ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA–HQ–OAR–2014–0741; FRL–9957–07–OAR]

RIN 2060–AS46

National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills to address the results of the residual risk and technology review (RTR) that the EPA is required to conduct under the Clean Air Act (CAA). These proposed amendments include revisions to the opacity monitoring provisions; addition of electrostatic precipitator (ESP) parameter monitoring provisions; a requirement for 5-year periodic emissions testing; revisions to provisions addressing periods of startup, shutdown, and malfunction (SSM); and technical and editorial changes. The EPA is proposing these amendments to improve the effectiveness of the rule.

DATES: *Comments.* Comments must be received on or before February 28, 2017. 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 January 30, 2017.

Public Hearing. A public hearing will be held if requested by January 4, 2017.

ADDRESSES: *Comments.* Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2014–0741, at *http://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. 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). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets.*

Instructions. Direct your comments to Docket ID No. EPA–HQ–OAR–2014–0741. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be CBI or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or email. The *http://www.regulations.gov* Web site is an ''anonymous access'' system, 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 *http://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 disk or CD–ROM 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 be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/dockets.*

Docket. The EPA has established a docket for this rulemaking under Docket ID No. EPA–HQ–OAR–2014–0741. All documents in the docket are listed in the *Regulations.gov* index. Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *Regulations.gov* or in hard copy at the EPA Docket Center, Room 3334, EPA WJC West Building, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the EPA Docket Center is (202) 566–1742.

Public Hearing. A public hearing will be held, if requested by January 4, 2017, to accept oral comments on this proposed action. If a hearing is requested, it will be held at the EPA's Washington, DC campus located at 1201 Constitution Avenue NW., Washington, DC. The hearing, if requested, will begin at 9:00 a.m. (local time) and will conclude at 5:00 p.m. (local time) on January 17, 2017. To request a hearing, to register to speak at a hearing, or to inquire if a hearing will be held, please contact Ms. Aimee St. Clair at (919) 541–1063 or by email at *stclair.aimee@epa.gov.* The last day to pre-register to speak at a hearing, if one is held, will be January 12, 2017.

Additionally, requests to speak will be taken the day of the hearing at the hearing registration desk, although preferences on speaking times may not be able to be fulfilled. Please note that registration requests received before the hearing will be confirmed by the EPA via email. The EPA will make every effort to accommodate all speakers who arrive and register. Because the hearing will be held at a United States governmental facility, individuals planning to attend the hearing should be prepared to show valid picture identification to the security staff in order to gain access to the meeting room. Please note that the REAL ID Act, passed by Congress in 2005, established new requirements for entering federal facilities. If your driver's license is issued by Alaska, American Samoa, Arizona, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Montana, New York, Oklahoma or the state of Washington, you must present an additional form of identification to enter the federal building. Acceptable alternative forms of identification include: Federal employee badges, passports, enhanced driver's licenses and military identification cards. In addition, you will need to obtain a property pass for any personal belongings you bring with you. Upon leaving the building, you will be required to return this property pass to

the security desk. No large signs will be allowed in the building, cameras may only be used outside of the building and demonstrations will not be allowed on federal property for security reasons.

Please note that any updates made to any aspect of the hearing, including whether or not a hearing will be held, will be posted online at *https://www.epa.gov/stationary-sources-air-pollution/kraft-soda-sulfite-and-stand-alone-semichemical-pulp-mills-mact-ii.* We ask that you contact Ms. Aimee St. Clair at (919) 541–1063 or by email at *stclair.aimee@epa.gov* or monitor our Web site to determine if a hearing will be held. The EPA does not intend to publish a notice in the **Federal Register** announcing any such updates. Please go to *https://www.epa.gov/stationary-sources-air-pollution/kraft-soda-sulfite-and-stand-alone-semichemical-pulp-mills-mact-ii* for more information on the public hearing.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed action, contact Dr. Kelley Spence, Sector Policies and Programs Division (Mail Code: E143–03), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541–3158; fax number: (919) 541–3470; and email address: *spence.kelley@epa.gov.* For specific information regarding the risk modeling methodology, contact Mr. James Hirtz, Health and Environmental Impacts Division (Mail Code: C539–02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541–0881; fax number: (919) 541–0840; and email address: *hirtz.james@epa.gov.* For information about the applicability of the NESHAP to a particular entity, contact Ms. Sara Ayres, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, USEPA Region 5 (Mail Code: E–19J), 77 West Jackson Boulevard, Chicago IL 60604; telephone number: (312) 353–6266; and email address: *ayres.sara@epa.gov.*

SUPPLEMENTARY INFORMATION:

Preamble Acronyms and Abbreviations. 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 levels
AERMOD air dispersion model used by the HEM–3 model
ANSI American National Standards Institute
ASME American Society of Mechanical Engineers
ASTM American Society for Testing and Materials
ATSDR Agency for Toxic Substances and Disease Registry
BACT best available control technology
BAT best available technology
BLO black liquor oxidation
BLS black liquor solids
CAA Clean Air Act
$CaCO_3$ calcium carbonate
CalEPA California EPA
CBI Confidential Business Information
CEDRI Compliance and Emissions Data Reporting Interface
CFR Code of Federal Regulations
CMS continuous monitoring system
COMS continuous opacity monitoring system
CPMS continuous parameter monitoring system
DCE direct contact evaporator
EJ environmental justice
EPA Environmental Protection Agency
ERPG Emergency Response Planning Guidelines
ERT Electronic Reporting Tool
ESP electrostatic precipitator
FR Federal Register
gr/dscf grains per dry standard cubic foot
HAP hazardous air pollutant
HCCPD hexachlorocyclopentadiene
HCl hydrochloric acid
HEM–3 Human Exposure Model, Version 1.1.0
HF hydrogen fluoride
HI hazard index
HQ hazard quotient
IBR incorporation by reference
ICR Information Collection Request
IRIS Integrated Risk Information System
km kilometer
LAER lowest achievable emission rate
lb/hr pounds per hour
lb/ton pounds per ton
LOAEL lowest-observed-adverse-effect level
MACT maximum achievable control technology
mg/kg-day milligrams per kilogram per day
mg/m^3 milligrams per cubic meter
MIR maximum individual risk
Na_2CO_3 sodium carbonate
Na_2S sodium sulfide
NAAQS National Ambient Air Quality Standards
NAC National Advisory Committee
NAICS North American Industry Classification System
NaOH sodium hydroxide
NAS National Academy of Sciences
NATA National Air Toxics Assessment
NCASI National Council for Air and Stream Improvement
NDCE nondirect contact evaporator
NEI National Emissions Inventory
NESHAP National Emission Standards for Hazardous Air Pollutants
NH_3 ammonia
NOAA National Oceanic and Atmospheric Administration
NOAEL no-observed-adverse-effect level
NRC National Research Council
NRDC Natural Resources Defense Council
NSPS New Source Performance Standards
NTTAA National Technology Transfer and Advancement Act
O&M operation and maintenance
O_2 oxygen
OAQPS Office of Air Quality Planning and Standards
OMB Office of Management and Budget
PAH polycyclic aromatic hydrocarbons
PB–HAP hazardous air pollutant known to be persistent and bio-accumulative in the environment
PDF portable document format
PEL probable effects level
PM particulate matter
$PM_{2.5}$ fine particles (particulate matter with particles less than 2.5 micrometers in diameter)
POM polycyclic organic matter
ppm parts per million
PRA Paperwork Reduction Act
PTC Performance Test Code
QA quality assurance
RACT reasonably available control technology
RBLC RACT/BACT/LAER Clearinghouse
REL reference exposure level
RFA Regulatory Flexibility Act
RfC reference concentration
RfD reference dose
RTO regenerative thermal oxidizer
RTR residual risk and technology review
SAB Science Advisory Board
SCC source classification code
SDT smelt dissolving tank
SOP standard operating procedure
SSM startup, shutdown, and malfunction
STAPPA/ State and Territorial Air Pollution Program
ALAPCO Administrators/Association of Local Air Pollution Control Officers
TEQ toxic equivalent
THC total hydrocarbon
TOSHI target organ-specific hazard index
tpy tons per year
TRIM.FaTE Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure model
TRS total reduced sulfur
UF uncertainty factor
$\mu g/m^3$ micrograms per cubic meter
UMRA Unfunded Mandates Reform Act
URE unit risk estimate
yr year

Organization of this Document. The information in this preamble is organized as follows:

I. General Information

A. Executive Summary

1. Purpose of the Regulatory Action

Section 112(f)(2) of the CAA requires the EPA to analyze and address the residual risk associated with hazardous air pollutant emissions from source categories subject to maximum achievable control technology (MACT) standards. This review, known as the residual risk review, is a one-time review that the statute provides will be done within 8 years of issuance of the MACT standard. Section 112(d)(6) of the CAA requires the EPA to review and revise CAA section 112 emissions standards, as necessary, taking into account developments in practices, processes, and control technologies. Emission standards promulgated under CAA section 112 are to be reviewed no less often than every 8 years. The EPA issued the NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Mills (40 Code of Federal Regulations (CFR) part 63, subpart MM) in 2001. The 2001 emission standards are due for review under CAA sections 112(d)(6) and 112(f)(2). In addition to conducting the RTR for subpart MM, we are evaluating the SSM provisions in the rule in light of the United States Court of Appeals for the District of Columbia Circuit decision in *Sierra Club* v. *EPA,* 551 F.3d 1019 (D.C. Cir. 2008). As explained in section IV of this preamble, in the *Sierra Club* case, the D.C. Circuit vacated the SSM exemption provisions in the General Provisions for nonopacity and opacity standards. Finally, the EPA evaluated the rule to determine if additional amendments were warranted or necessary to ensure continuous compliance with the standard and to promote consistency with other standards.

2. Summary of the Major Proposed Revisions

The EPA is not proposing to make any changes pursuant to 112(f)(2) as a result of its residual risk review. The EPA is proposing to reduce opacity limits as a result of the technology review under CAA section 112(d)(6). In addition, we are proposing the following as part of the technology review: Revising the opacity monitoring provisions, requiring ESP parameter monitoring for processes equipped with ESPs, clarifying the monitoring for combined ESP/wet scrubber controls, and providing alternative monitoring for smelt dissolving tank (SDT) wet scrubbers.

As an additional action, we are proposing to improve the compliance provisions of the subpart by proposing to require periodic air emissions performance testing once every 5 years for facilities subject to the standards for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills. To address the SSM exemptions, we are proposing amendments to subpart MM that will (1) require facilities to meet the standard at all times, including during periods of SSM, and (2) provide alternative monitoring parameters for wet scrubbers and ESPs during these periods. We are also proposing changes to the subpart MM NESHAP and the General Provisions applicability table to eliminate the SSM exemption. To increase the ease and efficiency of data submittal and improve data accessibility, we are proposing to require mills to submit electronic copies of compliance reports, which includes performance test reports.

We are also proposing a number of technical and editorial changes. These changes include the following: Clarifying the location in 40 CFR part 60 of applicable EPA test methods; updating the facility name for Cosmo Specialty Fibers; revising the definitions section in 40 CFR 63.861; corrected misspelling in 40 CFR 63.862(c), revising multiple sections to remove reference to former smelters and former black liquor gasification system at Georgia-Pacific's facility in Big Island, Virginia; revising the monitoring requirements section; revising the performance test requirements section to specify the conditions for conducting performance tests and to revise the ambient O2 concentration in Equations 7 and 8; revising the recordkeeping requirements section in 40 CFR 63.866 to include the requirement to record information on failures to meet the applicable standard; revising the terminology in the delegation of authority section in 40 CFR 63.868 to match the definitions in 40 CFR 63.90; and revising the General Provisions applicability table (Table 1 to subpart MM of part 63) to align with those sections of the General Provisions that have been amended or reserved over time.

3. Costs and Benefits

Table 1 summarizes the costs of this action. See section V of this preamble for further discussion.

TABLE 1—SUMMARY OF THE COSTS OF THIS PROPOSED ACTION

Requirement	Capital cost, $ million	Annual cost, $ million
Change in opacity monitoring provisions for recovery furnaces and lime kilns	42	8.8
ESP parameter monitoring	5.7	1.4

TABLE 1—SUMMARY OF THE COSTS OF THIS PROPOSED ACTION—Continued

Requirement	Capital cost, $ million	Annual cost, $ million
Periodic emissions testing	.....	1.1
Incremental reporting/recordkeeping	0.50	1.9
Total nationwide	48	13

The EPA estimates that the proposed changes to the opacity limits and monitoring allowances will reduce PM emissions by approximately 235 (tons per year) tpy and fine particle ($PM_{2.5}$) emissions by approximately 112 tpy. Periodic testing will tend to reduce emissions by providing incentive for facilities to maintain their control systems and make periodic adjustments to ensure peak performance. Eliminating the SSM exemption will reduce emissions by requiring facilities to meet the applicable standard during SSM periods. See section V of this preamble for further discussion.

B. Does this action apply to me?

Table 2 of this preamble lists the NESHAP and associated regulated industrial source categories that are the subject of this proposal. Table 2 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, once promulgated, will be directly applicable to the affected sources. Federal, state, local, and tribal government entities would not be affected by this proposed action. As defined in the *Initial List of Categories of Sources Under Section 112(c)(1) of the Clean Air Act Amendments of 1990* (see 57 FR 31576, July 16, 1992), the ''Pulp and Paper Production'' source category is any facility engaged in the production of pulp and/or paper. The EPA developed the NESHAPs for the source category in phases. This NESHAP, 40 CFR part 63, subpart MM, regulates chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills. The NESHAP for non-combustion sources (40 CFR part 63, subpart S) regulates non-combustion processes at mills that (1) chemically pulp wood fiber (using kraft, sulfite, soda, and semichemical methods), (2) mechanically pulp wood fiber (*e.g.,* groundwood, thermomechanical, pressurized), (3) pulp secondary fibers (deinked and non-deinked), (4) pulp non-wood material, and (5) manufacture paper. This proposal only addresses the RTR for subpart MM, and does not propose any amendments to subpart S.

TABLE 2—NESHAP AND INDUSTRIAL SOURCE CATEGORIES AFFECTED BY THIS PROPOSED ACTION

Source category	NESHAP	NAICS code [a]
Pulp and Paper Production	Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills.	32211, 32212, 32213

[a] North American Industry Classification System.

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

In addition to being available in the docket, an electronic copy of this action is available on the Internet through the EPA's Stationary Sources of Air Pollution Web site, a forum for information and technology exchange in various areas of air pollution control. A redline version of the regulatory language that incorporates the proposed changes in this action is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2014–0741). Following signature by the EPA Administrator, the EPA will post a copy of this proposed action at: *https://www.epa.gov/stationary-sources-air-pollution/kraft-soda-sulfite-and-stand-alone-semichemical-pulp-mills-mact-ii.* Following publication in the **Federal Register**, the EPA will post the **Federal Register** version of the proposal and key technical documents at this same Web site. Information on the overall RTR program is available at *http://www3.epa.gov/ttn/atw/rrisk/rtrpg.html.*

D. What should I consider as I prepare my comments for the EPA?

Submitting CBI. Do not submit information containing CBI to the EPA through *http://www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information on a disk or CD–ROM that you mail to the EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comments that includes information claimed as CBI, you must submit a copy of the comments that does not contain the information claimed as CBI for inclusion in the public docket. If you submit a CD–ROM or disk that does not contain CBI, mark the outside of the disk or CD–ROM clearly that it does not contain CBI. 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 CFR part 2. Send or deliver information identified as CBI only to the following address: OAQPS Document Control Officer (C404–02), OAQPS, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention Docket ID No. EPA–HQ–OAR–2014–0741.

II. Background

A. What is the statutory authority for this action?

Section 112 of the CAA establishes a two-stage regulatory process to address emissions of hazardous air pollutants (HAPs) from stationary sources. In the first stage, after the EPA has identified categories of sources emitting one or more of the HAPs listed in CAA section 112(b), CAA section 112(d) requires the Agency to promulgate technology-based NESHAPs for those sources. ''Major sources'' are those that emit or have the potential to emit 10 tpy or more of a single HAP or 25 tpy or more of any combination of HAPs. For major sources, the technology-based NESHAP must reflect the maximum degree of

emission reductions of HAPs achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts) and are commonly referred to as MACT standards.

MACT standards must reflect the maximum degree of emissions reduction achievable through the application of measures, processes, methods, systems, or techniques, including, but not limited to, measures that: (1) Reduce the volume of or eliminate pollutants through process changes, substitution of materials, or other modifications; (2) enclose systems or processes to eliminate emissions; (3) capture or treat pollutants when released from a process, stack, storage, or fugitive emissions point; (4) are design, equipment, work practice, or operational standards (including requirements for operator training or certification); or (5) are a combination of the above. CAA section 112(d)(2)(A)–(E). The MACT standards may take the form of design, equipment, work practice, or operational standards where the EPA first determines either that: (1) A pollutant cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with law; or (2) the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations. CAA section 112(h)(1)–(2).

The MACT ''floor'' is the minimum control level allowed for MACT standards promulgated under CAA section 112(d)(3) and may not be based on cost considerations. For new sources, the MACT floor cannot be less stringent than the emissions control that is achieved in practice by the best-controlled similar source. The MACT floor for existing sources can be less stringent than floors for new sources, but not less stringent than the average emissions limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing five sources for categories or subcategories with fewer than 30 sources). In developing MACT standards, the EPA must also consider control options that are more stringent than the floor. We may establish standards more stringent than the floor based on considerations of the cost of achieving the emission reductions, any non-air quality health and environmental impacts, and energy requirements.

The EPA is then required to review these technology-based standards and revise them ''as necessary (taking into account developments in practices, processes, and control technologies)'' no less frequently than every 8 years. CAA section 112(d)(6). In conducting this review, the EPA is not required to recalculate the MACT floor. *Natural Resources Defense Council (NRDC)* v. *EPA,* 529 F.3d 1077, 1084 (D.C. Cir. 2008). *Association of Battery Recyclers, Inc.* v. *EPA,* 716 F.3d 667 (D.C. Cir. 2013).

The second stage in standard-setting focuses on reducing any remaining (*i.e.,* ''residual'') risk according to CAA section 112(f). Section 112(f)(1) of the CAA required that the EPA prepare a report to Congress discussing (among other things) methods of calculating the risks posed (or potentially posed) by sources after implementation of the MACT standards, the public health significance of those risks, and the EPA's recommendations as to legislation regarding such remaining risk. The EPA prepared and submitted the *Residual Risk Report to Congress,* EPA–453/R–99–001 (*Risk Report*) in March 1999. Section 112(f)(2) of the CAA then provides that if Congress does not act on any recommendation in the Risk Report, the EPA must analyze and address residual risk for each category or subcategory of sources 8 years after promulgation of such standards pursuant to CAA section 112(d).

Section 112(f)(2) of the CAA requires the EPA to determine for source categories subject to MACT standards whether promulgation of additional standards is needed to provide an ample margin of safety to protect public health. Section 112(f)(2)(B) of the CAA expressly preserves the EPA's use of the two-step process 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 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) (54 FR 38044, September 14, 1989). The EPA notified Congress in the *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, in a challenge to the risk review for the Synthetic Organic Chemical Manufacturing source category, the United States Court of Appeals for the District of Columbia Circuit upheld as reasonable 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) (''[S]ubsection 112(f)(2)(B) expressly incorporates the EPA's interpretation of the Clean Air Act from the Benzene standard, complete with a citation to the **Federal Register**.''); see also, *A Legislative History of the Clean Air Act Amendments of 1990,* vol. 1, p. 877 (Senate debate on Conference Report).

The first step in the process of evaluating residual risk is the determination of acceptable risk. If risks are unacceptable, the EPA cannot consider cost in identifying the emissions standards necessary to bring risks to an acceptable level. The second step is the determination of whether standards must be further revised in order to provide an ample margin of safety to protect public health. The ample margin of safety is the level at which the standards must be set, unless an even more stringent standard is necessary to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect.

1. Step 1—Determination of Acceptability

The Agency in the Benzene NESHAP concluded that ''the acceptability of risk under section 112 is best judged on the basis of a broad set of health risk measures and information'' and that the ''judgment on acceptability cannot be reduced to any single factor.'' Benzene NESHAP at 38046. The determination of what represents an ''acceptable'' risk is based on a judgment of ''what risks are acceptable in the world in which we live'' (*Risk Report* at 178, quoting *NRDC* v. *EPA,* 824 F. 2d 1146, 1165 (D.C. Cir. 1987) (*en banc*) (''Vinyl Chloride''), recognizing that our world is not risk-free.

In the Benzene NESHAP, we stated that ''EPA will generally presume that if the risk to [the maximum exposed] individual is no higher than approximately one in 10 thousand, that risk level is considered acceptable.'' 54 FR at 38045, September 14, 1989. We discussed the maximum individual lifetime cancer risk (or maximum individual risk (MIR)) as being ''the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years.'' *Id.* We explained that this measure of risk ''is an estimate of the upper bound of risk based on conservative assumptions, such as continuous exposure for 24 hours per day for 70 years.'' *Id.* We

acknowledged that maximum individual lifetime cancer risk ''does not necessarily reflect the true risk, but displays a conservative risk level which is an upper-bound that is unlikely to be exceeded.'' *Id.*

Understanding that there are both benefits and limitations to using the MIR as a metric for determining acceptability, we acknowledged in the Benzene NESHAP that ''consideration of maximum individual risk . . . must take into account the strengths and weaknesses of this measure of risk.'' *Id.* Consequently, the presumptive risk level of 100-in-1 million (1-in-10 thousand) provides a benchmark for judging the acceptability of maximum individual lifetime cancer risk, but does not constitute a rigid line for making that determination. Further, in the Benzene NESHAP, we noted that:

> ''[p]articular attention will also be accorded to the weight of evidence presented in the risk assessment of potential carcinogenicity or other health effects of a pollutant. While the same numerical risk may be estimated for an exposure to a pollutant judged to be a known human carcinogen, and to a pollutant considered a possible human carcinogen based on limited animal test data, the same weight cannot be accorded to both estimates. In considering the potential public health effects of the two pollutants, the Agency's judgment on acceptability, including the MIR, will be influenced by the greater weight of evidence for the known human carcinogen.''

Id. at 38046. The Agency also explained in the Benzene NESHAP that:

> ''[i]n establishing a presumption for MIR, rather than a rigid line for acceptability, the Agency intends to weigh it with a series of other health measures and factors. These include the overall incidence of cancer or other serious health effects within the exposed population, the numbers of persons exposed within each individual lifetime risk range and associated incidence within, typically, a 50 km exposure radius around facilities, the science policy assumptions and estimation uncertainties associated with the risk measures, weight of the scientific evidence for human health effects, other quantified or unquantified health effects, effects due to co-location of facilities, and co-emission of pollutants.''

Id. at 38045. In some cases, these health measures and factors taken together may provide a more realistic description of the magnitude of risk in the exposed population than that provided by maximum individual lifetime cancer risk alone.

As noted earlier, in *NRDC* v. *EPA,* the court held that CAA section 112(f)(2) ''incorporates the EPA's interpretation of the Clean Air Act from the Benzene Standard.'' The court further held that Congress' incorporation of the Benzene standard applies equally to carcinogens and non-carcinogens. 529 F.3d at 1081–82. Accordingly, we also consider non-cancer risk metrics in our determination of risk acceptability and ample margin of safety.

2. Step 2—Determination of Ample Margin of Safety

Section 112(f)(2) of the CAA requires the EPA to determine, for source categories subject to MACT standards, whether those standards provide an ample margin of safety to protect public health. As explained in the Benzene NESHAP, ''the second step of the inquiry, determining an 'ample margin of safety,' again includes consideration of all of the health factors, and whether to reduce the risks even further . . . . Beyond that information, additional factors relating to the appropriate level of control will also be considered, including costs and economic impacts of controls, technological feasibility, uncertainties, and any other relevant factors. Considering all of these factors, the Agency will establish the standard at a level that provides an ample margin of safety to protect the public health, as required by section 112.'' 54 FR at 38046, September 14, 1989.

According to CAA section 112(f)(2)(A), if the MACT standards for HAP ''classified as a known, probable, or possible human carcinogen do not reduce lifetime excess cancer risks to the individual most exposed to emissions from a source in the category or subcategory to less than one in one million,'' the EPA must promulgate residual risk standards for the source category (or subcategory), as necessary to provide an ample margin of safety to protect public health. In doing so, the EPA may adopt standards equal to existing MACT standards if the EPA determines that the existing standards (*i.e.,* the MACT standards) are sufficiently protective. *NRDC* v. *EPA,* 529 F.3d 1077, 1083 (D.C. Cir. 2008) (''If EPA determines that the existing technology-based standards provide an 'ample margin of safety,' then the Agency is free to readopt those standards during the residual risk rulemaking.'') The EPA must also adopt more stringent standards, if necessary, to prevent an adverse environmental effect,[1] but must consider cost, energy, safety, and other relevant factors in doing so.

The CAA does not specifically define the terms ''individual most exposed,'' ''acceptable level,'' and ''ample margin of safety.'' In the Benzene NESHAP, 54 FR at 38044–38045, September 14, 1989, the Agency stated as an overall objective:

> In protecting public health with an ample margin of safety under section 112, EPA strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately 1-in-1 million and (2) limiting to no higher than approximately 1-in-10 thousand [*i.e.,* 100-in-1 million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years.

The Agency further stated that ''[t]he EPA also considers incidence (the number of persons estimated to suffer cancer or other serious health effects as a result of exposure to a pollutant) to be an important measure of the health risk to the exposed population. Incidence measures the extent of health risks to the exposed population as a whole, by providing an estimate of the occurrence of cancer or other serious health effects in the exposed population.'' *Id.* at 38045.

In the ample margin of safety decision process, the Agency again considers all of the health risks and other health information considered in the first step, including the incremental risk reduction associated with standards more stringent than the MACT standard or a more stringent standard that the EPA has determined is necessary to ensure risk is acceptable. In the ample margin of safety analysis, the Agency considers additional factors, including costs and economic impacts of controls, technological feasibility, uncertainties, and any other relevant factors. Considering all of these factors, the Agency will establish the standard at a level that provides an ample margin of safety to protect the public health, as required by CAA section 112(f). 54 FR 38046, September 14, 1989.

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

The ''Pulp and Paper Production'' source category includes any facility engaged in the production of pulp and/or paper. The EPA developed the NESHAPs for the source category in two phases. The first phase, 40 CFR part 63, subpart S, regulates pulping and paper production processes, and was

[1] ''Adverse environmental effect'' is defined as any significant and widespread adverse effect, which may be reasonably anticipated to wildlife, aquatic life, or natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental qualities over broad areas. CAA section 112(a)(7).

originally promulgated in 1998. The second phase, 40 CFR part 63, subpart MM, regulates chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills, and was originally promulgated in 2001. Another separate NESHAP, 40 CFR part 63, subpart DDDDD, covers other combustion sources located at pulp mills, such as industrial boilers. This proposal focuses exclusively on the RTR for subpart MM. The EPA is not proposing any amendments to Subpart DDDDD or subpart S in this notice.

Subpart MM of 40 CFR part 63 was promulgated on January 12, 2001 (66 FR 3180). As promulgated in 2001, the subpart MM MACT standard applies to major sources of HAP emissions from chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills. The chemical recovery combustion sources include kraft and soda recovery furnaces, SDTs, and lime kilns; kraft black liquor oxidation (BLO) units; sulfite combustion units; and semichemical combustion units. Subpart S was promulgated on April 15, 1998 (63 FR 18504), and underwent a RTR, with final amendments to subpart S promulgated on September 11, 2012 (77 FR 55698).

This proposal includes both a risk assessment and a technology review of the emission sources in 40 CFR part 63, subpart MM, as well as a risk assessment of the whole facility. The whole facility risk assessment includes emissions from all sources of HAP at the facility, including sources covered by other NESHAP (*e.g.,* boilers covered under 40 CFR part 63, subpart DDDDD; pulp and paper production processes covered under 40 CFR part 63, subpart S; paper coating operations covered under 40 CFR part 63, subpart JJJJ).

According to results of the EPA's 2011 pulp and paper information collection request (ICR), and updates based on more recent information, there are a total of 108 major sources in the United States that conduct chemical recovery combustion operations, including 97 kraft pulp mills, 1 soda pulp mill, 3 sulfite pulp mills, and 7 stand-alone semichemical pulp mills.

Subpart MM of 40 CFR part 63 includes numerical emission limits for recovery furnaces, SDTs, lime kilns, and sulfite and semichemical combustion units. The control systems used by most mills to meet the subpart MM emission limits are as follows:

- Recovery furnaces: ESPs, wet scrubbers, and nondirect contact evaporator (NDCE) furnace design with dry-bottom ESP, and dry particulate matter (PM) return system.
- Smelt dissolving tanks: Wet scrubbers, mist eliminators, and venting to recovery furnace.
- Lime kilns: ESPs and wet scrubbers.
- Sulfite combustion units: Wet scrubbers and mist eliminators.
- Semichemical combustion units: Wet scrubbers, ESPs, and regenerative thermal oxidizers (RTOs).

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

In February 2011, the EPA issued an ICR, pursuant to CAA section 114, to United States pulp and paper manufacturers to gather information needed to conduct the regulatory reviews required under CAA sections 112(d)(6) and (f)(2). The EPA divided the ICR into three parts. Part I requested available information regarding 40 CFR part 63, subpart S process equipment, control devices, pulp and paper production, bleaching, and other aspects of facility operations to support the subpart S technology review and the review of the Kraft Pulp Mills New Source Performance Standards (NSPS) under 40 CFR part 60, subpart BB. Part II requested updated inventory data for all pulp and paper emission sources to support the residual risk assessment for the pulp and paper sector (including 40 CFR part 63, subparts S and MM) and to supplement the National Emissions Inventory (NEI) for the source category for purposes of detailed residual risk modeling. Part III requested available information on subpart MM chemical recovery combustion equipment, control devices, and other pertinent information, to support the subpart MM technology review and the subpart BB NSPS review. The response rate for the ICR was 100 percent.

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

In addition to ICR responses, the EPA reviewed a number of other information sources to determine if there have been developments in practices, processes, or control technologies by chemical recovery combustion sources. These include:

- Permit limits from permits submitted with ICR responses and collected from state agencies.
- Information on air pollution control options in the pulp and paper industry from the RACT/BACT/LAER Clearinghouse (RBLC).
- Information on best available techniques in the pulp and paper industry from a 2015 European Commission document, titled *Best Available Techniques (BAT) Reference Document for the Production of Pulp, Paper and Board.*
- Information on the most effective ways to control emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors from sources in various industries, including the pulp and paper industry, from a 2006 State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officers (STAPPA/ALAPCO) document, titled *Controlling Fine Particulate Matter under the Clean Air Act: A Menu of Options.*
- Stack test data submitted with ICR responses.
- Emissions factors from technical bulletins prepared by the National Council for Air and Stream Improvement, Inc. (NCASI), a major source of environmental data affecting the pulp and paper industry.

III. Analytical Procedures

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 did we estimate post-MACT risks posed by the source category?

The EPA conducted a risk assessment that provides estimates of the MIR posed by the HAP emissions from each source in the source category, the hazard index (HI) for chronic exposures to HAPs with the potential to cause non-cancer health effects, and the hazard quotient (HQ) for acute exposures to HAPs with the potential to cause non-cancer health effects. The assessment also provides estimates of the distribution of cancer risks within the exposed populations, cancer incidence, and an evaluation of the potential for adverse environmental effects. The seven sections that follow this paragraph describe how we estimated emissions and conducted the risk assessment. The docket for this rulemaking contains the following document which provides more information on the risk assessment inputs and models: *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule.* The methods used to assess risks (as described in the seven primary steps below) are consistent with those peer-reviewed by a panel of the EPA's Science Advisory Board (SAB) in 2009 and described in their peer review report issued in 2010; [2] they are also consistent with the key

[2] U.S. EPA SAB. *Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies—MACT I Petroleum Refining Sources and Portland Cement Manufacturing,* May 2010.

recommendations contained in that report.

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

As discussed in section II.C of this preamble, we used data from Part II of the Pulp and Paper Sector ICR as the basis for the risk assessments for the pulp and paper sector (including 40 CFR part 63, subparts S and MM). Part II of the ICR, which concluded in June 2011, targeted facilities that are major sources of HAP emissions and involved an update of pre-populated NEI data spreadsheets (or creation of new datasets). The NEI is a database that contains information about sources that emit criteria air pollutants, their precursors and HAPs. The NEI database includes estimates of actual annual air pollutant emissions from point and volume sources; emission release characteristic data such as emission release height, temperature, diameter, velocity, and flow rate; and locational latitude/longitude coordinates. We asked pulp and paper mills to refine (or create new) inventories based on their NEI datasets for purposes of detailed residual risk modeling. Refinements included providing additional details for HAP emission sources, providing more specific information on the location and characteristics of emission points (*e.g.,* updating emission release coordinates and parameters), and adding or updating HAP emissions data for each emission release point. We compiled the updated datasets for each individual mill into a pulp and paper Part II emissions database to create the whole facility and MACT source category residual risk modeling files.

The actual annual emissions data in the pulp and paper emissions database include limited data from actual emissions tests and, in most cases, estimates of actual emissions (based on emissions factors) provided by sources surveyed in Part II of the ICR. We received a comprehensive set of emissions test data and emissions estimates that enabled us to conduct risk modeling of detectable HAP emissions for all major source facilities in the MACT source category.

We conducted two substantial quality assurance (QA) efforts on the Part II data in order to create the modeling files needed for the 40 CFR part 63, subpart S residual risk assessment, which included: (1) QA of the updated inventory spreadsheets submitted by each mill prior to import into the compiled database; and (2) QA and standardization of the compiled database.[3] We needed modeling files for both the subpart S category and the whole facility, so our QA efforts focused on data for all emission sources at pulp and paper facilities, including 40 CFR part 63, subpart MM emission sources.

We reviewed the Part II datasets to ensure that the major pulp and paper processes and pollutants were included and properly identified, to ensure that emissions from the various processes were allocated to the correct source category, and to identify emissions and other data anomalies. We also standardized the various codes (*e.g.,* source classification codes (SCCs), pollutant codes), eliminated duplicate records, and checked geographic coordinates. We reviewed emissions release parameters for data gaps and errors, assigned the proper default parameters where necessary, assigned emission process groups to distinguish between processes with related SCCs, and ensured that fugitive release dimensions were specified or given default values where necessary.

We requested comments on the inventory in the preamble to the December 27, 2011, 40 CFR part 63, subpart S proposal. We requested further updates to the mill-specific HAP emissions data used in the risk modeling, if needed. In 2012, we received revisions to inventories for 81 facilities following proposal of the subpart S residual risk review.[4]

While most of the inventory revisions that we received after the proposal made additional refinements to emissions levels and release point details for 40 CFR part 63, subpart S sources, some inventory revisions also made refinements to data for 40 CFR part 63, subpart MM sources. We incorporated revisions to all process types into the inventory to remodel facility-wide risk and perform the complete scope of residual risk modeling for subpart MM emissions sources. We checked the 81 individual revision files to ensure they were incorporated into the main database correctly, and then further reviewed the entire database.

We began compiling an initial draft residual risk modeling input file for use in the 40 CFR part 63, subpart MM residual risk review in September 2014.[5] We made updates to the mill list to account for facilities that recently closed or reopened, and to mill equipment configurations for facilities that recently upgraded equipment. We reviewed the inventory to ensure that each record contained a facility ID, emission unit ID, process ID, and emission release point ID. We cross-walked regulatory codes, SCCs, and emission process groups to identify and correct any inconsistencies that may have been introduced with the inventory updates.

In addition to retaining the emission process groups used in the previous 40 CFR part 63, subpart S modeling effort, we added new emission process groups for 40 CFR part 63, subpart MM sources where necessary. We compared the subpart MM emission process groups with the Part III ICR database to ensure that we included all known recovery furnaces and lime kilns in the inventory for the residual risk modeling. In addition, we reviewed the presence or absence of BLO systems (*i.e.,* because BLO systems are only expected to be present at mills with direct contact evaporator (DCE) recovery furnaces). Finally, we checked the mills to ensure emission process groups included SDTs and sulfite and semichemical recovery equipment, as expected.

We reviewed the pollutant codes in the inventory to ensure the codes and descriptions matched the latest NEI lookup table used by the EPA for risk model input files. We performed extensive QA of the pollutant codes prior to the 40 CFR part 63, subpart S risk modeling, so few updates were required.

We speciated data for a number of HAPs, including chromium, mercury, radionuclides, polycyclic organic matter (POM), and dioxins/furans to facilitate risk modeling. We speciated chromium emissions as hexavalent chromium (chromium VI) and trivalent chromium (chromium III).[6] We speciated mercury emissions as particulate divalent mercury, gaseous divalent mercury, and gaseous elemental mercury. We speciated total POM emissions differently for each emission unit type

[3] These QA efforts are discussed in a November 11, 2011 memorandum in the docket, titled *Inputs to the Pulp and Paper Industry October 2011 Residual Risk Modeling.*

[4] Review of the inventory revisions performed prior to promulgation of 40 CFR part 63, subpart S is documented in a May 8, 2012, memorandum in the subpart S docket (EPA–HQ–OAR–2007–0544), titled *Recommendations Concerning Residual Risk Remodeling for the Pulp and Paper Industry.*

[5] For more information, see the September 30, 2014 memorandum in the docket, titled *Preparation of Residual Risk Modeling Input File for Subpart MM.* The September 2014 memorandum describes the source of the inventory data, discusses quality assurance of the 40 CFR part 63, subpart MM data, provides actual versus allowable and acute risk multipliers for subpart MM sources, and identifies potential outliers and suspect data for further review.

[6] For more information on pollutant speciation, see the September 30, 2014 memorandum in the docket, titled *Preparation of Residual Risk Modeling Input File for Subpart MM.*

based on the most common POM compounds emitted from that unit. We speciated dioxin/furan emissions based on published emissions data in the EPA's dioxin/furan inventory report [7] or, if no speciation profile was available, recalculated the emissions using published emissions factors.[8] Where needed, we added/replaced emissions estimates that were omitted, outdated, out-of-scope, or inconsistent with changes to mill equipment configurations.

We reviewed all records for consistency with respect to the emission release point to ensure each record was characterized by one set of coordinates (latitude and longitude) and one set of stack or fugitive parameters. We checked fugitive parameters to ensure there were no blanks and that the values provided were reasonable and consistent with the required national defaults or other criteria. We reviewed emission points labeled as stacks to ensure no fugitive parameters were identified. We checked exit gas flow rate values against the stack velocity provided to ensure there were no inconsistencies. We mapped the emission point coordinates for each facility to determine if they were properly placed on the mill site. We also added control information from the Part III ICR database or mills' title V permits to the input file for 40 CFR part 63, subpart MM sources.

The emissions inventory for 40 CFR part 63, subpart MM sources identifies emissions of the following HAP known to be persistent and bio-accumulative in the environment (PB–HAPs): Cadmium compounds, lead compounds, mercury compounds, POM, dioxins/furans, and hexachlorobenzene. Risk-based screening levels are available for Tier 1 screening for all of the above PB–HAPs, with the exception of hexachlorobenzene.

Consistent with the EPA's standard practice in conducting risk assessments for source categories, we conducted a two-step process to determine: (1) Whether PB–HAPs are being emitted; and (2) whether they are being released above screening levels. If these releases are significantly above the screening levels and the EPA has detailed information on the releases and the site, a complete multipathway analysis of the site is conducted to estimate pathway risks for the source category.

We considered actual emissions of the ecological HAPs emitted from the 40 CFR part 63, subpart MM source category in the ecological HAP analysis. In addition to the PB–HAPs emitted from the subpart MM source category (except hexachlorobenzene), we considered hydrochloric acid (HCl) and hydrogen fluoride (HF) for ecological HAP modeling. Further information about the multipathway analysis performed for this category follows in section III.B.4 of this preamble.

In 2015, we posted the initial draft risk model input file on our Technology Transfer Network for additional review by interested parties. This review resulted in the submittal of additional mill-specific inventory and receptor revisions. As part of the review, we identified potential outliers and suspect data for 40 CFR part 63, subpart MM sources in the emission inventory and notified facilities to provide an opportunity to review and revise their emissions data, if needed. A total of 40 mills reviewed their emissions data, with 38 of those mills submitting inventory revisions to the EPA.[9]

Inventory revisions primarily included mill name changes; revisions to HAP metal, POM, and dioxin/furan inventory data; and requests for removal of hexachlorocyclopentadiene (HCCPD) data from inventories, particularly for SDTs, since HCCPD is not expected from pulp mill sources. Where necessary, we speciated the revised chromium, mercury, and POM data that the mills provided, using the approaches described above. As part of the review, we identified risk modeling receptors improperly located on mill property for correction in the Human Exposure Model (Community and Sector HEM–3 version 1.1.0) input files before we performed risk modeling for 40 CFR part 63, subpart MM.

After we incorporated the revisions into the input file, we conducted an additional review of the file, which included the following:

- Identified non-40 CFR part 63, subpart MM mills in the inventory and removed them.
- Identified additional mill name changes and incorporated them in the inventory.
- Reviewed fugitive parameters for missing data.
- Identified missing speciated mercury and chromium data and restored the data to the inventory.
- Reviewed location data for mills that submitted inventory revisions and corrected coordinates, as needed.
- Identified records for emissions points with zero emissions for a given pollutant and removed those records from the inventory.
- Conducted emission process group checks, resulting in a revision to an emission process group that reflects a change in SCC, and removal of records with an emission process group no longer applicable (specifically a BLO unit for a mill that no longer operates any DCE recovery furnaces that require a BLO unit).
- Checked mills to ensure they had the expected 40 CFR part 63, subpart MM equipment, comparing the number of recovery furnaces, lime kilns, and SDTs to Part III ICR data to ensure each emission unit was represented in the inventory.
- Reviewed each emission unit for the presence of an emissions value for key expected pollutants (*e.g.,* HAP metals, HCl, methanol, dioxins/furans, POM) and added emissions estimates for those pollutants where needed.[10]
- Replaced obviously errant emissions data (particularly dioxins/furans) with revised estimates calculated based on ICR-reported throughput and emissions factors.
- Rechecked IDs, SCCs, regulatory codes, pollutant codes, duplicate pollutants, and HCCPD deletions.

2. How did we estimate MACT-allowable emissions?

The available emissions data in the RTR emissions dataset include estimates of the mass of HAPs emitted during the specified annual time period. In some cases, these ''actual'' emission levels are lower than the emission levels required to comply with the current MACT standards. The emissions level allowed to be emitted by the MACT standards is referred to as the ''MACT-allowable'' emissions level. We discussed the use of both MACT-allowable and actual emissions in the final Coke Oven Batteries RTR (70 FR 19998–19999, April 15, 2005) and in the proposed and final Hazardous Organic NESHAP RTRs (71 FR 34428, June 14, 2006, and 71 FR 76609, December 21, 2006, respectively). In those actions, we noted that assessing the risks at the MACT-allowable level is inherently reasonable

[7] U.S. Environmental Protection Agency. *An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000.* Publication No. EPA/600/P–03/002F. Available at: *http://www.epa.gov/ncea/pdfs/dioxin/2006/dioxin.pdf.* November 2006. Tables 4–14, 4–25, and 5–13.

[8] National Council for Air and Stream Improvement (NCASI). *Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Pulp and Paper Mill Sources—A Second Update.* Technical Bulletin No. 973. February 2010. Table 9.9.

[9] For further information, see the October 16, 2015 memorandum in the docket, titled *Review of Pulp Mill Inventory Revisions Received in 2015.*

[10] For further information, see the February 16, 2016 memorandum in the docket, titled *Approach for Populating Missing and Erroneous Emissions Estimates for Key HAP in the Subpart MM Residual Risk Modeling Inventory.*

since these risks reflect the maximum level facilities could emit and still comply with national emission standards. 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, September 14, 1989.) It is reasonable to consider actual emissions because sources typically seek to perform better than required by emissions standards to provide an operational margin to accommodate the variability in manufacturing processes and control device performance. Facilities' actual emissions may also be significantly lower than MACT-allowable emissions for other reasons such as state requirements, better performance of control devices than required by the MACT standards, or reduced production.

We estimated actual emissions based on the Part II emissions inventory and subsequent site-specific inventory revisions provided by mills. To estimate emissions at the MACT-allowable level, we developed a ratio of MACT-allowable emissions to actual emissions for each source type for the facilities in the 40 CFR part 63, subpart MM source category. We developed this ratio based on the level of control required by the subpart MM MACT standards compared to the level of reported actual emissions from stack test reports provided with Part III survey responses. For example, stack test data indicated that SDTs achieve PM levels of 0.108 pounds per ton (lb/ton) black liquor solids (BLS), on average, while the PM emission limit for existing SDTs is 0.20 lb/ton BLS, so we estimated that MACT-allowable emissions of HAP metals from SDTs (where PM is used as a surrogate) could be as much as 1.8 times higher, and the ratio of MACT-allowable to actual emissions used was 1.8:1 for SDTs.[11]

After developing these ratios for each emission point type in this source category, we next applied these ratios on an emission unit basis to the Part II actual emissions data to obtain risk estimates based on MACT-allowable emissions.

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

Both long-term and short-term inhalation exposure concentrations and health risks from the source category addressed in this proposal were estimated using HEM–3. The HEM–3 performs three primary risk assessment activities: (1) Conducting dispersion modeling to estimate the concentrations of HAPs in ambient air, (2) estimating long-term and short-term inhalation exposures to individuals residing within 50 kilometers (km) of the modeled sources,[12] and (3) estimating individual and population-level inhalation risks using the exposure estimates and quantitative dose-response information.

The air dispersion model used by the HEM–3 model (AERMOD) is one of the EPA's preferred models for assessing pollutant concentrations from industrial facilities.[13] To perform the dispersion modeling and to develop the preliminary risk estimates, HEM–3 draws on three data libraries. The first is a library of meteorological data, which is used for dispersion calculations. This library includes 1 year (2014) of hourly surface and upper air observations for more than 800 meteorological stations, selected to provide coverage of the United States and Puerto Rico. A second library of United States Census Bureau census block [14] internal point locations and populations provides the basis of human exposure calculations (U.S. Census, 2010). 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 unit risk factors and other health benchmarks is used to estimate health risks. These risk factors and health benchmarks are the latest values recommended by the EPA for HAPs and other toxic air pollutants. These values are available at *https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants* and are discussed in more detail later in this section.

In developing the risk assessment for chronic exposures, we used the estimated annual average ambient air concentrations of each HAP emitted by each source for which we have emissions data in the source category. The air concentrations at each nearby census block centroid were used as a surrogate for the chronic inhalation exposure concentration for all the people who reside in that census block. We calculated the MIR for each facility as the cancer risk associated with a continuous lifetime (24 hours per day, 7 days per week, and 52 weeks per year for a 70-year period) exposure to the maximum concentration at the centroid of inhabited census blocks. Individual cancer risks were calculated by multiplying the estimated lifetime exposure to the ambient concentration of each of the 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 probability of contracting cancer over a lifetime of exposure to a concentration of 1 microgram of the pollutant per cubic meter of air. For residual risk assessments, we generally use URE values from the EPA's Integrated Risk Information System (IRIS). For carcinogenic pollutants without IRIS values, we look to other reputable sources of cancer dose-response values, often using California EPA (CalEPA) URE values, where available. In cases where new, scientifically credible dose response values have been developed in a manner consistent with the 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 EPA estimated incremental individual lifetime cancer risks associated with emissions from the facilities in the source category as the sum of the risks for each of the carcinogenic HAP (including those classified as carcinogenic to humans, likely to be carcinogenic to humans, and suggestive evidence of carcinogenic potential [15]) emitted by the modeled sources. Cancer incidence and the distribution of individual cancer risks for the population within 50 km of the

[11] For more information, see the September 30, 2014 memorandum in the docket, titled *Preparation of Residual Risk Modeling Input File for Subpart MM.*

[12] This metric comes from the Benzene NESHAP. See 54 FR 38046.

[13] 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, November 9, 2005).

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

[15] These classifications also 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, September 24, 1986). In August 2000, the document *Supplemental Guidance for Conducting Health Risk Assessment of Chemical Mixtures* (EPA/630/R–00/002) was published 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 risks of these individual compounds to obtain the cumulative cancer risks 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 *http://yosemite.epa.gov/ sab/sabproduct.nsf/214C6E915BB04E14852570CA007A682C/ $File/ecadv02001.pdf.*

sources were also estimated for the source category as part of this assessment by summing individual risks. A distance of 50 km is consistent with both the analysis supporting the 1989 Benzene NESHAP (54 FR 38044, September 14, 1989) and the limitations of Gaussian dispersion models, including AERMOD.

To assess the risk of non-cancer health effects from chronic exposures, we summed the HQ for each of the HAP that affects a common target organ system to obtain the HI for that target organ system (or target organ-specific HI, TOSHI). The HQ is the estimated exposure divided by the chronic reference value, which is a value selected from one of several sources. First, the chronic reference level can be the EPA reference concentration (RfC) (*https://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&vocabName=IRIS%20Glossary*), defined as ''an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.'' Alternatively, in cases where an RfC from the EPA's IRIS database is not available or where the EPA determines that using a value other than the RfC is appropriate, the chronic reference level can be a value from the following prioritized sources: (1) The Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Level (*http://www.atsdr.cdc.gov/mrls/index.asp*), which is defined as ''an estimate of daily human exposure to a hazardous substance that is likely to be without an appreciable risk of adverse non-cancer health effects (other than cancer) over a specified duration of exposure''; (2) the CalEPA Chronic Reference Exposure Level (REL) (*http://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0*), which is defined as ''the concentration level (that is expressed in units of micrograms per cubic meter ($\mu g/m^3$) for inhalation exposure and in a dose expressed in units of milligram per kilogram-day (mg/kg-day) for oral exposures), at or below which no adverse health effects are anticipated for a specified exposure duration''; or (3), as noted above, a scientifically credible dose-response value that has been developed in a manner consistent with the EPA guidelines and has undergone a peer review process similar to that used by the EPA, in place of or in concert with other values.

As mentioned above, in order to characterize non-cancer chronic effects, and in response to key recommendations from the SAB, the EPA selects dose-response values that reflect the best available science for all HAPs included in RTR risk assessments.[16] More specifically, for a given HAP, the EPA examines the availability of inhalation reference values from the sources included in our tiered approach (*e.g.,* IRIS first, ATSDR second, CalEPA third) and determines which inhalation reference value represents the best available science. Thus, as new inhalation reference values become available, the EPA will typically evaluate them and determine whether they should be given preference over those currently being used in RTR risk assessments.

The EPA also evaluated screening estimates of acute exposures and risks for each of the HAP (for which appropriate acute dose-response values are available) at the point of highest potential off-site exposure for each facility. To do this, the EPA estimated the risks when both the peak (hourly) emissions rate and worst-case dispersion conditions occur. We also assume that a person is located at the point of highest impact during that same time. In accordance with our mandate in section 112 of the CAA, we use the point of highest off-site exposure to assess the potential risk to the maximally exposed individual. The acute HQ is the estimated acute exposure divided by the acute dose-response value. In each case, the EPA calculated acute HQ values using best available, short-term dose-response values. These acute dose-response values, which are described below, include the acute REL, acute exposure guideline levels (AEGL) and emergency response planning guidelines (ERPG) for 1-hour exposure durations. As discussed below, we used conservative assumptions for emissions rates, meteorology, and exposure location.

As described in the CalEPA's *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part I, The Determination of Acute Reference Exposure Levels for Airborne Toxicants,* an acute REL value (*http://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary*) is defined as ''the concentration level at or below which no adverse health effects are anticipated for a specified exposure duration.'' *Id.* at page 2. Acute REL values are based on the most sensitive, relevant, adverse health effect reported in the peer-reviewed medical and toxicological literature. Acute REL values 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.

Acute exposure guideline level values were derived in response to recommendations from the National Research Council (NRC). The National Advisory Committee (NAC) for the Development of Acute Exposure Guideline Levels for Hazardous Substances—usually referred to as the AEGL Committee or the NAC/AEGL committee developed AEGL values for at least 273 of the 329 chemicals on the AEGL priority chemical list. The last meeting of the NAC/AEGL Committee was in April 2010, and its charter expired in October 2011. The NAC/AEGL Committee 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*).

As described in *Standing Operating Procedures (SOP) for Developing Acute Exposure Guideline Levels for Hazardous Substances,* ''The NRC's previous name for acute exposure levels—community emergency exposure levels—was replaced by the term AEGL to reflect the broad application of these values to planning, response, and prevention in the community, the workplace, transportation, the military, and the remediation of Superfund sites'' (*https://www.epa.gov/aegl/process-developing-acute-exposure-guideline-levels-aegls*) *Id.* at 2.[17] The AEGL values represent threshold exposure limits for the general public and are applicable to emergency exposures ranging from 10 minutes to 8 hours. ''The primary purpose of the AEGL program is to develop guideline levels for once-in-a-lifetime, short-term exposures to airborne concentrations of acutely toxic, high-priority chemicals.'' *Id.* at 21. ''More specifically, the AEGL values will be used for conducting various risk assessments to aid in the development of emergency preparedness and prevention plans, as well as real-time

[16] The SAB peer review of RTR Risk Assessment Methodologies is available at *http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf.*

[17] National Academy of Sciences (NAS), 2001. *Standing Operating Procedures for Developing Acute Exposure Levels for Hazardous Chemicals,* page 2.

emergency response actions, for accidental chemical releases at fixed facilities and from transport carriers.'' *Id.* at 31.

The AEGL–1 value is then specifically defined as ''the airborne concentration (expressed as ppm (parts per million) or mg/m3 (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.'' *Id.* at 3. 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.'' *Id.* Similarly, the document defines AEGL–2 values 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.'' *Id.*

Emergency response planning guideline values are derived for use in emergency response, as described in the American Industrial Hygiene Association's Emergency Response Planning (ERP) Committee document titled, *ERPGS Procedures and Responsibilities* (*https://www.aiha.org/get-involved/AIHAGuidelineFoundation/EmergencyResponsePlanningGuidelines/Documents/ERPG%20Committee%20Standard%20Operating%20Procedures%20%20-%20March%202014%20Revision%20%28Updated%2010-2-2014%29.pdf*), which states that, ''Emergency Response Planning Guidelines were developed for emergency planning and are intended as health based guideline concentrations for single exposures to chemicals.'' [18] *Id.* at 1. The ERPG–1 value is defined as ''the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient health effects or without perceiving a clearly defined, objectionable odor.'' *Id.* at 2. Similarly, the ERPG–2 value is defined as ''the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious adverse health effects or symptoms that could impair an individual's ability to take protective action.'' *Id.* at 1.

As can be seen from the definitions above, the AEGL and ERPG values include the similarly-defined severity levels 1 and 2. For many chemicals, a severity level 1 value AEGL or ERPG has not been developed because the types of effects for these chemicals are not consistent with the AEGL–1/ERPG–1 definitions; in these instances, we compare higher severity level AEGL–2 or ERPG–2 values to our modeled exposure levels to screen for potential acute concerns. When AEGL–1/ERPG–1 values are available, they are used in our acute risk assessments.

Acute REL values for 1-hour exposure durations are typically lower than their corresponding AEGL–1 and ERPG–1 values. Even though their definitions are slightly different, AEGL–1 values are often the same as the corresponding ERPG–1 values, and AEGL–2 values are often equal to ERPG–2 values. Maximum HQ values from our acute screening risk assessments typically result when basing them on the acute REL value for a particular pollutant. In cases where our maximum acute HQ value exceeds 1, we also report the HQ value based on the next highest acute dose-response value (usually the AEGL–1 and/or the ERPG–1 value).

To develop screening estimates of acute exposures in the absence of hourly emissions data, generally we first develop estimates of maximum hourly emissions rates by multiplying the average actual annual hourly emissions rates by a default factor to cover routinely variable emissions. We choose the factor to use partially based on process knowledge and engineering judgment. The factor chosen also reflects a Texas study of short-term volatile organic compound (VOC) emissions variability, which showed that most peak emission events in a heavily-industrialized four-county area (Harris, Galveston, Chambers, and Brazoria Counties, Texas) were less than twice the annual average hourly emissions rate. The highest peak emissions event was 74 times the annual average hourly emissions rate, and the 99th percentile ratio of peak hourly emissions rate to the annual average hourly emissions rate was 9.[19] Considering this analysis, to account for more than 99 percent of the peak hourly emissions, we apply a conservative screening multiplication factor of 10 to the average annual hourly emissions rate in our acute exposure screening assessments as our default approach. However, we use a factor other than 10 if we have information that indicates that a different factor is appropriate for a particular source category. For this source category, median peak-to-mean multipliers ranging from 1.1 to 4.7 were developed for 40 CFR part 63, subpart MM emission process groups based on the routine annual emissions data and peak hourly emissions data obtained from Part II survey data. A further discussion of why these factors were chosen can be found in the memorandum, *Preparation of Residual Risk Modeling Input File for Subpart MM,* available in the docket for this rulemaking.

As part of our acute risk assessment process, for cases where acute HQ values from the screening step were less than or equal to 1 (even under the conservative assumptions of the screening analysis), acute impacts were deemed negligible and no further analysis was performed for these HAPs. See the *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule* for more details. Ideally, we would prefer to have continuous measurements over time to see how the emissions vary by each hour over an entire year. Having a frequency distribution of hourly emissions rates over a year would allow us to perform a probabilistic analysis to estimate potential threshold exceedances and their frequency of occurrence. Such an evaluation could include a more complete statistical treatment of the key parameters and elements adopted in this screening analysis. Recognizing that this level of data is rarely available, we instead rely on the multiplier approach.

To better characterize the potential health risks associated with estimated acute exposures to HAPs, and in response to a key recommendation from the SAB's peer review of the EPA's RTR risk assessment methodologies,[20] we generally examine a wider range of available acute health metrics (*e.g.,* RELs, AEGL) than we do for our chronic risk assessments. This is in response to

[18] *ERP Committee Procedures and Responsibilities.* November 1, 2006. American Industrial Hygiene Association.

[19] Allen, et al., 2004. Variable Industrial VOC Emissions and their impact on ozone formation in the Houston Galveston Area. Texas Environmental Research Consortium. *https://www.researchgate.net/publication/237593060_Variable_Industrial_VOC_Emissions_and_their_Impact_on_Ozone_Formation_in_the_Houston_Galveston_Area.*

[20] The SAB peer review of *RTR Risk Assessment Methodologies* is available at *http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf.*

the SAB's acknowledgement that there are generally more data gaps and inconsistencies in acute reference values than there are in chronic reference values. In some cases, when Reference Value Arrays [21] for HAPs have been developed, we consider additional acute values (*i.e.,* occupational and international values) to provide a more complete risk characterization.

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

The EPA conducted a screening analysis examining the potential for significant human health risks due to exposures via routes other than inhalation (*i.e.,* ingestion). We first determined whether any sources in the source category emitted PB–HAP. The PB–HAP compounds or compound classes are identified for the screening from the EPA's Air Toxics Risk Assessment Library (available at *http://www2.epa.gov/fera/risk-assessment-and-modeling-air-toxics-risk-assessment-reference-library*).

For the 40 CFR part 63, subpart MM source category, we identified emissions of cadmium compounds, lead compounds, mercury compounds, POM, dioxins/furans, and hexachlorobenzene. Because one or more of these PB–HAPs are emitted by at least one facility in the subpart MM source category, we proceeded to the next step of the evaluation. In this step, we determined whether the facility-specific emissions rates of the emitted PB–HAP were large enough to create the potential for significant non-inhalation human health risks under reasonable worst-case conditions. To facilitate this step, we have developed emissions rate screening levels for several PB–HAPs using 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–HAPs with emissions rate screening levels are: Lead, cadmium, dioxins/furans, mercury compounds, and POM. We conducted a sensitivity analysis on the screening scenario to ensure that its key design parameters would represent the upper end of the range of possible values, such that it would represent a conservative, but not impossible, scenario. The facility-specific emissions for each PB–HAP were compared to the emission rate screening levels for these PB–HAPs to assess the potential for significant human health risks via non-inhalation pathways. We call this application of the TRIM.FaTE model the Tier 1 TRIM-screen or Tier 1 screen.

For the purpose of developing emission rate screening values for our Tier 1 TRIM-screen, we derived emission levels for these PB–HAPs (other than lead compounds) at which the maximum excess lifetime cancer risk would be 1-in-1 million (*i.e.,* for dioxins/furans and POM) or, for HAPs that cause non-cancer health effects (*i.e.,* cadmium compounds and mercury compounds), the maximum HQ would be 1. If the emissions rate of any PB–HAP included in the Tier 1 screen exceeds the Tier 1 screening emissions level for any facility, we conduct a second screen, which we call the Tier 2 TRIM-screen or Tier 2 screen.

In the Tier 2 screen, the location of each facility that exceeded the Tier 1 emission level is used to refine the assumptions associated with the environmental scenario while maintaining the exposure scenario assumptions. A key assumption that is part of the Tier 1 screen is that a lake is located near the facility; we confirm the existence of lakes near the facility as part of the Tier 2 screen. We then adjust the risk-based Tier 1 screening value for each PB–HAP for each facility based on an understanding of how exposure concentrations estimated for the screening scenario change with meteorology and environmental assumptions. PB–HAP emissions that do not exceed these new Tier 2 screening levels are considered to pose no unacceptable risks. If the PB–HAP emissions for a facility exceed the Tier 2 screening levels and data are available, we may decide to conduct a more refined Tier 3 multipathway assessment. There are several analyses that can be included in a Tier 3 screen depending upon the extent of refinement warranted, including validating that the lake is fishable and considering plume-rise to estimate emissions lost above the mixing layer. If the Tier 3 screen is exceeded, the EPA may further refine the assessment.

In evaluating the potential multipathway risk from emissions of lead compounds, rather than developing a screening emissions rate for them, we compared maximum estimated chronic inhalation exposures with the level of the current National Ambient Air Quality Standard (NAAQS) for lead.[22] Values below the level of the primary (health-based) lead NAAQS were considered to have a low potential for multipathway risk.

For further information on the multipathway analysis approach, see the document titled *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule*, which is available in the docket for this action.

5. How did we conduct the environmental risk screening assessment?

a. Adverse Environmental Effect

The EPA conducts a screening assessment to examine the potential for adverse environmental effects as required under section 112(f)(2)(A) of the CAA. Section 112(a)(7) of the CAA 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.''

b. Environmental HAPs

The EPA focuses on seven HAPs, which we refer to as ''environmental HAPs,'' in its screening analysis: Five PB–HAPs and two acid gases. The five PB–HAPs are cadmium, dioxins/furans, POM, mercury (both inorganic mercury and methyl mercury) and lead compounds. The two acid gases are HCl and HF. The rationale for including these seven HAPs in the environmental risk screening analysis is presented below.

The HAPs that persist and bioaccumulate are of particular environmental concern because they accumulate in the soil, sediment, and water. The PB–HAPs are taken up, through sediment, soil, water, and/or

[21] U.S. EPA. (2009) Chapter 2.9, *Chemical Specific Reference Values for Formaldehyde in Graphical Arrays of Chemical-Specific Health Effect Reference Values for Inhalation Exposures (Final Report).* U.S. Environmental Protection Agency, Washington, DC, EPA/600/R–09/061, 2009, and available online at *http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=211003.*

[22] 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''). 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 67002/3; 73 FR 67000/3; 73 FR 67005/1. 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.

ingestion of other organisms, by plants or animals (*e.g.,* small fish) at the bottom of the food chain. As larger and larger predators consume these organisms, concentrations of the PB–HAPs in the animal tissues increases as does the potential for adverse effects. The five PB–HAPs we evaluate as part of our screening analysis account for 99.8 percent of all PB–HAP emissions nationally from stationary sources (on a mass basis from the 2005 EPA NEI).

In addition to accounting for almost all of the mass of PB–HAPs emitted, we note that the TRIM.FaTE model that we use to evaluate multipathway risk allows us to estimate concentrations of cadmium compounds, dioxins/furans, POM, and mercury in soil, sediment and water. For lead compounds, we currently do not have the ability to calculate these concentrations using the TRIM.FaTE model. Therefore, to evaluate the potential for adverse environmental effects from lead compounds, we compare the estimated exposures from the source category emissions of lead with the level of the secondary NAAQS for lead.[23] We consider values below the level of the secondary lead NAAQS to be unlikely to cause adverse environmental effects.

Due to their well-documented potential to cause direct damage to terrestrial plants, we include two acid gases, HCl and HF, in the environmental screening analysis. According to the 2005 NEI, HCl and HF account for about 99 percent (on a mass basis) of the total acid gas HAPs emitted by stationary sources in the United States. In addition to the potential to cause direct damage to plants, high concentrations of HF in the air have been linked to fluorosis in livestock. Air concentrations of these HAPs are already calculated as part of the human multipathway exposure and risk screening analysis using the HEM3–AERMOD air dispersion model, and we are able to use the air dispersion modeling results to estimate the potential for an adverse environmental effect.

The EPA acknowledges that other HAPs beyond the seven HAPs discussed above may have the potential to cause adverse environmental effects. Therefore, the EPA may include other relevant HAPs in its environmental risk screening in the future, as modeling science and resources allow. The EPA invites comment on the extent to which other HAPs emitted by the source category may cause adverse environmental effects. Such information should include references to peer-reviewed ecological effects benchmarks that are of sufficient quality for making regulatory decisions, as well as information on the presence of organisms located near facilities within the source category that such benchmarks indicate could be adversely affected.

[23] The Secondary Lead NAAQS is a reasonable measure of determining whether there is an adverse environmental effect since it was established considering ''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.''

c. Ecological Assessment Endpoints and Benchmarks for PB–HAP

An important consideration in the development of the EPA's screening methodology is the selection of ecological assessment endpoints and benchmarks. Ecological assessment endpoints are defined by the ecological entity (*e.g.,* aquatic communities including fish and plankton) and its attributes (*e.g.,* frequency of mortality). Ecological assessment endpoints can be established for organisms, populations, communities or assemblages, and ecosystems.

For PB–HAPs (other than lead compounds), we evaluated the following community-level ecological assessment endpoints to screen for organisms directly exposed to HAPs in soils, sediment, and water:

- Local terrestrial communities (i.e., soil invertebrates, plants) and populations of small birds and mammals that consume soil invertebrates exposed to PB–HAPs in the surface soil;
- Local benthic (i.e., bottom sediment dwelling insects, amphipods, isopods, and crayfish) communities exposed to PB–HAPs in sediment in nearby water bodies; and
- Local aquatic (water-column) communities (including fish and plankton) exposed to PB–HAP in nearby surface waters.

For PB–HAPs (other than lead compounds), we also evaluated the following population-level ecological assessment endpoint to screen for indirect HAP exposures of top consumers via the bioaccumulation of HAPs in food chains:

- Piscivorous (*i.e.,* fish-eating) wildlife consuming PB–HAP-contaminated fish from nearby water bodies.

For cadmium compounds, dioxins/furans, POM, and mercury, we identified the available ecological benchmarks for each assessment endpoint. An ecological benchmark represents a concentration of HAPs (*e.g.,* 0.77 µg of HAP per liter of water) that has been linked to a particular environmental effect level through scientific study. For PB–HAPs we identified, where possible, ecological benchmarks at the following effect levels:

- Probable effect levels (PEL): Level above which adverse effects are expected to occur frequently;
- Lowest-observed-adverse-effect level (LOAEL): The lowest exposure level tested at which there are biologically significant increases in frequency or severity of adverse effects; and
- No-observed-adverse-effect levels (NOAEL): The highest exposure level tested at which there are no biologically significant increases in the frequency or severity of adverse effect.

We established a hierarchy of preferred benchmark sources to allow selection of benchmarks for each environmental HAP at each ecological assessment endpoint. In general, the EPA sources that are used at a programmatic level (*e.g.,* Office of Water, Superfund Program) were used in the analysis, if available. If unavailable, the EPA benchmarks used in regional programs (*e.g.,* Superfund) were used. If benchmarks were not available at a programmatic or regional level, we used benchmarks developed by other federal agencies (*e.g.,* National Oceanic and Atmospheric Administration (NOAA)) or state agencies.

Benchmarks for all effect levels are not available for all PB–HAPs and assessment endpoints. 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 to determine whether ecological risks exist and, if so, whether the risks could be considered significant and widespread.

d. Ecological Assessment Endpoints and Benchmarks for Acid Gases

The environmental screening analysis also evaluated potential damage and reduced productivity of plants due to direct exposure to acid gases in the air. For acid gases, we evaluated the following ecological assessment endpoint:

- Local terrestrial plant communities with foliage exposed to acidic gaseous HAPs in the air.

The selection of ecological benchmarks for the effects of acid gases on plants followed the same approach as for PB–HAPs (*i.e.,* we examine all of the available chronic benchmarks). For HCl, the EPA identified chronic benchmark concentrations. We note that the benchmark for chronic HCl exposure

to plants is greater than the reference concentration for chronic inhalation exposure for human health. This means that where the EPA includes regulatory requirements to prevent an exceedance of the reference concentration for human health, additional analyses for adverse environmental effects of HCl would not be necessary.

For HF, the EPA identified chronic benchmark concentrations for plants and evaluated chronic exposures to plants in the screening analysis. High concentrations of HF in the air have also been linked to fluorosis in livestock. However, the HF concentrations at which fluorosis in livestock occur are higher than those at which plant damage begins. Therefore, the benchmarks for plants are protective of both plants and livestock.

e. Screening Methodology

For the environmental risk screening analysis, the EPA first looked at whether any facilities in the 40 CFR part 63, subpart MM source category emitted any of the seven environmental HAPs. Because we found that one or more of the seven environmental HAPs evaluated are emitted by at least one facility in the source category, we proceeded to the second step of the evaluation.

f. PB–HAP Methodology

For cadmium, mercury, POM, and dioxins/furans, the environmental screening analysis consists of two tiers, while lead compounds are analyzed differently as discussed earlier. In the first tier, we determined whether the maximum facility-specific emission rates of each of the emitted environmental HAPs were large enough to create the potential for adverse environmental effects under reasonable worst-case environmental conditions. These are the same environmental conditions used in the human multipathway exposure and risk screening analysis.

To facilitate this step, TRIM.FaTE was run for each PB–HAP under hypothetical environmental conditions designed to provide conservatively high HAP concentrations. The model was set to maximize runoff from terrestrial parcels into the modeled lake, which in turn, maximized the chemical concentrations in the water, the sediments, and the fish. The resulting media concentrations were then used to back-calculate a screening level emission rate that corresponded to the relevant exposure benchmark concentration value for each assessment endpoint. To assess emissions from a facility, the reported emission rate for each PB–HAP was compared to the screening level emission rate for that PB–HAP for each assessment endpoint. If emissions from a facility do not exceed the Tier 1 screening level, the facility ''passes'' the screen, and, therefore, is not evaluated further under the screening approach. If emissions from a facility exceed the Tier 1 screening level, we evaluate the facility further in Tier 2.

In Tier 2 of the environmental screening analysis, the emission rate screening levels 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 screen. The modeling domain for each facility in the Tier 2 analysis consists of 8 octants. Each octant contains 5 modeled soil concentrations at various distances from the facility (5 soil concentrations × 8 octants = total of 40 soil concentrations per facility) and 1 lake with modeled concentrations for water, sediment and fish tissue. In the Tier 2 environmental risk screening analysis, the 40 soil concentration points are averaged to obtain an average soil concentration for each facility 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 level, the facility passes the screen, and typically is not evaluated further. If emissions from a facility exceed the Tier 2 screening level, the facility does not pass the screen and, therefore, may have the potential to cause adverse environmental effects. Such facilities are evaluated further to investigate factors such as the magnitude and characteristics of the area of exceedance.

g. Acid Gas Methodology

The environmental screening analysis evaluates the potential phytotoxicity and reduced productivity of plants due to chronic exposure to acid gases. The environmental risk screening methodology for acid gases is a single-tier screen that compares the average off-site ambient air concentration over the modeling domain to ecological benchmarks for each of the acid gases. Because air concentrations are compared directly to the ecological benchmarks, emission-based screening levels are not calculated for acid gases as they are in the ecological risk screening methodology for PB–HAPs.

For purposes of ecological risk screening, the EPA identifies a potential for adverse environmental effects to plant communities from exposure to acid gases when the average concentration of the HAP around a facility exceeds the LOAEL ecological benchmark. In such cases, we further investigate factors such as the magnitude and characteristics of the area of exceedance (*e.g.,* land use of exceedance area, size of exceedance area) to determine if there is an adverse environmental effect. For further information on the environmental screening analysis approach, see the *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule*, which is available in the docket for this action.

6. How did 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 the HAP emissions not only from the source category emission points of interest, but also emissions of HAPs from all other emission sources at the facility for which we have data. There are currently 108 major sources subject to the 40 CFR part 63, subpart MM source category which includes chemical recovery combustion sources (*e.g.,* recovery furnace, SDT, lime kiln). Nearly all major sources also have boilers on site. These facilities engage in chemical or mechanical pulping, papermaking, paper coating, landfills, petroleum storage and transfer, and other operations. Therefore, where data were available, we performed a facility-wide risk assessment for these major sources as part of this action. For this source category, we conducted the facility-wide assessment using the data from Part II of the Pulp and Paper Sector ICR.

We analyzed risks due to the inhalation of HAPs 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 facility-wide risks that could be attributed to the source category addressed in this proposal. We 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 document titled *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review*

Proposed Rule, available in the docket for this action, 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.

7. How did we consider uncertainties in risk assessment?

In the Benzene NESHAP, the Agency concluded that risk estimation uncertainty should be considered in our decision-making under the ample margin of safety framework. 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 conservative tools and assumptions, ensures that our decisions are health-protective and environmentally protective. A brief discussion of the uncertainties in the RTR emissions dataset, dispersion modeling, inhalation exposure estimates, and dose-response relationships follows below. Where relevant to the estimated exposures, the lack of short-term dose-response values at different levels of severity should be factored into the risk characterization as potential uncertainties. A more thorough discussion of these uncertainties is included in the document titled *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule,* which is available in the docket for this action.

a. Uncertainties in the RTR Emissions Dataset

Although the development of the RTR emissions dataset involved quality assurance/quality control processes, various uncertainties exist. Thus, 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 annual totals for certain years, and they do not reflect short-term fluctuations during the course of a year or variations from year to year. 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

We recognize there is uncertainty in ambient concentration estimates associated with any model, including the EPA's recommended regulatory dispersion model, 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 under- or overestimate ambient levels (*e.g.,* meteorology and receptor locations). On balance, 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.

c. Uncertainties in Inhalation Exposure

The EPA did not include the effects of human mobility on exposures in the assessment. Specifically, short-term mobility and long-term mobility between census blocks in the modeling domain were not considered.[24] The approach of not considering short or long-term population mobility does not bias the estimate of the theoretical MIR (by definition), nor does it affect the estimate of cancer incidence because the total population number remains the same. It does, however, affect the shape of the distribution of individual risks across the affected population, shifting it toward higher estimated individual risks at the upper end and reducing the number of people estimated to be at lower risks, thereby increasing the estimated number of people at specific high risk levels (*e.g.,* 1-in-10 thousand or 100-in-1 million).

In addition, the assessment predicted the chronic exposures at the centroid of each populated census block as surrogates for the exposure concentrations for all people living in that block. Using the census block centroid to predict chronic exposures tends to over-predict exposures for people in the census block who live farther from the facility and under-predict exposures for people in the census block who live closer to the facility. Thus, using the census block centroid to predict chronic exposures may lead to a potential understatement or overstatement of the true maximum impact, but is an unbiased estimate of average risk and incidence. We reduce this uncertainty by analyzing large census blocks near facilities using aerial imagery and adjusting the location of the block centroid to better represent the population in the block, as well as adding additional receptor locations where the block population is not well represented by a single location.

The assessment evaluates the cancer inhalation risks associated with pollutant exposures over a 70-year period, which is the assumed lifetime of an individual. In reality, both the length of time that modeled emission sources at facilities actually operate (*i.e.,* more or less than 70 years) and the domestic growth or decline of the modeled industry (*i.e.,* the increase or decrease in the number or size of domestic facilities) will influence the future risks posed by a given source or source category. Depending on the characteristics of the industry, these factors will, in most cases, result in an overestimate both in individual risk levels and in the total estimated number of cancer cases. However, in the unlikely scenario where a facility maintains, or even increases, its emissions levels over a period of more than 70 years, residents live beyond 70 years at the same location, and the residents spend most of their days at that location, then the cancer inhalation risks could potentially be underestimated. However, annual cancer incidence estimates from exposures to emissions from these sources would not be affected by the length of time an emissions source operates.

The exposure estimates used in these analyses assume chronic exposures to ambient (outdoor) levels of pollutants. Because most people spend the majority of their time indoors, actual exposures may not be as high, depending on the characteristics of the pollutants modeled. For many of the HAPs, indoor levels are roughly equivalent to ambient levels, but for very reactive pollutants or larger particles, indoor levels are typically lower. This factor has the potential to result in an overestimate of 25 to 30 percent of exposures.[25]

In addition to the uncertainties highlighted above, there are several factors specific to the acute exposure

[24] Short-term mobility is movement from one micro-environment to another over the course of hours or days. Long-term mobility is movement from one residence to another over the course of a lifetime.

[25] U.S. EPA. *National-Scale Air Toxics Assessment for 1996.* (EPA 453/R–01–003; January 2001; page 85.)

assessment that the EPA conducts as part of the risk review under section 112 of the CAA that should be highlighted. The accuracy of an acute inhalation exposure assessment depends on the simultaneous occurrence of independent factors that may vary greatly, such as hourly emissions rates, meteorology, and the present of humans at the location of the maximum concentration. In the acute screening assessment that we conduct under the RTR program, we assume that peak emissions from the source category and worst-case meteorological conditions co-occur, thus, resulting in maximum ambient concentrations. These two events are unlikely to occur at the same time, making these assumptions conservative. We then include the additional assumption that a person is located at this point during this same time period. For this source category, these assumptions would tend to be worst-case actual exposures, as it is unlikely that a person would be located at the point of maximum exposure during the time when peak emissions and worst-case meteorological conditions occur simultaneously.

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 non-cancer effects from both chronic and acute exposures. Some uncertainties may be considered quantitatively, and others generally are expressed in qualitative terms. We note as a preface to this discussion a point on dose-response uncertainty that is brought out in the EPA's *2005 Cancer Guidelines;* 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'' (*EPA's 2005 Cancer Guidelines,* pages 1–7). This is the approach followed here as summarized in the next several paragraphs. A complete detailed discussion of uncertainties and variability in dose-response relationships is given in the *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule,* which is available in the docket for this action.

Cancer URE values used in our risk assessments are those that have been developed to generally provide an upper bound estimate of risk. 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).[26] In some circumstances, the true risk could be as low as zero; however, in other circumstances the risk could be greater.[27] When developing an upper bound estimate of risk and to provide risk values that do not underestimate risk, health-protective default approaches are generally used. To err on the side of ensuring adequate health protection, the EPA typically uses the upper bound estimates rather than lower bound or central tendency estimates in our risk assessments, an approach that may have limitations for other uses (*e.g.,* priority-setting or expected benefits analysis).

Chronic non-cancer RfC and reference dose (RfD) values represent chronic exposure levels that are intended to be health-protective levels. Specifically, these values provide an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure (*i.e.,* the RfC) or a daily oral exposure (*i.e.,* the RfD) to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. To derive values that are intended to be ''without appreciable risk,'' the methodology relies upon an uncertainty factor (UF) approach (U.S. EPA, 1993 and 1994) which considers uncertainty, variability and gaps in the available data. The UFs are applied to derive reference values that are intended to protect against appreciable risk of deleterious effects. The UFs are commonly default values,[28] *e.g.,* factors of 10 or 3, used in the absence of compound-specific data; where data are available, UFs may also be developed using compound-specific information. When data are limited, more assumptions are needed and more UFs are used. Thus, there may be a greater tendency to overestimate risk in the sense that further study might support development of reference values that are higher (*i.e.,* less potent) because fewer default assumptions are needed. However, for some pollutants, it is possible that risks may be underestimated.

While collectively termed ''UF,'' these factors account for a number of different quantitative considerations when using observed animal (usually rodent) or human toxicity data in the development of the RfC. The UFs are intended to account for: (1) variation in susceptibility among the members of the human population (*i.e.,* inter-individual variability); (2) uncertainty in extrapolating from experimental animal data to humans (i.e., interspecies differences); (3) uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure (i.e., extrapolating from sub-chronic to chronic exposure); (4) uncertainty in extrapolating the observed data to obtain an estimate of the exposure associated with no adverse effects; and (5) uncertainty when the database is incomplete or there are problems with the applicability of available studies.

Many of the UFs used to account for variability and uncertainty in the development of acute reference values are quite similar to those developed for chronic durations, but they more often use individual UF values that may be less than 10. The UFs are applied based on chemical-specific or health effect-specific information (*e.g.,* simple irritation effects do not vary appreciably between human individuals, hence a value of 3 is typically used), or based on the purpose for the reference value (see the following paragraph). The UFs applied in acute reference value derivation include: (1) Heterogeneity among humans; (2) uncertainty in extrapolating from animals to humans; (3) uncertainty in lowest observed adverse effect (exposure) level to no observed adverse effect (exposure) level adjustments; and (4) uncertainty in accounting for an incomplete database on toxic effects of potential concern. Additional adjustments are often applied to account for uncertainty in

[26] IRIS glossary (*https://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&vocabName=IRIS%20Glossary*).

[27] 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.

[28] According to the NRC report, *Science and Judgment in Risk Assessment* (NRC, 1994) ''[Default] options are generic approaches, based on general scientific knowledge and policy judgment, that are applied to various elements of the risk assessment process when the correct scientific model is unknown or uncertain.'' The 1983 NRC report, *Risk Assessment in the Federal Government: Managing the Process,* defined default option as ''the option chosen on the basis of risk assessment policy that appears to be the best choice in the absence of data to the contrary'' (NRC, 1983a, p. 63). Therefore, default options are not rules that bind the Agency; rather, the Agency may depart from them in evaluating the risks posed by a specific substance when it believes this to be appropriate. In keeping with the EPA's goal of protecting public health and the environment, default assumptions are used to ensure that risk to chemicals is not underestimated (although defaults are not intended to overtly overestimate risk). See U.S. EPA, *An Examination of EPA Risk Assessment Principles and Practices*, EPA/100/B–04/001, 2004 available at: *https://training.fws.gov/resources/course-resources/pesticides/Risk%20Assessment/Risk%20Assessment%20Principles%20and%20Practices.pdf.*

extrapolation from observations at one exposure duration (*e.g.,* 4 hours) to derive an acute reference value at another exposure duration (*e.g.,* 1 hour).

Not all acute reference values are developed for the same purpose, and care must be taken when interpreting the results of an acute assessment of human health effects relative to the reference value or values being exceeded. Where relevant to the estimated exposures, the lack of short-term dose-response values at different levels of severity should be factored into the risk characterization as potential uncertainties.

For a group of compounds that are unspeciated (*e.g.,* glycol ethers), we conservatively use the most protective reference 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 reference value, we also apply the most protective reference value from the other compounds in the group to estimate risk.

e. Uncertainties in the Multipathway Assessment

For each source category, we generally rely on site-specific levels of PB–HAP emissions to determine whether a refined assessment of the impacts from multipathway exposures is necessary. This determination is based on the results of a three-tiered screening analysis that relies on the outputs from models that estimate environmental pollutant concentrations and human exposures for four PB–HAPs. 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.[29]

Model uncertainty concerns whether the selected models are appropriate for the assessment being conducted and whether they adequately represent the actual processes that might occur for that situation. An example of model uncertainty is the question of whether the model adequately describes the movement of a pollutant through the soil. 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 screen are appropriate and state-of-the-art for the multipathway risk assessments conducted in support of RTR.

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 screen, 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 and 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 assessment, 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 screen. The assumptions and the associated uncertainties regarding the selected ingestion exposure scenario are the same for Tier 1 and Tier 2.

For both Tiers 1 and 2 of the multipathway assessment, 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 screen out, 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 not screen out, it does not mean that multipathway impacts are significant, only that we cannot rule out that possibility and that a refined multipathway analysis for the site might be necessary to obtain a more accurate risk characterization for the source category.

For further information on uncertainties and the Tier 1 and 2 screening methods, refer to the risk document, Appendix 6, *Technical Support Document for TRIM-Based Multipathway Tiered Screening Methodology for RTR.*

f. Uncertainties in the Environmental Risk Screening Assessment

For each source category, we generally rely on site-specific levels of environmental HAP emissions to perform an environmental screening assessment. The environmental screening assessment is based on the outputs from models that estimate environmental HAP concentrations. The same models, specifically the TRIM.FaTE multipathway model and the AERMOD air dispersion model, are used to estimate environmental HAP concentrations for both the human multipathway screening analysis and for the environmental screening analysis. Therefore, both screening assessments have similar modeling uncertainties.

Two important types of uncertainty associated with the use of these models in RTR environmental screening assessments (and inherent to any assessment that relies on environmental modeling) are model uncertainty and input uncertainty.[30]

Model uncertainty concerns whether the selected models are appropriate for the assessment being conducted and whether they adequately represent the movement and accumulation of environmental HAP emissions in the environment. For example, does the model adequately describe the movement of a pollutant through the soil? 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 screen are appropriate and state-of-the-art for the environmental risk assessments conducted in support of our RTR analyses.

Input uncertainty is concerned with how accurately the models have been configured and parameterized for the assessment at hand. For Tier 1 of the environmental screen for PB–HAPs, we configured the models to avoid underestimating exposure and risk to reduce the likelihood that the results

[29] 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.

[30] In the context of this discussion, the term ''uncertainty,'' as it pertains to exposure and risk assessment, 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.

indicate the risks are lower than they actually are. 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, the location and size of any bodies of water, meteorology, surface water and soil characteristics, and structure of the aquatic food web. In Tier 1, we used the maximum facility-specific emissions for the PB–HAPs (other than lead compounds, which were evaluated by comparison to the Secondary Lead NAAQS) that were included in the environmental screening assessment and each of the media when comparing to ecological benchmarks. This is consistent with the conservative design of Tier 1 of the screen. In Tier 2 of the environmental screening analysis for PB–HAPs, 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 locations of water bodies near the facility location. 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 screen. To better represent widespread impacts, the modeled soil concentrations are averaged in Tier 2 to obtain one average soil concentration value for each facility and for each PB–HAP. For PB–HAP concentrations in water, sediment, and fish tissue, the highest value for each facility for each pollutant is used.

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 both Tiers 1 and 2 of the environmental screening assessment, 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 potential risks for adverse environmental impacts.

Uncertainty also exists in the ecological benchmarks for the environmental risk screening analysis. We established a hierarchy of preferred benchmark sources to allow selection of benchmarks for each environmental HAP at each ecological assessment endpoint. In general, EPA benchmarks used at a programmatic level (*e.g.,* Office of Water, Superfund Program) were used if available. If unavailable, we used EPA benchmarks used in regional programs (*e.g.,* Superfund Program). If benchmarks were not available at a programmatic or regional level, we used benchmarks developed by other agencies (*e.g.,* NOAA) or by state agencies.

In all cases (except for lead compounds, which were evaluated through a comparison to the NAAQS), we searched for benchmarks at the following three effect levels, as described in section III.A.5 of this preamble:

1. A no-effect level (*i.e.*, NOAEL).
2. Threshold-effect level (*i.e.*, LOAEL).
3. Probable effect level (*i.e.*, PEL).

For some ecological assessment endpoint/environmental HAP combinations, we could identify benchmarks for all three effect levels, but for most, we could not. In one case, where different agencies derived significantly different numbers to represent a threshold for effect, we included both. In several cases, only a single benchmark was available. In cases where multiple effect levels were available for a particular PB–HAP and assessment endpoint, we used all of the available effect levels to help us to determine whether risk exists and if the risks could be considered significant and widespread.

The EPA evaluates the following seven HAPs in the environmental risk screening assessment: cadmium, dioxins/furans, POM, mercury (both inorganic mercury and methyl mercury), lead compounds, HCl, and HF, where applicable. These seven HAPs represent pollutants that can cause adverse impacts for plants and animals either through direct exposure to HAPs in the air or through exposure to HAPs that is deposited from the air onto soils and surface waters. These seven HAPs also represent those HAPs for which we can conduct a meaningful environmental risk screening assessment. For other HAPs not included in our screening assessment, 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 HAPs beyond the seven HAPs that we are evaluating may have the potential to cause adverse environmental effects and, therefore, the EPA may evaluate other relevant HAPs in the future, as modeling science and resources allow.

Further information on uncertainties and the Tier 1 and 2 environmental screening methods is provided in Appendix 6 of the document, *Technical Support Document for TRIM-Based Multipathway Tiered Screening Methodology for RTR. Also, see the document titled Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule,* available in the docket for this action.

B. How did we consider the risk results in making decisions for this proposal?

As discussed in section II.A of this preamble, in evaluating and developing standards under CAA section 112(f)(2), we apply a two-step process to address residual risk. 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) [31] of approximately [1-in-10 thousand] [*i.e.*, 100-in-1 million].'' 54 FR 38045, September 14, 1989. If risks are unacceptable, the EPA must determine the emissions standards necessary to bring risks to an acceptable level without considering costs. In the second step of the process, the EPA considers whether the emissions standards provide an ample margin of safety ''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 economic impacts, technological feasibility, and other factors relevant to each particular decision.'' *Id.* The EPA must promulgate emission standards necessary to provide an ample margin of safety. 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.

In past residual risk actions, the EPA considered a number of human health risk metrics associated with emissions from the categories under review, including the MIR, the number of persons in various risk ranges, cancer incidence, the maximum non-cancer HI and the maximum acute non-cancer hazard. See, *e.g.*, 72 FR 25138, May 3,

[31] Although defined as ''maximum individual risk,'' MIR refers only to cancer risk. MIR, one metric for assessing cancer risk, is the estimated risk were an individual exposed to the maximum level ofa pollutant for a lifetime.

2007; and 71 FR 42724, July 27, 2006. The EPA considered this health information for both actual and allowable emissions. See, *e.g.*, 75 FR 65068, October 21, 2010; 75 FR 80220, December 21, 2010; 76 FR 29032, May 19, 2011. The EPA also discussed risk estimation uncertainties and considered the uncertainties in the determination of acceptable risk and ample margin of safety in these past actions. The EPA considered this same type of information in support of this action.

The Agency is considering these various measures of health information to inform our determinations of risk acceptability and ample margin of safety under CAA section 112(f). 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 [previous] section 112 is best judged on the basis of a broad set of health risk measures and information.'' 54 FR 38046, September 14, 1989. 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. 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. In responding to comment on our policy under the Benzene NESHAP, the EPA explained that:

> ''[t]he 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 [her] 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 [her] judgment, believes are appropriate to determining what will 'protect the public health'.''

See 54 FR at 38057, September 14, 1989. Thus, the level of the MIR is only one factor to be weighed in determining acceptability of risks. The Benzene NESHAP explained that ''an 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 information in making an overall judgment on acceptability. Or, the Agency may find, in a particular case, that a risk that includes MIR less than the presumptively acceptable level is unacceptable in the light of other health risk factors.'' *Id.* at 38045. 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.'' *Id.* at 38061. We also consider the uncertainties associated with the various risk analyses, as discussed earlier in this preamble, in our determinations of acceptability and ample margin of safety.

The EPA notes that it has not considered certain health information to date in making residual risk determinations. At this time, we do not attempt to quantify those HAP risks that may be associated with emissions from other facilities that do not include the source categories in question, mobile source emissions, natural source emissions, persistent environmental pollution, or atmospheric transformation in the vicinity of the sources in these categories.

The Agency understands the potential importance of considering an individual's total exposure to HAPs 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 non-cancer risks, where pollutant-specific exposure health reference levels (e.g., RfCs) are based on the assumption that thresholds exist for adverse health effects. For example, the Agency recognizes that, although exposures attributable to emissions from a source category or facility alone may not indicate the potential for increased risk of adverse non-cancer 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 increased risk of adverse non-cancer health effects. In May 2010, the 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.'' [32]

In response to the SAB recommendations, the EPA is incorporating cumulative risk analyses into its RTR risk assessments, including those reflected in this proposal. The Agency is: (1) Conducting facility-wide assessments, which include source category emission points as well as other emission points within the facilities; (2) considering sources in the same category whose emissions result in exposures to the same individuals; and (3) for some persistent and bioaccumlative pollutants, analyzing the ingestion route of exposure. In addition, the RTR risk assessments have always considered aggregate cancer risk from all carcinogens and aggregate non-cancer HI from all non-carcinogens affecting the same target organ system.

Although we are interested in placing source category and facility-wide HAP risks in the context of *total* HAP risks from all sources combined in the vicinity of each source, we are concerned about the uncertainties of doing so. Because of the contribution to total HAP risk from emission sources other than those that we have studied in depth during this RTR review, such estimates of total HAP risks would have significantly greater associated uncertainties than the source category or facility-wide estimates. Such aggregate or cumulative assessments would compound those uncertainties, making the assessments too unreliable.

C. How did we perform the technology review?

Our technology review focused on the identification and evaluation of developments in practices, processes, and control technologies that have occurred since the MACT standards were promulgated. Where we identified such developments, in order to inform

[32] The EPA's responses to this and all other key recomendations of the SAB's advisory on RTR risk assessment methodologies (which is available at: *http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf*) are outlined in a memorandum to this rulemaking docket from David Guinnup titled, *EPA's Actions in Response to the Key Recommendations of the SAB Review of RTR Risk Assessment Methodologies.*

our decision of whether it is ''necessary'' to revise the emissions standards, we analyzed the technical feasibility of applying these developments and the estimated costs, energy implications, non-air environmental impacts, as well as considering the emission reductions. We also considered the appropriateness of applying controls to new sources versus retrofitting existing sources.

Based on our analyses of the available data and information, we identified potential developments in practices, processes, and control technologies. For this exercise, a ''development'' was considered to be any of the following that was not considered during the development of the promulgated subpart MM standards that could result in significant additional reductions of regulated HAP emissions:

- Add-on control technology or other equipment not previously identified;
- Improvements in add-on control technology or other equipment;
- Work practices or operational procedures that were not previously identified;
- Process change or pollution prevention alternative that could be broadly applied to further reduce HAP emissions; and
- Improvements in work practices, operational procedures, process changes, or pollution prevention alternatives.

In addition to reviewing the practices, processes, and control technologies that were considered at the time we originally developed the NESHAP, we reviewed a variety of data sources in our investigation of potential practices, processes, or controls to consider. Among the sources we reviewed were the practices, processes and control technologies considered in the NESHAP for various industries that were promulgated since the MACT standards being reviewed in this action. We requested information from facilities regarding developments in practices, processes or control technology through Part III of the Pulp and Paper Sector ICR. The ICR data provided information on the process and emission controls currently in use on chemical recovery combustion sources, and provided emissions data to assess the performance of current emissions controls. We reviewed continuous opacity monitoring data for ESP-controlled recovery furnaces and lime kilns. We also consulted the EPA's RBLC to determine whether it contained any practices, processes or control technologies for the types of processes covered by the 40 CFR part 63, subpart MM source category.[33] We conducted a general search of the Internet for information on control technologies applicable to pulp mill combustion sources. We also reviewed information from other sources, such as state and/or local permitting agency databases.

Each of the evaluations listed above considered and reviewed the technologies suitable to demonstrate compliance with the requirements listed in 40 CFR 63.860 through 63.868 (subpart MM).[34]

IV. Analytical Results and Proposed Decisions

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

1. Inhalation Risk Assessment Results

The inhalation risk modeling performed to estimate risks based on actual and allowable emissions relied primarily on emissions data from the ICR. The results of the chronic baseline inhalation cancer risk assessment indicate that, based on estimates of current actual and allowable emissions under 40 CFR part 63, subpart MM, the MIR posed by the MACT source category was 4-in-1 million. The total estimated cancer incidence from the MACT source category based on actual emission levels is 0.01 excess cancer cases per year, or 1 case every 100 years, while the cancer incidence for allowable emissions is 0.02 excess cancer cases per year, or 1 case every 50 years. Air emissions of chromium VI, formaldehyde, and naphthalene contributed 31 percent, 18 percent, and 13 percent, respectively, to this cancer incidence. We estimated approximately 7,600 people to have cancer risks greater than or equal to 1-in-1 million considering actual and allowable emissions from subpart MM sources, refer to Table 3.

TABLE 3—INHALATION RISK ASSESSMENT SUMMARY FOR PULP MILL COMBUSTION SOURCES SOURCE CATEGORY—(SUBPART MM)

	Cancer MIR (in-1 million)		Cancer incidence (cases per year)	Population with risk of 1-in-1 million or more	Population with risk of 10-in-1 million or more	Max chronic noncancer HI (actuals)	Max chronic noncancer HI (allowables)
	Based on actual emissions	Based on allowable emissions					
Source Category	4 (naphthalene, acetaldehyde).	4 (naphthalene, acetaldehyde).	0.01	7,600	0	HI < 1	HI < 1
Whole Facility	20 (arsenic, chromium VI).	.....	0.05	440,000	280	HI = 1	HI = 1

We estimated the maximum modeled chronic non-cancer HI (TOSHI) value for the source category based on actual and allowable emissions to be 0.3, with acrolein emissions from lime kilns accounting for 92 percent of the HI.

2. Acute Risk Results

Our screening analysis for worst-case acute impacts based on actual emissions did not identify impacts associated with any pollutants that exceeded an HQ value of 1 based upon the REL. For the acute risk screening analysis, we calculated acute hourly multipliers based on the median of peak-to-mean ratio for 14 emission process groups ranging from 1.3 to 4.7, with emissions from the semichemical recovery process having the highest hourly peak emissions with a multiplier of 4.7. For more information on how we calculated the acute hourly multipliers, refer to the

[33] See the memorandum in the docket titled, *Summary of RBLC and Other Findings to Suppport the Residual Risk and Technology Review of Chemical Recovery Combustion Sources NESHAP.*

[34] See the memorandum in the docket titled, *Section 112(d)(6) Technology Review fo the NESHAP for Chemical Recovery Combustion Sourcces at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills.*

risk document, Appendix 1, *Preparation of Residual Risk Modeling Input File for Subpart MM* dated September 30, 2014.

3. Multipathway Risk Screening Results

Results of the worst-case Tier 1 screening analysis identified emissions (based on estimates of actual emissions) exceeding the PB–HAP emission cancer screening rates for dioxin/furans and polycyclic aromatic hydrocarbons (PAH) and the non-cancer screening threshold for mercury. For the compounds and facilities that did not screen out at Tier 1, we conducted a Tier 2 screen. The Tier 2 screen replaces some of the assumptions used in Tier 1 with site-specific data, including the location of fishable lakes and local precipitation, wind direction and speed. The Tier 2 screen continues to rely on high-end assumptions about consumption of local fish and locally grown or raised foods (adult female angler at 99th percentile consumption for fish for the subsistence fisherman scenario and 90th percentile consumption for locally grown or raised foods for the farmer scenario). For facilities for which the Tier 2 screening value(s) indicate a potential health risk to the public, we can conduct a Tier 3 multipathway screen. Tier 3 has three individual stages: (1) Lake assessment to assess fishability and accessibility; (2) plume-rise calculations to estimate the emissions exiting the mixing layer and resulting in no ground-level exposures; (3) TRIMFaTE hourly screening runs using the layout for the farm and/or fish location that best characterizes the facility being modeled. We progress through Tier 3 stages until the facility's screening values indicate that emissions are unlikely to pose health risks to the public, or until all three stages are complete. A Tier 3 screen was required for one facility that exceeded the Tier 2 screen for mercury. It is important to note that, even with the inclusion of some site-specific information in the Tier 2 and 3 analysis, the multipathway screening analysis is still a very conservative, health-protective assessment (i.e., upper-bound consumption of local fish and locally grown and/or raised foods) and in all likelihood yields results that serve as an upper-bound multipathway risk associated with a facility.

While the screening analysis is not designed to produce a quantitative risk result, the factor by which the emissions exceed the threshold serves as a rough gauge of the ''upper-limit'' risks we would expect from a facility. Thus, for example, if a facility emitted a PB–HAP carcinogen at a level 2 times the screening threshold, we can say with a high degree of confidence that the actual maximum cancer risks will be less than 2-in-1 million. Likewise, if a facility emitted a noncancer PB–HAP at a level 2 times the screening threshold, the maximum noncancer hazard would represent an HQ less than 2. The high degree of confidence comes from the fact that the screens are developed using the very conservative (health-protective) assumptions that we describe above.

a. Cancer Risk Screening

Results of the worst-case Tier 1 screening analysis indicate that 85 of the 108 facilities with pulp mill combustion sources exceeded the PB–HAP emission cancer screening rates (based on estimates of actual emissions) for dioxin/furans and PAH. The EPA conducted a Tier 2 cancer screening analysis of the 85 facilities that were found to exceed the Tier 1 screening value. Nineteen of these facilities with subpart MM MACT source category sources emitted dioxin/furans and PAH above a cancer screening value of 1 for the subsistence fisher and farmer scenarios. In the Tier 2 analysis, the individual dioxin/furan congener emissions are all scaled based on their toxicity relative to 2,3,7,8-tetrachlorodibenzo-p-dioxin and are reported as toxic equivalents (TEQs), and all PAH congener emissions are scaled based on their toxicity relative to benzo(a)pyrene and are reported as TEQs. The maximum Tier 2 cancer screening value for the subsistence fisher scenario and the farmer scenario for this source category was equal to 10, which represents a maximum cancer risks that would be less than 10-in-1 million. The EPA did not conduct further cancer screening for this source category and considered this result along with all the risk results as part of determining whether the risks are acceptable (as discussed in section B).

b. Non-Cancer Risk Screening

Results of the worst-case Tier 1 screening analysis indicate that 59 of the 108 plants sources exceeded the Tier 1 non-cancer screen value for mercury. The EPA conducted a Tier 2 chronic non-cancer screening analysis of the 59 facilities, resulting in 9 facilities emitting divalent mercury above the non-cancer screening value of 1 for the subsistence fisher scenario. The highest exceedance of the Tier 2 non-cancer mercury screen value for pulp mill combustion sources under 40 CFR part 63, subpart MM was equal to 5. The risk associated with divalent mercury is based on its ability to transform into the most toxic form of mercury as methyl mercury.

The Tier 2 non-cancer screening analysis for the 9 facilities indicated potential risks greater than or equal to 2 but less than 5 times the non-cancer screening level for the subsistence fisher scenario. More refined screening using Tier 3 was conducted for the 9 facilities flagged in Tier 2. The Tier 3 screen examined the set of lakes from which the fisher might ingest fish (Stage 1). Any lakes that appeared to not be fishable or not publicly accessible were removed from the assessment, and the screening assessment was repeated. After we made the determination that the critical lakes were fishable, we analyzed plume rise data for each of the sites (Stage 2). The results of the Tier 3 screen (Stage 2) showed one facility with a non-cancer screen value of 2.

We conducted the final screening stage of Tier 3 for this single facility utilizing a time-series assessment (Stage 3). In this stage, we conducted a new mercury run using TRIM.FaTE for each relevant lake that represents a risk concern based upon the Tier 3 plume-rise assessment. For these model runs, we started with the screening configuration corresponding to the lake location, but instead of the static meteorology and stack parameters used in previous screening tiers and stages, we used site-specific hourly meteorology and the hourly plume-rise values calculated in the Tier 3 plume-rise assessment. Allowing TRIM.FaTE to model chemical fate and transport with hour-by-hour changes in meteorology and plume rise produces a more accurate estimate of chemical concentrations in media of interest, as compared to the static values used in Tier 2 and the post-processing adjustments made in the Tier 3 plume-rise assessment. If the potential risk (estimated using this Tier 3 time-series approach) associated with a facility's PB–HAP emissions are lower than the screening value, we consider the emissions to pose no significant risk. This Tier 3 screen resulted in lowering the maximum exceedance of the screen value for the highest site from 2 to 1. Further details on the refined multipathway screening analysis are in Appendix 10, Attachment 1 of the risk report, ''Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule''.

4. Environmental Risk Screening Results

As described in section III.A of this document, we conducted an environmental risk screening assessment for the 40 CFR part 63, subpart MM source category for the following seven HAPs: PAH, mercury

(methyl mercury and mercuric chloride), cadmium, lead, dioxin/furans, HCl, and HF.

In the Tier 1 screening analysis for PB–HAPs (other than lead, which we evaluated differently), one modeled soil parcel for one facility in the source category exceeded a surface soil—threshold level benchmark (invertebrates) for mercuric chloride by 2. There were no Tier 1 exceedances of any benchmarks for the other pollutants; PAH, cadmium and dioxins/furans. Therefore, we conducted a Tier 2 screen for mercuric chloride only. In the Tier 2 screen for mercuric chloride, none of the individual modeled concentrations for any facility in the source category exceeded any of the ecological benchmarks.

For lead, we did not estimate any exceedances of the secondary lead NAAQS. 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.

5. Facility-Wide Risk Results

Considering facility-wide emissions at the 108 plants, we estimated the MIR to be 20-in-1 million driven by arsenic and chromium VI emissions, and calculated the chronic non-cancer TOSHI value to be 1 driven by emissions of acrolein (refer to Table 3). The above cancer and non-cancer risks are driven by emissions from the industrial boilers.

We estimated approximately 440,000 people to have cancer risks greater than or equal to 1-in-1 million considering whole facility emissions from 81 of the 108 facilities modeled from the pulp and paper production industry (refer to Table 3). From these 81, 2 facilities have cancer risks greater than or equal to 10-in-1 million (but less than 20-in-1 million) with approximately 300 being exposed at these levels.

6. What demographic groups might benefit from this regulation?

To determine whether or not to conduct a demographics analysis, which is an assessment of risks to individual demographic groups, we look at a combination of factors, including the MIR, non-cancer TOSHI, population around the facilities in the source category, and other relevant factors. For the 40 CFR part 63, subpart MM source category, we examined the potential for any environmental justice (EJ) issues that might be associated with the source category, by performing a demographic analysis of the population close to the facilities. In this analysis, we evaluated the distribution of HAP-related cancer and non-cancer risks from the subpart MM source category across different social, demographic, and economic groups within the populations living near facilities identified as having the highest risks. The methodology and the results of the demographic analyses are included in a technical report, *Risk and Technology Review—Analysis of Socio-Economic Factors For Populations Living Near Pulp Mill Combustion Sources*, available in the docket for this action.

The results of the demographic analysis are summarized in Table 4 below. These results, for various demographic groups, are based on the estimated risks from actual emissions levels for the population living within 50 km of the facilities.

TABLE 4—SUBPART MM SOURCE CATEGORY DEMOGRAPHIC RISK ANALYSIS RESULTS

	Nationwide	Population with cancer risk at or above 1-in-1 million	Population with chronic hazard index above 1
Total Population	312,861,265	7,600	0
Race by Percent			
White	72	67	0
All Other Races	28	33	0
Race by Percent			
White	72	67	0
African American	13	28	0
Native American	1.1	0.4	0
Other and Multiracial	14	5	0
Ethnicity by Percent			
Hispanic	17	3	0
Non-Hispanic	83	97	0
Income by Percent			
Below Poverty Level	14	16	0
Above Poverty Level	86	84	0
Education by Percent			
Over age 25 and without High School Diploma	15	18	0
Over age 25 and with a High School Diploma	85	82	0

The results of the 40 CFR part 63, subpart MM source category demographic analysis indicate that emissions from the source category expose approximately 7,600 people to a cancer risk at or above 1-in-1 million

and no one exposed to a chronic non-cancer TOSHI greater than 1. The specific demographic results indicate that the percentage of the population potentially impacted by emissions is greater than its corresponding national percentage for the minority population (33 percent for the source category compared to 28 percent nationwide), the African American population (28 percent for the source category compared to 13 percent nationwide) and for the population over age 25 without a high school diploma (18 percent for the source category compared to 15 percent nationwide). The proximity results (irrespective of risk) indicate that the population percentages for certain demographic categories within 5 km of source category emissions are greater than the corresponding national percentage for those same demographics. The following demographic percentages for populations residing within close proximity to facilities with chemical recovery combustion sources are higher than the corresponding nationwide percentage: African American, ages 65 and up, over age 25 without a high school diploma, and below the poverty level.

The risks due to HAP emissions from this source category are low for all populations (*e.g.*, inhalation cancer risks are less than 4-in-1 million for all populations and non-cancer hazard indices are less than 1). Furthermore, we do not expect this proposal to achieve significant reductions in HAP emissions. Section IV.C of this preamble addresses opportunities as part of the technology review to further reduce HAP emissions. These technologies were found not to be cost-effective. Therefore, we conclude that this proposal will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment. However, this proposal, if finalized, will provide additional benefits to these demographic groups by improving the compliance, monitoring, and implementation of the NESHAP.

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

1. Risk Acceptability

As noted in section II.A of this preamble, the EPA sets standards under CAA section 112(f)(2) using ''a two-step standard-setting approach, with an analytical first step to determine an 'acceptable risk' that considers all health information, including risk estimation uncertainty, and includes a presumptive limit on MIR of approximately 1-in-10 thousand.'' (54 FR 38045, September 14, 1989).

In this proposal, the EPA estimated risks based on both actual and allowable emissions from pulp mill combustion sources. As discussed above, in determining acceptability, we considered risks based on both actual and allowable emissions. Based on the risk assessment results described above, the EPA is proposing that the risks are acceptable.

The baseline inhalation cancer risk from the source category was 4-in-1-million for the most exposed individual based on actual and allowable emissions. The total estimated incidence of cancer for this source category due to inhalation exposures is 0.02 excess cancer cases per year, or 1 case in 50 years. The Agency estimates that the maximum chronic non-cancer TOSHI from inhalation exposure for this source category has an HI equal to 0.3 based upon both actual and allowable emissions. Lime kilns account for a large portion (92 percent) of the HI.

The multipathway screening analysis, based upon actual emissions, indicates the excess cancer risk from this source category is less than 10-in-1 million based on dioxins/furans and PAH emissions, with PAH emissions accounting for 99 percent of these potential risks from the fisher and the farmer scenarios. There were no facilities within this source category with a multipathway non-cancer screen value greater than 1 for cadmium or mercury. In evaluating the potential for multipathway effects from emissions of lead, we compared modeled maximum annual lead concentrations to the secondary NAAQS for lead (0.15 μg/m3). Results of this analysis estimate that the NAAQS for lead would not be exceeded at any off-site locations.

To put the risks from the source category in context, we also evaluated facility-wide risk. Our facility-wide assessment, based on actual emissions, estimated the MIR to be 20-in-1 million driven by arsenic and chromium VI emissions, and estimated the chronic non-cancer TOSHI value to be 1 driven by emissions of acrolein. We estimated approximately 440,000 people to have cancer risks greater than or equal to 1-in-1 million considering facility-wide emissions from the pulp and paper production industry (see Table 3). The above cancer and non-cancer risks are driven by emissions from industrial boilers, representing 62 percent of the cancer risks and 95 percent of the non-cancer risks. Emissions from the 40 CFR part 63, subpart MM sources represent only 6 percent of the total facility-wide cancer risk of 20-in-1 million.

The screening assessment of worst-case acute inhalation impacts indicates no pollutants exceeding an HQ value of 1 based on the REL, with an estimated worst-case maximum acute HQ of 0.3 for acrolein based on the 1-hour REL.

A review of the uncertainties in the risk assessment identified one additional key consideration, and that is the quality of data associated with the whole-facility emissions. The data provided from the power boilers were collected in 2009 and represent pre-MACT emissions before any controls. The uncertainty introduced by using pre-MACT boiler emissions data may result in an overestimated risk estimate for the whole-facility analysis for both cancer and non-cancer impacts.

Considering all of the available health risk information, we propose that risks from the source category are acceptable.

2. Ample Margin of Safety Analysis

As directed by section 112(f)(2), we conducted an additional analysis to determine whether additional standards are needed to provide an ample margin of safety to protect public health. Under this ample margin of safety analysis, we evaluated the cost and feasibility of available control technologies and other measures that could be applied in this source category to further reduce the risks (or potential risks) due to emissions of HAPs identified in our risk assessment, along with all of the health risks and other health information considered in our determination of risk acceptability.

Although we are proposing that the risks from the subpart MM source category are acceptable, inhalation risk estimates are above 1-in-1 million at the actual and MACT-allowable emission levels for approximately 7,600 individuals in the exposed population. The HAP risk drivers contributing to the inhalation risks in excess of 1-in-1 million include primarily the gaseous organic HAPs acetaldehyde and naphthalene. Additional gaseous organic HAPs contributing to the risk includes benzene, chloroprene, formaldehyde, 2-methylnaphthalene, 7,12-dimethylbenz[a]anthracene, acenaphthene, acenaphthylene, and fluoranthene. More than 80-percent of the mass emissions of these compounds originate from NDCE recovery furnaces, and DCE recovery furnaces (including BLO systems). We considered options for further reducing gaseous organic HAP emissions from NDCE and DCE

recovery furnaces. The greatest reduction in gaseous organic HAP emissions that could be achieved for DCE recovery furnaces would result from DCE-to-NDCE furnace conversions or replacements of DCE furnaces with NDCE systems. We estimated furnace emissions to be reduced when a DCE furnace is converted (or replaced with NDCE design). Conversion or replacement of a DCE system with an NDCE system results in removal of the BLO system and elimination of 100 percent of the BLO emissions. For NDCE recovery furnaces with wet ESP systems, conversion of the wet ESP system to a dry system can further reduce gaseous organic HAPs. Section IV.C.1 of this preamble discusses the costs and impacts associated with DCE conversions (or replacements) and wet-to-dry ESP conversions for NDCE recovery furnaces. The overall cost of these options is an estimated $1.4 billion to $3.7 billion in capital cost and $120 million to $440 million in annualized cost. Application of this option would achieve an estimated emission reduction of 2,920 tpy of gaseous organic HAPs (including risk drivers and other gaseous organic HAPs), and the corresponding cost-effectiveness ranges from $45,000 to $153,000 per ton of emissions reduced. The non-air environmental impacts, energy impacts, and secondary air emissions associated with the options described above are discussed in a memorandum in the docket. Due to the low level of current risk and the substantial costs associated with these options, we are proposing that additional emission reductions from the source category are not necessary to provide an ample margin of safety.

3. Adverse Environmental Effects

Based on the results of our environmental risk screening assessment, we propose to conclude that there is not an adverse environmental effect as a result of HAP emissions from the 40 CFR part 63, subpart MM source category.[35] Thus, we are proposing that it is not necessary to set a more stringent standard to prevent an adverse environmental effect.

[35] The environmental screening analysis is documented in *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule*, in the docket for this action.

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

1. Kraft and Soda Recovery Furnaces

The ability to recover pulping chemicals is imperative to the kraft and soda process, and is achieved by burning spent pulping liquor (*i.e.*, black liquor) in a recovery furnace. The recovery furnace is easily identified at a pulp mill because it is typically the tallest equipment on site. The purpose of the recovery furnace is to: (1) Recover inorganic pulping chemicals (e.g., sodium sulfide (Na_2S) and sodium hydroxide (NaOH) in kraft mills and NaOH in soda mills); and (2) produce steam. The recovered inorganic pulping chemicals are reused in the process, and the steam is used to generate electricity and for process heating. Prior to being fired in the recovery furnace, black liquor recovered from pulp washing is concentrated using an NDCE or DCE. The NDCE is an indirect, steam-heated black liquor concentrator. The DCE uses the hot combustion gases exiting the furnace to increase the solids content of the black liquor. A BLO system precedes the DCE to reduce malodorous total reduced sulfur (TRS) emissions that can be stripped in the DCE when hot flue gases from the recovery furnace come in contact with the black liquor. The BLO system uses molecular oxygen (O_2) or air to oxidize Na_2S to nonvolatile sodium thiosulfate ($Na_2S_2O_3$) to reduce the potential for stripping. Outputs from recovery furnaces include molten smelt (primarily Na_2S and sodium carbonate (Na_2CO_3)), flue gases, and steam. The smelt exits from the bottom of the furnace into an SDT, where the recovery of kraft pulping chemicals continues. Particulate matter (primarily sodium sulfate (Na_2SO_4) [salt cake] and Na_2CO_3) entrained in the flue gases is also recovered using an ESP, which deposits the collected material into a chemical ash tank or salt cake mix tank for subsequent addition into the concentrated black liquor.

We reviewed ICR data on recovery furnace design and emissions controls for purposes of the technology review. There are currently 148 kraft and soda recovery furnaces in the United States, including 36 existing DCE furnaces, 108 existing NDCE furnaces, and 4 recovery furnaces subject to the new source limits under 40 CFR part 63, subpart MM. The vast majority (96 percent) of recovery furnaces have ESP control, including the 4 NDCE recovery furnaces subject to the new source limits under subpart MM. Three of the DCE furnaces and one of the NDCE furnaces have an ESP followed by a wet scrubber. Two NDCE furnaces have a wet scrubber alone. The one remaining soda recovery furnace is a subpart MM new source with ESP control. As we noted in 2001, when subpart MM was promulgated, we project no new DCE recovery furnaces to be installed in the future, because more energy-efficient NDCE technology is now prevalent.

Recovery furnace ESPs can be further characterized as wet- or dry-bottom ESPs having either a wet or dry PM return system. A wet-bottom ESP uses either oxidized or unoxidized black liquor to collect the PM and carry it to the salt cake mix tank via a wet PM return system. A dry-bottom ESP routes the captured PM to the mix tank via a screw conveyor or drag chain without the use of liquid, typically with a dry PM return system. However, there are some dry-bottom ESPs with a wet PM return system that use black liquor or other process liquids to transport the dry collected PM to the mix tank. Approximately 60 percent of recovery furnaces in the United States (or 90 recovery furnaces) have a dry-bottom ESP with a dry PM return system (including two furnaces with a dry-bottom ESP followed by a scrubber).

Recovery furnace gaseous organic HAP. Subpart MM of 40 CFR part 63 contains a gaseous organic HAP limit of 0.025 lb/ton BLS (measured as methanol) for new recovery furnaces based on use of an NDCE recovery furnace with a dry-bottom ESP and a dry PM return system. Recovery furnace system design impacts gaseous organic HAP emissions. Non-direct contact evaporator recovery furnaces emit less gaseous organic HAPs because there is no contact between the incoming black liquor and hot flue gases in the evaporator and there is no BLO system. Replacement of DCE recovery furnace systems with a new NDCE recovery furnace or conversion of an existing DCE furnace to an NDCE design (referred to as a ''low-odor conversion''), along with removal of the associated BLO system, provides the greatest reduction in gaseous organic HAP emissions. Use of a dry-bottom ESP system with a dry PM return also reduces gaseous organic HAP emissions.

Analysis of ICR data for our technology review revealed that the number of DCE recovery furnaces in the United States continues to decrease as facilities with older DCE furnaces either close or, where feasible, replace aging DCE furnaces or convert them to NDCE systems. When subpart MM was proposed in 1998, 39 percent of recovery furnaces (82 units) were DCE systems. Today, only 36 DCE recovery furnaces remain, which is 24 percent of

the recovery furnace population (including 2 DCE recovery furnaces that are only used as backup systems for times when other NDCE furnaces onsite are not operating).

We analyzed the costs and environmental impacts of replacement or conversion of the remaining DCE recovery furnaces as part of our technology review. High capital costs of an estimated $1.3 to $3.7 billion and annualized costs of an estimated $120 to $440 million are associated with recovery furnace installation (or conversion) projects due to the integral nature of the recovery furnace within the pulp mill and the number of upstream and downstream equipment components that must be removed, replaced, or reengineered along with the recovery furnace itself. These costs would be borne by 21 facilities that continue to operate DCE recovery furnaces and are not already projected to replace these systems in the absence of any regulatory action. The cost effectiveness of recovery furnace conversions or replacements is also high, at an estimated $44,000 to $159,000 per ton of gaseous organic HAPs reduced. We estimated a range of costs based on multiple information sources.

We also considered the costs and impacts associated with converting the remaining NDCE recovery furnace wet-bottom ESPs in the industry to dry-bottom ESPs. Capital costs are an estimated $56.1 million for wet-to-dry bottom ESP conversions at 11 mills with NDCE recovery furnaces, with cost effectiveness of $54,000 per ton of gaseous organic HAPs removed.

The total costs of the gaseous organic HAP options we considered are an estimated $1.4 to $3.7 billion in capital cost borne by 32 facilities, to achieve an estimated emission reduction of 2,920 tpy of gaseous organic HAP at a cost effectiveness of $45,000 to $153,000 per ton of gaseous organic HAPs removed. Collateral TRS emission reductions are an estimated 1,250 tpy at a cost effectiveness of $104,000 to $357,000 per ton of TRS reduced. Given the high capital costs and high cost per ton of emissions reduced, we are not proposing additional regulation of recovery furnace gaseous organic HAP emissions as a result of the technology review.

Recovery furnace PM. Under the current 40 CFR part 63, subpart MM, PM is a surrogate for HAP metal emissions. Subpart MM requires existing recovery furnaces to meet a PM emission limit of 0.044 grains per dry standard cubic foot (gr/dscf) at 8 percent O_2 and requires new recovery furnaces to meet a PM limit of 0.015 gr/dscf at 8-percent O_2. We recently analyzed PM emissions test data collected with the 2011 Pulp and Paper Sector ICR for purposes of the Kraft Pulp Mill NSPS review promulgated on April 4, 2014 (79 FR 18952). We reviewed the PM data tabulated for the NSPS review in the context of the existing and new source PM limits for the subpart MM NESHAP technology review. The dataset included more than 200 filterable PM stack tests, including some repeat tests, on nearly all of the recovery furnaces in the United States using a variety of PM emission controls (ESP, ESP and wet scrubber combinations, and wet scrubbers). The PM stack test data revealed little or no distinction between DCE and NDCE recovery furnaces for PM emissions. Nearly all of the recovery furnaces tested met the current existing source limit (0.044 gr/dscf),[36] and several met the new source limit (0.015 gr/dscf), though there was a considerable scatter of emission test results between 0.015 and 0.044 gr/dscf, including variability in test results for the same units tested multiple times. There was also variability in the performance of the different types of ESP or ESP and scrubber systems such that no one type of control system seemed to perform better than another. Based on the data, wet scrubbing of recovery furnace exhaust gases (either alone or in conjunction with an ESP) does not necessarily improve filterable PM removal. After reviewing the recovery furnace PM emissions data, we concluded that the current subpart MM emission limits of 0.044 gr/dscf and 0.015 gr/dscf continue to represent the performance of existing and new recovery furnaces, respectively. The technology review did not reveal any developments in practices, processes, and control technologies for reducing PM emissions from recovery furnaces that have occurred since promulgation of subpart MM. Therefore, we are not proposing any changes to the PM emission limits for purposes of the technology review. As discussed below, we estimated incidental incremental improvements in PM emissions as part of our analysis of the opacity monitoring limit for recovery furnaces.

2. Kraft and Soda Lime Kilns

In kraft and soda pulp mills, the lime kiln is part of the causticizing process in which green liquor from the SDT is converted to white liquor. The function of the lime kiln is to oxidize lime mud (calcium carbonate, $CaCO_3$) to reburned lime (calcium oxide, CaO) in a process known as calcining. Lime kiln air pollution control devices include wet scrubbers, ESPs, or a combination system including an ESP followed by a wet scrubber. The 2011 ICR data indicate that, of 130 lime kilns in the United States, 89 kilns have wet scrubbers, 30 kilns have ESPs, and 11 kilns have ESP-wet scrubber combinations.

Subpart MM, 40 CFR part 63, includes a PM limit of 0.064 gr/dscf at 10-percent O_2 (which is a surrogate limit for HAP metals) for existing lime kilns. For new or reconstructed lime kilns, the subpart MM limit is 0.010 gr/dscf at 10-percent O_2 based on use of a high-efficiency ESP. Subpart MM does not distinguish between fuel types. Lime kilns typically burn natural gas, fuel oil, petroleum coke, or a combination of these fuels. They may also burn noncondensable gases (NCGs) or pulp mill byproducts such as tall oil.

The EPA recently reviewed PM stack test data from more than 250 filterable PM stack tests (including several repeat tests) on 110 lime kilns in the United States for purposes of the Kraft Pulp Mill NSPS review. The EPA interpreted this same dataset in the context of conducting the technology review of the subpart MM PM limits for lime kilns. The tests included lime kilns with scrubbers, ESPs and ESP-wet scrubber combination controls. Most of the scrubber-controlled kilns achieved the subpart MM existing source limit (0.064 gr/dscf at 10-percent O_2) with the exception of kilns that participate in the PM bubble compliance alternative. The data suggested that scrubber-controlled kilns would not be expected to meet the subpart MM new source limit of 0.010 gr/dscf at 10-percent O_2. The EPA found that ESP and ESP-wet scrubber controls typically reduce PM to lower levels than wet scrubbers alone. The ESP-wet scrubber systems did not necessarily perform better on filterable PM than the ESPs alone. Several existing ESP and ESP-wet scrubber controlled kilns consistently met the 0.064 gr/dscf existing source limit, and often met the new source limit of 0.010 gr/dscf at 10-percent O_2. The EPA observed test results between the existing and new source limit for existing sources with ESP and ESP-wet scrubber systems. Our review of the PM emissions test data for lime kilns suggests that the subpart MM limits for lime kilns are appropriate. For purposes of the subpart MM technology review, the EPA has identified no practices, processes, or controls for PM emissions from lime kilns beyond those

[36] Exceptions included a few stack tests that were repeated, or recovery furnaces that participate in the PM bubble compliance option under 40 CFR part 63, subpart MM.

identified when subpart MM was developed. Therefore, the EPA is not proposing any changes to the existing PM limits of 0.064 gr/dscf at 10-percent O_2 for existing lime kilns and 0.010 gr/dscf at 10-percent O_2 for new and reconstructed lime kilns.

3. Recovery Furnace and Lime Kiln Monitoring

This subsection discusses our review of the opacity and ESP monitoring provisions for recovery furnaces and lime kilns with ESPs or combined ESP and wet scrubber systems.

Continuous opacity monitoring. Subpart MM of 40 CFR part 63 requires continuous monitoring of opacity to demonstrate ongoing compliance with the PM concentration limits for ESP-controlled recovery furnaces and lime kilns. The current PM opacity limits under subpart MM are 35-percent opacity for existing recovery furnaces and 20-percent opacity for existing lime kilns, new lime kilns, and new recovery furnaces. Subpart MM contains an opacity monitoring allowance for existing sources where 6 percent of the 6-minute opacity averages during a quarter (excluding periods of SSM and periods when the facility is not operating) may exceed the 35-percent recovery furnace or 20-percent lime kiln opacity limit without being considered a violation. Subpart MM currently contains a corrective action threshold of 10 consecutive 6-minute averages above 20-percent opacity for new and existing recovery furnaces and lime kilns.

The EPA reviewed recovery furnace and lime kiln continuous opacity monitoring system (COMS) data for purposes of the technology review to evaluate the current 40 CFR part 63, subpart MM opacity limits and 6-percent monitoring allowance. The EPA performed a similar review of the COMS data for the subpart BBa NSPS review promulgated April 4, 2014 (79 FR 18952). The EPA's analysis of the recovery furnace COMS data for subpart MM is included in a memorandum in the docket.[37] Our conclusions from reviewing the opacity data in the context of subpart MM are consistent with the conclusions reached for the 2014 NSPS review.

The COMS data for 135 recovery furnaces show that the majority of existing recovery furnaces, regardless of design (DCE or NDCE), and with most controls, are meeting a 20-percent opacity limit based on a 6-minute average, with fewer than 2 percent of averaging periods exceeding 20-percent opacity, including periods of startup and shutdown. The EPA also reviewed state permits and found many recovery furnaces with permit limits of 20-percent opacity. Therefore, the EPA concludes that this information is evidence that there has been a development in existing recovery furnace operating practices that supports reducing the existing source opacity limit from 35-percent to 20-percent and revising the monitoring allowance for the 20-percent opacity limit from 6 percent to a 2-percent monitoring allowance as part of the 40 CFR part 63, subpart MM technology review process.

The COMS data for 28 ESP-controlled lime kilns show that all of the existing lime kilns are meeting the 20-percent opacity limit based on a 6-minute average, with nearly all performing at a 1-percent monitoring allowance, including periods of startup and shutdown. The EPA considers this information as evidence that there has been a development in existing lime kiln operating practices and that this development supports revising the monitoring allowance from 6 percent to a 1-percent monitoring allowance for opacity as part of the 40 CFR part 63, subpart MM technology review process.

Subpart MM of 40 CFR part 63 currently requires that the opacity allowance be calculated based on the percent of the operating time in a quarter in which excess emissions are recorded. The Agency is proposing to change the reporting requirement frequency, as discussed in section IV.D.4, and, therefore, analyzed both quarterly and semiannual averaging periods when reviewing the proposed monitoring allowance discussed above.

The EPA considered the impacts of various opacity monitoring options as part of the technology review. The opacity regulatory options considered for kraft and soda recovery furnaces were:

Baseline Option 1: 35-percent opacity (existing) or 20-percent opacity (new), 20-percent corrective action level, 6-percent monitoring allowance, quarterly reporting.

Option 2: 35-percent opacity, 20-percent corrective action level, 2-percent monitoring allowance, semiannual reporting.

Option 3: 20-percent opacity, 6-percent monitoring allowance, quarterly reporting.

Option 4: 20-percent opacity, 2-percent monitoring allowance, semiannual reporting.

Option 5: 20-percent opacity, 2-percent monitoring allowance, quarterly reporting.

The opacity regulatory options considered for kraft and soda ESP-controlled lime kilns were:

Baseline Option 1: 20-percent opacity and corrective action level with 6-percent allowance, quarterly reporting.

Option 2: 20-percent opacity with a 1-percent monitoring allowance, semiannual reporting.

Option 3: 20-percent opacity with a 1-percent monitoring allowance, quarterly reporting.

For purposes of estimating costs and impacts of the regulatory options, we assumed that recovery furnaces and ESP-controlled lime kilns that did not meet the regulatory options in our COMS analysis would require ESP maintenance and testing to improve opacity performance, or an ESP upgrade. The EPA also reviewed PM performance levels (based on PM stack test data) for emission units not meeting the opacity limits under consideration in at least one reporting period. If the PM performance level achieved met the PM performance expected from an upgraded ESP (0.015 gr/dscf at 8-percent O_2 for recovery furnaces or 0.010 gr/dscf at 10-percent O_2 for lime kilns), then we assumed that the ESP would only require improved annual maintenance and testing to achieve the opacity options. Otherwise, we assumed that units would require an ESP upgrade to meet the opacity options.

Although we are not proposing any changes to the PM metal HAP limits as part of the technology review, ESP upgrades to meet a tighter opacity monitoring limit would have the effect of reducing PM emissions. We estimated recovery furnace upgrade costs for adding two parallel fields to an existing ESP resulting in a PM performance level of 0.015 gr/dscf at 8-percent O_2. For lime kilns, we estimated costs based on adding one field to the existing ESP to achieve a PM performance level of 0.01 gr/dscf at 10-percent O_2. For each emission unit expected to require an ESP upgrade, we estimated the potential reduction in PM emissions by subtracting the PM limit expected to be achieved by the upgraded ESP from the lower of the current PM permit limit or the actual PM performance level for the emission unit.

The EPA's full analysis of the cost and impacts associated with the regulatory options for opacity (including energy and secondary air impacts) is presented

[37] See memorandum titled, *Review of the Continuous Opacity Monitoring Data from the Pulp and Paper ICR Responses for Subpart MM Sources*, in the docket.

in a memorandum in the docket.[38] Table 5 summarizes the number of impacted facilities, estimated cost, PM reductions, and cost effectiveness of the opacity regulatory options.

TABLE 5—COSTS AND IMPACTS OF OPACITY REGULATORY OPTIONS

Option	Number of mills impacted	2015$		Incremental HAP reduction, tpy	Cost effectiveness $/ton PM[1]
		Capital costs, $million	Annualized costs, $million/yr		
Recovery Furnaces Opacity Monitoring Limit Options					
Baseline Option 1: No change. 35% opacity, 20% corrective action level (CAL), 6% monitoring allowance (MA), quarterly (Q) reporting.	0	0	0	0	NA
Option 2: 35% opacity, 20% CAL, 2% MA, semiannual (SA) reporting.	1	0	0.087	0	NA
Option 3: 20% opacity, 6% MA, Q reporting	7	27	5.4	188 (PM), 85 ($PM_{2.5}$)	28,400
Option 4: 20% opacity, 2% MA, SA reporting	12	42	8.7	235 (PM), 112 ($PM_{2.5}$)	36,800
Option 5: 20% opacity, 2% MA, Q reporting	19	74	15	364 (PM), 170 ($PM_{2.5}$)	41,000
Lime Kiln Opacity Monitoring Limit Options					
Option 1: No change. 20% opacity, 6% MA, Q reporting.	0	0	0	0	NA
Option 2: 20% opacity, 1% MA, SA reporting	2	0	0.068	0	NA
Option 3: 20% opacity, 1% MA, Q reporting	Same as option 2				

[1] HAP metals comprise less than 0.5-percent of the PM emissions (0.03-percent for recovery furnaces or 0.48-percent for lime kilns). Thus, the cost effectiveness specifically for HAP metals is orders of magnitude greater than that shown for PM (>$5.5 million per ton HAP metals).

After considering the costs and impacts of the regulatory options for opacity, we are proposing recovery furnace option 4 and lime kiln option 2 for opacity monitoring. These options are representative of the actual performance of 40 CFR part 63, subpart MM emission units based on our analysis of the COMS data, and also align closely with the opacity limits, monitoring allowances, and semiannual reporting requirements established for new sources through the 2014 NSPS review. The EPA is proposing to reduce the opacity limit for existing recovery furnaces from 35-percent to 20-percent opacity. Lowering the recovery furnace opacity limit to 20 percent eliminates the need for the 20-percent corrective action level. Specifying a 20-percent corrective action level is redundant where the opacity limit is already set at 20-percent; therefore, we are proposing to eliminate the subpart MM corrective action level in 40 CFR 63.864(k)(1)(i) by reserving this section. We are proposing a monitoring allowance of 2-percent for existing and new recovery furnaces. We are proposing to retain the 20-percent opacity limit and are proposing a monitoring allowance of 1 percent for opacity monitoring for lime kilns. We are also proposing to reduce the reporting frequency from quarterly to semiannually, as discussed in section IV.D.4 of this preamble. The proposed semiannual averaging period would be used for calculating the opacity monitoring allowance, providing flexibility for startup and shutdown periods. The cost effectiveness of recovery furnace option 4, $36,800 per ton PM, is within the range of other recent EPA regulations. There is no cost effectiveness value for lime kiln option 2 because no incremental HAP reductions were estimated. In addition to proposing the revisions described above, the EPA is requesting comment on all of the options presented in Table 5.

ESP parameter monitoring. The EPA is proposing to add an ESP parameter monitoring requirement for recovery furnaces and lime kilns equipped with ESPs. The purpose of this is to provide another indicator of ESP performance and enable affected sources to show continuous compliance with the HAP metal standards (surrogate PM emission limit) at all times, including periods when the opacity monitoring allowance is used. The EPA is proposing that these sources monitor the secondary voltage and secondary current (or, alternatively, total secondary power) of each ESP collection field. These ESP parameter monitoring requirements are in addition to opacity monitoring for recovery furnaces equipped with ESPs alone. The EPA is proposing that these ESP parameters be monitored, recorded every successive 15 minutes, and averaged over the same semiannual period as the opacity monitoring allowance. The semiannual average of the ESP parameters must remain above the minimum limits established during the PM performance test (*i.e.*, above the minimum secondary current and secondary voltage or above minimum total secondary power).

The EPA estimates that the nationwide costs associated with adding the proposed ESP parameter monitoring requirements would be $5.7 million capital and $1.4 million annualized costs for ESP parameter monitors. All mills with ESP-controlled recovery furnaces and lime kilns are estimated to be impacted.

Monitoring of ESPs followed by wet scrubbers. Because moisture in wet stacks interferes with opacity readings, opacity is not a suitable monitoring requirement for recovery furnaces or lime kilns with wet scrubber stacks. The EPA is therefore proposing to require ESP and wet scrubber parameter monitoring for emission units equipped with an ESP followed by a wet scrubber. The ESP parameters to be monitored are

[38] See memorandum titled, *Costs/Impacts of the Subpart MM Residual Risk and Technology Review*, in the docket.

secondary voltage and secondary current (or, alternatively, total secondary power), and the wet scrubber parameters are pressure drop and scrubber liquid flow rate. The EPA is proposing that ESP and wet scrubber parameters be recorded at least once every successive 15-minute period and reduced to 3-hour averages. The EPA estimates no incremental costs to be associated specifically with the proposed monitoring requirements for combined ESP-wet scrubber systems because the ESP parameter monitoring costs estimated above include ESPs in combined control systems, and wet scrubber parameter monitoring is already required under 40 CFR part 63, subpart MM.

4. Kraft and Soda Smelt Dissolving Tanks

Smelt dissolving tanks are covered vessels located below the recovery furnace to collect molten smelt, one of the main products from the combustion of black liquor. Smelt is comprised predominantly of Na_2S and Na_2CO_3 and is formed in the bottom of the recovery furnace. The smelt is continuously discharged through water-cooled smelt spouts into the SDT where it is mixed with weak wash water from the pulp mill recausticizing area to form green liquor, an aqueous solution of Na_2CO_3 and Na_2S. The green liquor is subsequently transferred to the recausticizing area for reprocessing into pulping liquor (*i.e.*, white liquor). In the soda pulping process, the molten smelt and green liquor is predominantly Na_2CO_3 because soda pulping is a non-sulfur process. Based on the 2011 Pulp and Paper Sector ICR data, there are 161 kraft and soda SDTs in the United States. Nearly all of the SDTs have wet scrubbers that control the particulate emissions, including HAP metals, from this process. A small number of SDTs use mist eliminators as the only means of emissions control. Some new sources were designed to vent emissions through the recovery furnace as an alternative to using wet scrubber control alone, but also have a wet scrubber for backup periods when venting to the recovery furnace is not feasible.

SDT PM. The current 40 CFR part 63, subpart MM PM emission limit (which is a surrogate for HAP metals) for existing SDTs is 0.20 lb/ton BLS. The subpart MM PM limit for new and reconstructed sources with initial startup in 2001 or later is 0.12 lb/ton BLS based on the use of a high-efficiency wet scrubber.

The EPA analyzed SDT PM stack test data collected with the 2011 Pulp and Paper Sector ICR for the NSPS review promulgated on April 4, 2014 (79 FR 18952). We reviewed this same dataset in the context of subpart MM for purposes of the 40 CFR part 63, subpart MM technology review. The stack test data show that nearly all SDTs have achieved the subpart MM existing source limit of 0.20 lb/ton BLS (with the exception of a few SDTs with mist eliminators and SDTs included in the PM bubble compliance option under subpart MM). There were many existing scrubber-controlled SDTs with emissions between the new source limit of 0.12 lb/ton BLS and the existing source limit of 0.20 lb/ton BLS. The practice of routing SDT emissions through the recovery furnace has an unquantified effect on PM emissions because no emission test data are available to differentiate SDT emissions from the recovery furnace emissions in these systems. The EPA has identified no practices, processes, or controls for SDTs beyond those identified at the time of subpart MM development, nor any incremental improvements in the ability of wet scrubbers to reduce PM. Therefore, the EPA is not proposing any changes to the current existing and new source PM limits in subpart MM for kraft and soda mill SDTs. The EPA has identified no regulatory options for SDTs for further consideration under the subpart MM technology review.

SDT parameter monitoring. Subpart MM specifies monitoring of scrubber liquid flow rate and pressure drop for SDTs equipped with wet scrubbers. Facilities may have difficulty meeting the minimum pressure drop requirement during startup and shutdown, as expected due to the reduced (and changing) volumetric flow of stack gases during startup and shutdown. The EPA is proposing to consider only scrubber liquid flow rate during these periods (*i.e.*, excess emissions would include any 3-hour period when BLS are fired that the scrubber flow rate does not meet the minimum parameter limits set in the initial performance test). This is discussed further in section IV.D.1.

Based on previous alternative monitoring requests for SDTs, the EPA is also proposing to allow operators to use SDT scrubber fan amperage as an alternative to pressure drop measurement for SDT dynamic scrubbers operating at ambient pressure or for low-energy entrainment scrubbers on SDTs where the fan speed does not vary.

5. Sulfite Combustion Units

When subpart MM was proposed in 1998, there were 15 sulfite pulp mills. Today there are only three sulfite mills, including one using the magnesium-based sulfite process and two mills using the ammonia (NH3)-based sulfite process. The EPA projects no new sulfite mills to come online in the United States in the next 5 years. Based on a review of permits and ICR data that the EPA has collected for these three sulfite mills, we determined that there are a total of eight sulfite combustion units currently operating in the United States.

Sulfite combustion unit PM. Subpart MM of 40 CFR part 63 requires existing sulfite combustion units to meet a PM emission limit of 0.040 gr/dscf at 8-percent O_2, based on the use of a fiber-bed demister system. Subpart MM requires new sulfite combustion units to meet a PM limit of 0.020 gr/dscf at 8-percent O_2, based on the combined use of a wet scrubber and fiber-bed demister system.[39] The PM emission limits are a surrogate for HAP metals.

For the 40 CFR part 63 subpart MM technology review, the EPA reviewed ICR data on sulfite processes and controls, title V permit limits, and PM stack test data for the three sulfite pulp mills currently operating in the United States. Each sulfite mill has a unique configuration of sulfite combustion units and corresponding site-specific limits. Two facilities with sulfite combustion units subject to a PM permit limit of 0.04 gr/dscf achieved this limit based on actual measurement data submitted (with the exception of one test above the limit that was superseded by a more recent test). Another facility (Cosmo Specialty Fibers in Cosmopolis, Washington) has a site-specific PM permit limit of 0.10 gr/dscf for its chemical recovery combustion units, and instead reduces PM emissions from the hog fuel dryer at the plant site. The chemical recovery combustion units (which have a combined stack) have achieved average PM emissions of 0.054 gr/dscf. The hog fuel dryer is permitted at 10 pounds per hour (lb/hr) of PM and has achieved PM emissions of 1.2 and 1.5 lb/hr in two tests. The EPA's technology review found no developments in practices, processes, or controls since the promulgation of subpart MM for PM emissions from sulfite combustion units. The EPA is proposing to retain the 0.040 and 0.020 gr/dscf at 8-percent O_2 PM limits for existing and new sulfite combustion units. The EPA has identified no

[39] Although any control system could be used to meet the emission limits for sulfite combustion units, the existing source limit is consistent with the performance of a fiber-bed demister system and the new source limit is consistent with the performance of a wet scrubber with a fiber-bed demister.

regulatory options for sulfite combustion units for further consideration under the subpart MM technology review.

Sulfite combustion unit parameter monitoring. Subpart MM of 40 CFR part 63 specifies monitoring of scrubber liquid flow rate and pressure drop for sulfite combustion units equipped with wet scrubbers. Facilities may have difficulty meeting the minimum pressure drop requirement during startup and shutdown, as expected due to the reduced (and changing) volumetric flow of stack gases during startup and shutdown. The EPA is proposing to consider only scrubber liquid flow rate during startup and shutdown periods (*i.e.*, excess emissions would include any 3-hour period when spent pulping liquor is fired that the scrubber flow rate does not meet the minimum parameter limits set in the initial performance test). The EPA is proposing no changes for parameter monitoring of the fiber-bed demister system, which is addressed under the alternative monitoring provisions of subpart MM.

6. Semichemical Combustion Units

When 40 CFR part 63, subpart MM, was originally proposed in 1998, there were 14 semichemical combustion units at 14 stand-alone semichemical pulp mills. Today, there are seven semichemical combustion units at seven mills in the United States, at six of which combustion units and mills are operating.[40] Semichemical combustion unit design types include: Fluidized-bed reactor (two units, one operating), recovery furnace (four units), and rotary liquor kiln (one unit).

Semichemical combustion unit total hydrocarbon (THC). The current 40 CFR part 63, subpart MM standards require existing and new semichemical combustion units to reduce total gaseous organic HAP emissions (measured as THC) by 90 percent or meet a total gaseous organic HAP emission limit (measured as THC) of 2.97 lb/ton of BLS fired.

For the 40 CFR part 63, subpart MM RTR, the EPA reviewed ICR data on processes and control configurations, title V permit limits, and THC stack test data for the stand-alone semichemical pulp mills currently operating in the United States. The review of permit limits indicated that all semichemical combustion units are subject to the 2.97 lb/ton BLS THC limit specified in subpart MM for existing and new units. Performance of the different semichemical combustion units varies considerably for THC. While most units achieve the 2.97 lb/ton BLS THC limit, at least one unit relied on the 90-percent reduction compliance option included in subpart MM to address variability. The EPA has identified no regulatory options for semichemical combustion units for purposes of the subpart MM RTR, given that no practices, processes, or controls beyond those considered during the original rule development have emerged.

Semichemical combustion unit parameter monitoring. Subpart MM of 40 CFR part 63 requires semichemical combustion units using RTOs to measure and record RTO operating temperature to demonstrate compliance with the standard for gaseous organic HAP (measured as THC). As noted previously, no practices, processes, or controls beyond those considered during the original rule development have emerged. Consequently, the EPA is proposing no changes for the current parameter monitoring requirements.

D. What other actions are we proposing?

In addition to the proposed actions described above, we are proposing additional revisions. We are proposing revisions to the SSM provisions of the MACT rule in order to ensure that they are consistent with the court decision in *Sierra Club* v. *EPA*, 551 F.3d 1019 (D.C. Cir. 2008), which vacated two provisions that exempted sources from the requirement to comply with otherwise applicable CAA section 112(d) emission standards during periods of SSM. We also are proposing various other changes, including 5-year periodic emissions testing for selected process equipment, semiannual electronic reporting for all excess emissions reports, electronic submittal of compliance reports (which include performance test reports), incorporation by reference, and various technical and editorial changes. Our analyses and proposed changes related to these issues are discussed in sections IV.D.1 through 6 of this preamble.

1. Startup, Shutdown, and Malfunction

In its 2008 decision in *Sierra Club* v. *EPA*, 551 F.3d 1019 (D.C. Cir. 2008), the United States Court of Appeals for the District of Columbia Circuit vacated portions of two provisions in the EPA's CAA section 112 regulations governing the emissions of HAPs during periods of SSM. Specifically, the Court vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under section 302(k) of the CAA, emissions standards or limitations must be continuous in nature and that the SSM exemption violates the CAA's requirement that some CAA section 112 standards apply continuously.

We are proposing the elimination of the SSM exemption in this rule. Consistent with *Sierra Club* v. *EPA*, we are proposing standards in this rule that apply at all times. We are also proposing several revisions to Table 1 (the General Provisions Applicability Table) as is explained in more detail below. For example, we are proposing to eliminate the incorporation of the General Provisions' requirement that the source develop an SSM plan. We also are proposing to eliminate and revise certain recordkeeping and reporting requirements related to the SSM exemption as further described below.

The EPA has attempted to ensure that the provisions we are proposing to eliminate are inappropriate, unnecessary, or redundant in the absence of the SSM exemption. We are specifically seeking comment on whether we have successfully done so.

Periods of startup and shutdown. In reviewing the standards in this rule, the EPA has taken into account startup and shutdown periods and, for the reasons explained below, is not proposing alternate standards for those periods.

Subpart MM of 40 CFR part 63 requires continuous opacity monitoring to indicate ongoing compliance with the PM emission limits. In developing proposed standards for subpart MM, the EPA reviewed numerous continuous opacity monitoring datasets that included periods of startup and shutdown, and concluded that the affected units will be able to comply with the proposed standards at all times. The proposed subpart MM also requires RTO operating temperature and ESP and wet scrubber parameter monitoring. Parameter limits apply at all times, including during startup and shutdown. The proposed subpart MM requires RTO operating temperature and wet scrubber and ESP operating parameters to be recorded at least once every 15 minutes. Subpart MM specifies corrective action levels in 40 CFR 63.864(k)(1) and violation levels in 40 CFR 63.864(k)(2) which would be reported as excess emissions under 40 CFR 63.867(c). For RTO temperature, subpart MM requires corrective action when any 1-hour temperature falls below the average temperature established during the performance test. Subpart MM considers any 3-hour RTO temperature that falls below the average established during the performance test to be a violation. Subpart MM requires the ESP and scrubber parameters to be averaged over a 3-hour block, except for ESPs with COMS, which would have

[40] One additional stand-alone semichemical pump mill ceased operation in late 2015.

ESP parameters averaged semiannually. The corrective action level for wet scrubber and ESP operating parameters (when opacity is not also measured) is triggered when any 3-hour average is outside of the limit established during the performance test. A violation would occur when six or more of the 3-hour average parameter values within a 6-month period are outside of the limits established during the performance test. Violations based on opacity would be considered over a semiannual period. For new or existing kraft or soda recovery furnaces, a violation would occur when any opacity is greater than 20 percent for 2 percent or more of the operating time when spent liquor is fired within a semiannual period. For new or existing lime kilns, a violation would occur when any opacity is greater than 20 percent for 1 percent or more of the operating time when lime mud is fired in a semiannual period. A violation would also occur when the recovery furnace or lime kiln ESP secondary voltage and secondary current (or total secondary power) averaged over the semiannual period are below the minimum operating limits established during the performance test, with the exception of secondary current (or total secondary power) during periods of startup and shutdown.

To address the need for ESPs to warm to a specified temperature (typically above 200 °F) before full power is applied to the transformer-rectifier set, the EPA is proposing to define excess emissions (*i.e.*, the corrective action and violation levels) as opacity and ESP parameter measurements below the minimum requirements during times when BLS or lime mud is fired (as applicable), based on several responses to the ICR indicating that mills with ESP minimum temperature requirements bring the ESP online before introducing BLS or lime mud into the recovery furnace or lime kiln, respectively. The EPA is also proposing language that would allow affected units to use wet scrubber liquid flow rate to demonstrate compliance during periods of startup and shutdown because pressure drop is difficult to achieve during these periods.

Periods of malfunction. Periods of startup, normal operations, and shutdown are all predictable and routine aspects of a source's operations. Malfunctions, in contrast, are neither predictable nor routine. Instead they are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process or monitoring equipment. (40 CFR 63.2) (Definition of malfunction). The EPA interprets CAA section 112 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 112 standards. Under CAA section 112, emissions standards for new sources must be no less stringent than the level ''achieved'' by the best controlled similar source and for existing sources generally must be no less stringent than the average emission limitation ''achieved'' by the best performing 12 percent of sources in the category. There is nothing in CAA section 112 that directs the Agency to consider malfunctions in determining the level ''achieved'' by the best performing sources when setting emission standards. As the District of Columbia Circuit Court has recognized, the phrase ''average emissions limitation achieved by the best performing 12 percent of'' sources ''says nothing about how the performance of the best units is to be calculated.'' *Nat'l Ass'n of Clean Water Agencies* v. *EPA*, 734 F.3d 1115, 1141 (D.C. Cir. 2013). While the EPA accounts for variability in setting emissions standards, nothing in CAA section 112 requires the Agency to consider malfunctions as part of that analysis. A malfunction should not be treated in the same manner as the type of variation in performance that occurs during routine operations of a source. A malfunction is a failure of the source to perform in a ''normal or usual manner'' and no statutory language compels the EPA to consider such events in setting section CAA 112 standards.

Further, accounting for malfunctions in setting emission standards would be difficult, if not impossible, given the myriad of different types of malfunctions that can occur across all sources in the category and given the difficulties associated with predicting or accounting for the frequency, degree, and duration of various malfunctions that might occur. As such, the performance of units that are malfunctioning is not ''reasonably'' foreseeable. See, *e.g., Sierra Club* v. *EPA*, 167 F.3d 658, 662 (D.C. Cir. 1999) (''The EPA typically has wide latitude in determining the extent of data-gathering necessary to solve a problem. We generally defer to an agency's decision to proceed on the basis of imperfect scientific information, rather than to 'invest the resources to conduct the perfect study.' '') See also, *Weyerhaeuser* v. *Costle,* 590 F.2d 1011, 1058 (D.C. Cir. 1978) (''In the nature of things, no general limit, individual permit, or even any upset provision can anticipate all upset situations. After a certain point, the transgression of regulatory limits caused by 'uncontrollable acts of third parties,' such as strikes, sabotage, operator intoxication or insanity, and a variety of other eventualities, must be a matter for the administrative exercise of case-by-case enforcement discretion, not for specification in advance by regulation.''). In addition, emissions during a malfunction event can be significantly higher than emissions at any other time of source operation. For example, if an air pollution control device with 99-percent removal goes off-line as a result of a malfunction (as might happen if, for example, the bags in a baghouse catch fire) and the emission unit is a steady state type unit that would take days to shut down, the source would go from 99-percent control to zero control until the control device was repaired. The source's emissions during the malfunction would be 100 times higher than during normal operations. As such, the emissions over a 4-day malfunction period would exceed the annual emissions of the source during normal operations. As this example illustrates, accounting for malfunctions could lead to standards that are not reflective of (and significantly less stringent than) levels that are achieved by a well-performing non-malfunctioning source. It is reasonable to interpret CAA section 112 to avoid such a result. The EPA's approach to malfunctions is consistent with CAA section 112 and is a reasonable interpretation of the statute.

In the event that a source fails to comply with the applicable CAA section 112(d) standards as a result of a malfunction event, the EPA would determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during malfunction periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions. The EPA would also consider whether the source's failure to comply with the CAA section 112(d) standard was, in fact, sudden, infrequent, not reasonably preventable, and was not instead caused in part by poor maintenance or careless operation. 40 CFR 63.2 (definition of malfunction).

If the EPA determines in a particular case that an enforcement action against a source for violation of an emission standard is warranted, the source can raise any and all defenses in that enforcement action and the Federal District Court will determine what, if any, relief is appropriate. The same is true for citizen enforcement actions. Similarly, the presiding officer in an administrative proceeding can consider any defense raised and determine

whether administrative penalties are appropriate.

In summary, the EPA interpretation of the CAA and, in particular, CAA section 112 is reasonable and encourages practices that will avoid malfunctions. Administrative and judicial procedures for addressing exceedances of the standards fully recognize that violations may occur despite good faith efforts to comply and can accommodate those situations.

a. General Duty

We are proposing to revise the General Provisions table (Table 1) entry for 40 CFR 63.6(e) by re-designating it as 40 CFR 63.6(e)(1)(i) and changing the ''yes'' in column 3 to a ''no.'' Section 63.6(e)(1)(i) describes the general duty to minimize emissions. Some of the language in that section is no longer necessary or appropriate in light of the elimination of the SSM exemption. We are proposing instead to add general duty regulatory text at 40 CFR 63.860(d) that reflects the general duty to minimize emissions while eliminating the reference to periods covered by an SSM exemption. The current language in 40 CFR 63.6(e)(1)(i) characterizes what the general duty entails during periods of SSM. With the elimination of the SSM exemption, there is no need to differentiate between normal operations and SSM events in describing the general duty. Therefore, the language the EPA is proposing for 40 CFR 63.860(d) does not include that language from 40 CFR 63.6(e)(1).

We are also proposing to revise the General Provisions table (Table 1) to add an entry for 40 CFR 63.6(e)(1)(ii) and include a ''no'' in column 3. Section 63.6(e)(1)(ii) imposes requirements that are not necessary with the elimination of the SSM exemption or are redundant with the general duty requirement being added at 40 CFR 63.860(d).

b. SSM Plan

We are proposing to revise the General Provisions table (Table 1) to add an entry for 40 CFR 63.6(e)(3) and include a ''no'' in column 3. Generally, the paragraphs under 40 CFR 63.6(e)(3) require development of an SSM plan and specify SSM recordkeeping and reporting requirements related to the SSM plan. As noted, the EPA is proposing to remove the SSM exemptions. Therefore, affected units will be subject to an emission standard during such events. The applicability of a standard during such events will ensure that sources have ample incentive to plan for and achieve compliance and, thus, the SSM plan requirements are no longer necessary.

c. Compliance With Standards

We are proposing to revise the General Provisions table (Table 1) entries for 40 CFR 63.6(f) and (h) by re-designating these sections as 40 CFR 63.6(f)(1) and (h)(1) and including a ''no'' in column 3. The current language of 40 CFR 63.6(f)(1) and (h)(1) exempts sources from non-opacity and opacity standards during periods of SSM. As discussed above, the court in *Sierra Club* vacated the exemptions contained in this provision and held that the CAA requires that some CAA section 112 standard apply continuously. Consistent with *Sierra Club*, the EPA is proposing to revise standards in this rule to apply at all times.

d. Performance Testing

We are proposing to revise the General Provisions table (Table 1) entry for 40 CFR 63.7(e) by re-designating it as 40 CFR 63.7(e)(1) and including a ''no'' in column 3. Section 63.7(e)(1) describes performance testing requirements. The EPA is instead proposing to add a performance testing requirement at 40 CFR 63.865. The proposed performance testing provisions require testing under representative operating conditions, excluding periods of startup and shutdown. As in 40 CFR 63.7(e)(1), performance tests conducted under this subpart should not be conducted during malfunctions because conditions during malfunctions are often not representative of normal operating conditions. The EPA is proposing to add language that requires the owner or operator to record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation. Section 63.7(e) requires that the owner or operator make available to the Administrator such records ''as may be necessary to determine the condition of the performance test'' available to the Administrator upon request, but does not specifically require the information to be recorded. The regulatory text the EPA is proposing to add to this provision builds on that requirement and makes explicit the requirement to record the information.

e. Monitoring

We are proposing to revise the General Provisions table (Table 1) by re-designating 40 CFR 63.8(c) as 40 CFR 63.8(c)(1), adding entries for 40 CFR 63.8(c)(1)(i) through (iii) and including ''no'' in column 3 for paragraphs (i) and (iii). The cross-references to the general duty and SSM plan requirements in those subparagraphs are not necessary in light of other requirements of 40 CFR 63.8 that require good air pollution control practices (40 CFR 63.8(c)(1)) and that set out the requirements of a quality control program for monitoring equipment (40 CFR 63.8(d)).

We are also proposing to revise the General Provisions table (Table 1) by adding an entry for 40 CFR 63.8(d)(3) and including a ''no'' in column 3. The final sentence in 40 CFR 63.8(d)(3) refers to the General Provisions' SSM plan requirement which is no longer applicable. The EPA is proposing to add to the rule at 40 CFR 63.864(f) text that is identical to 40 CFR 63.8(d)(3) except that the final sentence is replaced with the following sentence: ''The program of corrective action should be included in the plan required under 40 CFR 63.8(d)(2).''

f. Recordkeeping

We are proposing to revise the General Provisions table (Table 1) by adding an entry for 40 CFR 63.10(b)(2)(i) and including a ''no'' in column 3. Section 63.10(b)(2)(i) describes the recordkeeping requirements during startup and shutdown. These recording provisions are no longer necessary because the EPA is proposing that recordkeeping and reporting applicable to normal operations will apply to startup and shutdown. Special provisions applicable to startup and shutdown, such as a startup and shutdown plan, have been removed from the rule (with exceptions discussed below) thereby reducing the need for additional recordkeeping for startup and shutdown periods.

Records of startup and shutdown periods are proposed to be required under 40 CFR 63.866(c)(8) to help characterize minor exceptions to reporting. The EPA is proposing no reporting of wet scrubber pressure drop or ESP secondary current (or total secondary power) during periods of startup and shutdown because it is not feasible to meet operating limits established under normal operation for these parameters during startup and shutdown. Instead, the EPA is proposing that wet scrubber liquid flow rate (or fan amperage) and ESP secondary voltage be monitored during startup and shutdown.

We are also proposing to revise the General Provisions table (Table 1) by adding an entry for 40 CFR 63.10(b)(2)(ii) and including a ''no'' in column 3. Section 63.10(b)(2)(ii) describes the recordkeeping requirements during a malfunction. The EPA is proposing to add such

requirements to 40 CFR 63.866(d). The regulatory text we are proposing to add differs from the General Provisions it is replacing in that the General Provisions requires the creation and retention of a record of the occurrence and duration of each malfunction of process, air pollution control, and monitoring equipment. The EPA is proposing that this requirement apply to any failure to meet an applicable standard and is requiring that the source record the date, time, and duration of the failure rather than the ''occurrence.'' The EPA is also proposing to add to 40 CFR 63.866(d) a requirement that sources keep records that include a list of the affected source or equipment and actions taken to minimize emissions, an estimate of the quantity of each regulated pollutant emitted over the emission limit for which the source failed to meet the standard, and a description of the method used to estimate the emissions. Examples of such methods would include product-loss calculations, mass balance calculations, measurements when available, or engineering judgment based on known process parameters. The EPA is proposing to require that sources keep records of this information to ensure that there is adequate information to allow the EPA to determine the severity of any failure to meet a standard, and to provide data that may document how the source met the general duty to minimize emissions when the source has failed to meet an applicable standard.

We are also proposing to revise the General Provisions table (Table 1) by adding an entry for 40 CFR 63.10(b)(2)(iv) and (v) and including a ''no'' in column 3. When applicable, the provision requires sources to record actions taken during SSM events when actions were inconsistent with their SSM plan. The requirement is no longer appropriate because SSM plans will no longer be required. The requirement previously applicable under 40 CFR 63.10(b)(2)(iv)(B) to record actions to minimize emissions and record corrective actions is now applicable by reference to 40 CFR 63.866(d).

We are also proposing to revise the General Provisions table (Table 1) by adding an entry for 40 CFR 63.10(c)(15) and including a ''no'' in column 3. The EPA is proposing that 40 CFR 63.10(c)(15) no longer apply. When applicable, the provision allows an owner or operator to use the affected source's SSM plan or records kept to satisfy the recordkeeping requirements of the SSM plan, specified in 40 CFR 63.6(e), to also satisfy the requirements of 40 CFR 63.10(c)(10) through (12). The EPA is proposing to eliminate this requirement because SSM plans would no longer be required, and, therefore, 40 CFR 63.10(c)(15) no longer serves any useful purpose for affected units.

g. Reporting

We are proposing to revise the General Provisions table (Table 1) entry for 40 CFR 63.10(d)(5) by re-designating it as 40 CFR 63.10(d)(5)(i) and changing the ''yes'' in column 3 to a ''no.'' Section 63.10(d)(5)(i) describes the periodic reporting requirements for startups, shutdowns, and malfunctions. To replace the General Provisions reporting requirement, the EPA is proposing to add reporting requirements to 40 CFR 63.867(c). The replacement language differs from the General Provisions requirement in that it eliminates periodic SSM reports as a stand-alone report. We are proposing language that requires sources that fail to meet an applicable standard at any time to report the information concerning such events in the semiannual report to be required under the proposed rule. We are proposing that the report must contain the number, date, time, duration, and the cause of such events (including unknown cause, if applicable), a list of the affected source or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, and a description of the method used to estimate the emissions.

Examples of such methods would include product-loss calculations, mass balance calculations, measurements when available, or engineering judgment based on known process parameters. The EPA is proposing this requirement to ensure that there is adequate information to determine compliance, to allow the EPA to determine the severity of the failure to meet an applicable standard, and to provide data that may document how the source met the general duty to minimize emissions during a failure to meet an applicable standard.

We will no longer require owners or operators to determine whether actions taken to correct a malfunction are consistent with an SSM plan, because plans would no longer be required. The proposed amendments, therefore, eliminate the cross reference to 40 CFR 63.10(d)(5)(i) that contains the description of the previously required SSM report format and submittal schedule from this section. These specifications are no longer necessary because the events will be reported in otherwise required reports with similar format and submittal requirements.

We are also proposing to revise the General Provisions table (Table 1) to add an entry for 40 CFR 63.10(d)(5)(ii) and include a ''no'' in column 3. Section 63.10(d)(5)(ii) describes an immediate report for startups, shutdown, and malfunctions when a source failed to meet an applicable standard, but did not follow the SSM plan. We will no longer require owners and operators to report when actions taken during a startup, shutdown, or malfunction were not consistent with an SSM plan, because plans would no longer be required.

2. 5-Year Periodic Emissions Testing

As part of an ongoing effort to improve compliance with various federal air emission regulations, the EPA reviewed the testing and monitoring requirements of 40 CFR part 63, subpart MM and is proposing the following change. The EPA is proposing to require facilities complying with the standards for chemical recovery combustion sources at kraft, soda, sulfite, and stand-alone semichemical pulp mills to conduct periodic air emissions performance testing, with the first of the periodic performance tests to be conducted within 3 years of the effective date of the revised standards and thereafter before the facilities renew their 40 CFR part 70 operating permits, but no longer than 5 years following the previous performance test. Periodic performance tests are already required by permitting authorities for some facilities. Further, the EPA believes that requiring periodic performance tests will help to ensure that control systems are properly maintained over time, thereby reducing the potential for acute emissions episodes. This proposal would require periodic air emissions testing for filterable PM once every 5 years for existing and new kraft and soda recovery furnaces, SDTs, and lime kilns and sulfite combustion units. In addition, this proposal would require air emissions testing for methanol once every 5 years for new kraft and soda recovery furnaces. This proposal would also require periodic air emissions testing for THC for existing and new semichemical combustion units.

3. Continuous Parameter Monitoring System (CPMS) Operating Limits

We are proposing to specify procedures for establishing operating limits based on data recorded by CPMS. The 40 CFR part 63, subpart MM emission standards are comprised of numerical emission limits, with compliance demonstrated through periodic performance tests, and operating limits such as opacity limits or continuously monitored parameter limits used to demonstrate ongoing compliance in between performance

tests. Currently, the subpart MM regulatory text refers extensively to operating parameter ranges and is not as specific as more recent NESHAPs in specifying how operating limits are to be determined. Therefore, we are proposing language to clarify the procedures for establishing parameter limits.

As noted previously, we are proposing ESP parameter monitoring requirements for recovery furnaces and lime kilns with ESPs or combined ESP and wet scrubber controls. This proposal would require ESP parameters be recorded at least once every successive 15-minute period, and the recorded readings be reduced to semiannual averages for ESPs (i.e., where opacity monitoring requirements also apply) or 3-hour averages for ESPs followed by a wet scrubber. Similarly, this proposal would require wet scrubber parameters, including pressure drop across the scrubber (or fan amperage for certain SDT scrubbers) and scrubbing liquid flow rate, be recorded at least every 15-minutes and reduced to 3-hour averages. This proposal would require RTO temperature be recorded every 15 minutes and reduced to a 1-hour average for purposes of assessing when corrective action is required under 40 CFR 63.864(k)(1), and reduced to a 3-hour average under 40 CFR 63.864(k)(2) for purposes of assessing violations.

We are proposing that the ESP and wet scrubber operating limits be established as the average of the parameter values associated with each performance test run. For example, the proposal would require the recorded readings during each test run be averaged to arrive at the parameter value associated with three test runs, and the three values be averaged to arrive at the operating limit. The proposal would require these revised procedures be used beginning with the first periodic performance test proposed to be required under 40 CFR 63.865. Wet scrubbers and ESPs have minimum operating limits, such that the EPA would consider 3-hour average values below the minimum operating limit to be a monitoring exceedance to be reported under 40 CFR 63.867(c). Also, in the spirit of ensuring continuous compliance, we are proposing to eliminate the language in 40 CFR 63.864(k)(3) that allowed no more than one non-opacity monitoring exceedance to be attributed to any 24-hour period.

4. Reporting Frequency

Subpart MM of 40 CFR part 63 currently requires owners and operators of subpart MM facilities to submit quarterly excess emissions reports for monitoring exceedances and periods of noncompliance and semiannual reports when no excess emissions have occurred during the reporting period. These excess emission reports are typically submitted as a hard copy to the delegated authority, and reports in this form usually are not readily available for the EPA and public to analyze. The Agency is proposing that semiannual electronic reporting would provide ample data to assess a facility's performance with regard to the emission standards in subpart MM. The EPA is proposing that all excess emissions reports be submitted on a semiannual basis, to conform to the semiannual reporting frequency employed by the electronic reporting system discussed in the following section. The EPA requests comment on maintaining quarterly reporting for reports of monitoring exceedances and periods of noncompliance.

5. Electronic Reporting

The EPA is proposing that owners and operators of 40 CFR part 63, subpart MM facilities submit electronic copies of compliance reports, which include performance test reports, semiannual reports, and notifications, through the EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI). Specifically, we are proposing that owners and operators submit performance test reports through the Electronic Reporting Tool (ERT) and submit notifications and semiannual reports through CEDRI. The EPA believes that the electronic submittal of the reports addressed in this proposed rulemaking will increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability, will further assist in the protection of public health and the environment, and will ultimately result in less burden on the regulated community. Under current requirements, paper reports are often stored in filing cabinets or boxes, which make the reports more difficult to obtain and use for data analysis and sharing. Electronic storage of such reports would make data more accessible for review, analyses, and sharing. Electronic reporting can also eliminate paper-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.

In 2011, in response to Executive Order 13563, the EPA developed a plan [41] to periodically review its regulations to determine if they should be modified, streamlined, expanded, or repealed in an effort to make regulations more effective and less burdensome. The plan includes replacing outdated paper reporting with electronic reporting. In keeping with this plan and the White House's Digital Government Strategy,[42] in 2013 the EPA issued an agency-wide policy specifying that new regulations will require reports to be electronic to the maximum extent possible. By requiring electronic submission of specified reports in this proposed rule, the EPA is taking steps to implement this policy.

The EPA Web site that stores the submitted electronic data, WebFIRE, will be easily accessible to everyone and will provide a user-friendly interface that any stakeholder could access. By making data readily available, electronic reporting increases the amount of data that can be used for many purposes. One example is the development of emissions factors. An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant (e.g., kilograms of particulate emitted per megagram of coal burned). Such factors facilitate the estimation of emissions from various sources of air pollution and are an important tool in developing emissions inventories, which in turn are the basis for numerous efforts, including trends analysis, regional, and local scale air quality modeling, regulatory impact assessments, and human exposure modeling. Emissions factors are also widely used in regulatory applicability determinations and in permitting decisions.

The EPA has received feedback from stakeholders asserting that many of the EPA's emissions factors are outdated or not representative of a particular industry emission source. While the EPA believes that the emissions factors are suitable for their intended purpose, we recognize that the quality of emissions factors varies based on the extent and quality of underlying data. We also recognize that emissions profiles on different pieces of equipment can change over time due to

[41] *Improving Our Regulations: Final Plan for Periodic Retrospective Reviews of Existing Regulations,* August 2011. Available at *https://www.epa.gov/sites/roduction/files/2015-09-/documents/eparetroreviewplan-aug2011_0.pdf.*

[42] *Digital Government: Buildiing a 21st Century Platform to Better Serve the American People,* May 2012. Available at *http://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy/pdf.*

a number of factors (fuel changes, equipment improvements, industry work practices), and it is important for emissions factors to be updated to keep up with these changes. The EPA is currently pursuing emissions factor development improvements that include procedures to incorporate the source test data that we are proposing be submitted electronically. By requiring the electronic submission of the reports identified in this proposed action, the EPA would be able to access and use the submitted data to update emissions factors more quickly and efficiently, creating factors that are characteristic of what is currently representative of the relevant industry sector. Likewise, an increase in the number of test reports used to develop the emissions factors will provide more confidence that the factor is of higher quality and representative of the whole industry sector.

Additionally, by making the records, data and reports addressed in this proposed rulemaking readily available, the EPA, the regulated community and the public will benefit when the EPA conducts periodic reviews of its rules. As a result of having performance test reports and air emission reports readily accessible, our ability to carry out comprehensive reviews will be increased and achieved within a shorter period of time. These data will provide useful information on control efficiencies being achieved and maintained in practice within a source category and across source categories for regulated sources and pollutants. These reports can also be used to inform the technology-review process by providing information on improvements to add-on control technology and new control technology.

Under an electronic reporting system, the EPA's Office of Air Quality Planning and Standards (OAQPS) would have air emissions and performance test data in hand; OAQPS would not have to collect these data from the EPA Regional offices or from delegated authorities or industry sources in cases where these reports are not submitted to the EPA Regional offices. Thus, we anticipate fewer or less substantial ICRs in conjunction with prospective CAA-required technology and risk-based reviews may be needed. We expect this to result in a decrease in time spent by industry to respond to data collection requests. We also expect the ICRs to contain less extensive stack testing provisions, as we will already have stack test data electronically. Reduced testing requirements would be a cost savings to industry. The EPA should also be able to conduct these required reviews more quickly, as OAQPS will not have to include the ICR collection time in the process or spend time collecting reports from the EPA Regional Offices. While the regulated community may benefit from a reduced burden of ICRs, the general public benefits from the Agency's ability to provide these required reviews more quickly, resulting in increased public health and environmental protection.

Electronic reporting could minimize submission of unnecessary or duplicative reports in cases where facilities report to multiple government agencies and the agencies opt to rely on the EPA's electronic reporting system to view report submissions. Where delegated authorities continue to require a paper copy of these reports and will accept a hard copy of the electronic report, facilities will have the option to print paper copies of the electronic reporting forms to submit to the delegated authorities, and, thus, minimize the time spent reporting to multiple agencies. Additionally, maintenance and storage costs associated with retaining paper records could likewise be minimized by replacing those records with electronic records of electronically submitted data and reports.

Delegated authorities could benefit from more streamlined and automated review of the electronically submitted data. For example, because the performance test data would be readily-available in a standard electronic format, delegated authorities would be able to review reports and data electronically rather than having to conduct a review of the reports and data manually. Having reports and associated data in electronic format will facilitate review through the use of software ''search'' options, as well as the downloading and analyzing of data in spreadsheet format. Additionally, delegated authorities would benefit from the reported data being accessible to them through the EPA's electronic reporting system wherever and whenever they want or need access (as long as they have access to the Internet). The ability to access and review air emission report information electronically will assist delegated authorities to more quickly and accurately determine compliance with the applicable regulations, potentially allowing a faster response to violations which could minimize harmful air emissions. This benefits both delegated authorities and the general public.

The proposed electronic reporting of data is consistent with electronic data trends (*e.g.,* electronic banking and income tax filing). Electronic reporting of environmental data is already common practice in many media offices at the EPA. The changes being proposed in this rulemaking are needed to continue the EPA's transition to electronic reporting.

As noted above, we are proposing that 40 CFR part 63, subpart MM performance test reports be submitted through the EPA's ERT. All of the test methods listed under subpart MM are currently supported by the ERT, with the exception of Method 308 in 40 CFR part 63, appendix A. The proposal would require that performance test results collected using test methods that are not supported by the ERT as listed on the EPA's ERT Web site at the time of the test be submitted in portable document format (PDF) using the attachment module of the ERT.

In addition to electronically reporting the results of performance tests, we are proposing the requirement to electronically submit notifications and the semiannual excess emissions report and/or summary report required in 40 CFR 63.867. The proposal would require the owner or operator use the appropriate electronic form or spreadsheet template in CEDRI for the subpart or an alternate electronic file format consistent with the form's extensible markup language (XML) schema. If neither the reporting form nor the spreadsheet template specific to the subpart are available at the time that the report is due, the owner or operator would upload an electronic copy of the report in CEDRI. The owner or operator would begin submitting reports electronically using the reporting form or spreadsheet template with the next report that is due, once the electronic form or template has been available for at least 90 days. The EPA is currently working to develop the forms and a spreadsheet template for subpart MM. We are specifically taking comment on the content, layout, and overall design of the forms and spreadsheet template, which are discussed in a memorandum in the docket titled *Electronic Reporting for Subpart MM Excess Emission Reports.*

As part of this review, we have specified in 40 CFR 63.867 the reporting requirements from the 40 CFR part 63 General Provisions for the excess emissions and summary reports. We believe that specifying the General Provision reporting requirements for the proposed semiannual reports in 40 CFR part 63, subpart MM, will help eliminate confusion as to which report is submitted (*e.g.*, full excess emissions report or summary report) and the content of the required report. Based on the criteria specified in the General Provisions, subpart MM requires a full

excess emissions report under any of the following three conditions: (1) The total duration of monitoring exceedances is one percent or more of the total reporting period operating time, or (2) the total continuous monitoring system (CMS) downtime is five percent or more of the total reporting period operating time, or (3) any violations according to 40 CFR 63.864(k)(2) occurred. Subpart MM requires only an abbreviated summary report when none of the three conditions apply for the semiannual reporting period.

As stated in 40 CFR 63.867(a), the proposal also requires that notifications be reported electronically though CEDRI. Currently, there are no templates for notifications in CEDRI for this subpart. Therefore, the owner or operator must submit their notifications in PDF. Examples of such notifications include (but are not limited to) the following: Initial notifications, notifications of compliance status, notifications of a performance test, notifications of CMS performance evaluation, and notifications of opacity and visible emissions observations.

6. Incorporation by Reference Under 1 CFR part 51

The EPA is proposing regulatory text that includes incorporation by reference (IBR). In accordance with requirements of 1 CFR 51.5, the EPA is proposing to incorporate by reference the following document described in the amendments to 40 CFR 63.14:

- EPA–454/R–98–015, Office of Air Quality Planning and Standards (OAQPS), Fabric Filter Bag Leak Detection Guidance, September 1997, IBR approved for 40 CFR 63.864(e).

This document provides guidance on the use of triboelectric monitors as fabric filter bag leak detectors. The document includes fabric filter and monitoring system descriptions; guidance on monitor selection, installation, setup, adjustment, and operation; and quality assurance procedures. The EPA has made, and will continue to make, this document generally available electronically through *http://www.regulations.gov* and/or in hard copy at the appropriate EPA office (see the **ADDRESSES** section of this preamble for more information). In addition, this document is available on the EPA Technical Air Pollution Resources Emission Measurement Center Web page (*https://www.epa.gov/emc*) under Continuous Emission Monitoring.

7. Technical and Editorial Changes

The following lists additional changes that address technical and editorial corrections:

- Made revisions throughout 40 CFR part 63, subpart MM, to clarify the location in 40 CFR part 60 of applicable EPA test methods;
- Made revisions throughout 40 CFR part 63, subpart MM, to update the facility name for Cosmo Specialty Fibers;
- Revised the definitions section in 40 CFR 63.861 to:
  - Remove the definition for ''black liquor gasification'' and remove reference to black liquor gasification in the definitions for ''kraft recovery furnace,'' ''recovery furnace,'' ''semichemical combustion unit,'' and ''soda recovery furnace'';
  - Remove the SSM exemption from the definition for ''modification'';
  - Clarify that the definition for ''particulate matter'' refers to filterable PM;
  - Removed reference to use of one-half of the method detection limit for non-detect Method 29 measurements within the definition of ''hazardous air pollutant (HAP) metals'' because the full detection limit in emission measurements is now typically used for compliance determination in NESHAPs, with the limited exception of TEQ determination for dioxins and furans; and
  - Remove the definition for ''startup'' that pertains to the former black liquor gasification system at Georgia-Pacific's facility in Big Island, Virginia.
- Corrected misspelling in 40 CFR 63.862(c).
- Revised multiple sections (40 CFR 63.863, 63.866, and 63.867) to remove reference to the former smelters and former black liquor gasification system at Georgia-Pacific's facility in Big Island, Virginia.
- Revised the monitoring requirements section in 40 CFR 63.864 to:
  - Add reference to Performance Specification 1 (PS–1) in COMS monitoring provisions;
  - Add IBR for bag leak detection systems;
  - Specify written procedures for CMS recording frequency and reducing data into averages; and
  - Clarify ongoing compliance provisions to address startup and shutdown periods when certain parameters cannot be met.
- Revised the performance test requirements section in 40 CFR 63.865 to specify the conditions for conducting performance tests and to revise the ambient O_2 concentration in Equations 7 and 8 from 21 percent to 20.9 percent to bring 40 CFR part 63, subpart MM, in line with the rest of the NESHAPs.
- Revised the recordkeeping requirements section in 40 CFR 63.866 to include the requirement to record information on failures to meet the applicable standard.
- Revised the terminology in the delegation of authority section in 40 CFR 63.868 to match the definitions in 40 CFR 63.90.
- Revised the General Provisions applicability table (Table 1 to subpart MM of part 63) to align with those sections of the General Provisions that have been amended or reserved over time.

E. What compliance dates are we proposing?

The compliance date for the revisions we are proposing here is 1 year after the date of publication of the final rule in the **Federal Register**, with the exception of the following: (1) Facilities must conduct the first of the 5-year periodic performance tests within 3 years of the effective date of the standards (that is, the date 3 years after the date of publication of the final rule in the **Federal Register**), and must conduct the subsequent periodic performance tests before renewing the facility's 40 CFR part 70 operating permit, but no longer than 5 years following the previous performance test; and (2) facilities must submit performance test data through the ERT within 60 days after the date of completing each performance test.

V. Summary of Cost, Environmental, and Economic Impacts

A. What are the affected sources?

There are currently 108 major source pulp and paper mills operating in the United States that conduct chemical recovery combustion operations, including 97 kraft pulp mills, 1 soda pulp mill, 3 sulfite pulp mills, and 7 stand-alone semichemical pulp mills. The 40 CFR part 63, subpart MM, affected source regulated at kraft or soda pulp mills is each existing chemical recovery system, defined as all existing DCE and NDCE recovery furnaces, SDTs, and lime kilns. The DCE recovery furnace system is defined as the DCE recovery furnace and any BLO system, if present, at the pulp mill. New affected sources at kraft or soda pulp mills include each new NDCE or DCE recovery furnace and associated SDT, and each new lime kiln. Subpart MM affected sources also include each new or existing chemical recovery combustion unit located at a sulfite pulp

mill or at a stand-alone semichemical pulp mill.

B. What are the air quality impacts?

At the current level of control, emissions of HAPs (HAP metals, acid gases, and gaseous organic HAP) are approximately 11,600 tpy. Current emissions of PM (a surrogate pollutant for HAP metals) and TRS (emitted by the same mechanism as gaseous organic HAP) are approximately 23,200 tpy and 3,600 tpy, respectively.

The proposed amendments will require an estimated 108 mills to conduct periodic testing for their chemical recovery combustion operations, 96 mills equipped with ESP controls to meet more stringent opacity limits and monitoring allowances and conduct ESP parameter monitoring, and all 108 major sources with equipment subject to the 40 CFR part 63, subpart MM standards to operate without the SSM exemption. The EPA estimates that the proposed changes to the opacity limits and monitoring allowances will reduce PM emissions by approximately 235 tpy and $PM_{2.5}$ emissions by approximately 112 tpy. We were unable to quantify the specific emissions reductions associated with periodic emissions testing or eliminating the SSM exemption, and we expect no emissions reductions with ESP parameter monitoring. However, periodic testing will tend to reduce emissions by providing incentive for facilities to maintain their control systems and make periodic adjustments to ensure peak performance. Eliminating the SSM exemption will reduce emissions by requiring facilities to meet the applicable standard during SSM periods.

Indirect or secondary air emissions impacts are impacts that would result from the increased electricity usage associated with the operation of control devices (i.e., increased secondary emissions of criteria pollutants from power plants). Energy impacts consist of the electricity and steam needed to operate control devices and other equipment that would be required under this proposed rule. The EPA estimates that the proposed changes to the opacity limits and monitoring allowances will result in energy impacts of 106,000 million British thermal units per year and criteria pollutant emissions of 29 tpy (which includes PM, carbon monoxide, nitrogen oxides, and sulfur dioxide). The EPA expects no secondary air emissions impacts or energy impacts from the other proposed requirements.

Section IV.C of this preamble presents estimates of the air quality impacts associated with the regulatory options that were not selected for inclusion in this proposed rule. For further information, see the memorandum titled, Costs/Impacts of the *Subpart MM Residual Risk and Technology Review*, in the docket for this action.

C. What are the cost impacts?

Subpart MM of 40 CFR part 63 mills will incur costs to meet more stringent opacity limits and monitoring allowances, conduct periodic testing, and perform new ESP parameter monitoring. Costs associated with elimination of the startup and shutdown exemption were estimated as part of the reporting and recordkeeping costs and include time for re-evaluating previously developed SSM record systems. The EPA estimates the nationwide capital costs associated with the new testing and monitoring requirements to be $48 million. The EPA estimates the total nationwide annualized costs associated with these new requirements to be $13 million per year. Section IV.C of this preamble presents cost estimates associated with the regulatory options that were not selected for inclusion in this rule. For further information, see the memorandum titled *Costs/Impacts of the Subpart MM Residual Risk and Technology Review,* in the docket for this action.

D. What are the economic impacts?

The economic impact analysis is designed to inform decision makers about the potential economic consequences of a regulatory action. For the current proposal, the EPA performed a partial-equilibrium analysis of national pulp and paper product markets to estimate potential paper product market and consumer and producer welfare impacts of the proposed regulatory options.

Across proposed regulatory options, the EPA estimates market-level changes in the paper and paperboard markets to be insignificant. For the proposed option, the EPA predicts national-level weighted average paper and paperboard prices to increase about 0.01 percent, but predicts total quantities to decrease less than 0.01 percent.

In addition, the EPA performed a screening analysis for impacts on small businesses by comparing estimated annualized engineering compliance costs at the firm-level to firm sales. The screening analysis found that the ratio of compliance cost to firm revenue falls below 1-percent for the three small companies likely to be affected by the proposal. For small firms, the minimum and maximum cost-to-sales ratios are less than 1 percent.

More information and details of this analysis is provided in the technical document titled *Economic Impact Analysis for Proposed Revisions to the National Emissions Standards for Hazardous Air Pollutants, Subpart MM, for the Pulp and Paper Industry*, which is available in the docket for this proposed rule (Docket ID No. EPA–HQ–OAR–2014–0741).

E. What are the benefits?

The EPA estimates the proposed changes to the opacity limits and monitoring allowances at the 16 impacted mills will reduce PM emissions by approximately 235 tpy and $PM_{2.5}$ emissions by approximately 112 tpy. Because these proposed amendments are not considered economically significant, as defined by Executive Order 12866, we did not monetize the benefits of reducing these emissions. This does not mean that there are no benefits associated with the reduction in metal HAPs from this rule. We expect that these avoided emissions will reduce health effects associated with exposure to air pollution, and we provide below a qualitative description of benefits associated with reducing $PM_{2.5}$. In addition, we anticipate the specific control technologies associated with these proposed amendments will result in minor disbenefits from additional energy consumption.

Directly emitted particles are precursors to secondary formation of $PM_{2.5}$. Controls installed to reduce HAP emissions would also reduce ambient concentrations of $PM_{2.5}$. Reducing exposure to $PM_{2.5}$ is associated with significant human health benefits, including avoiding mortality and morbidity from cardiovascular and respiratory illnesses. Researchers have associated $PM_{2.5}$ exposure with adverse health effects in numerous toxicological, clinical, and epidemiological studies (U.S. EPA, 2009).[43] When adequate data and resources are available and a regulatory impact analysis is required, the EPA generally quantifies several health effects associated with exposure to $PM_{2.5}$ (*e.g.*, U.S. EPA, 2012).[44] These

[43] U.S. Environmental Protection agency (U.S. EPA). 2009. *Integrated Science Assessment for Particulate Matter (Final Report).* EPA–600–R–08–139F. National Center for Environmental Assessment—RTP Division. Available on the Internet at *https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=216546.*

[44] U.S. Environmental Protection Agency (U.S. EPA). 2012. *Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter.* Office of Air and Radiation, Research Triange Park, NC. Available on the Internet at *https://www3.epa.gov/thn/ecas/regdata/RIAs/finalria.pdf* and *https://www3.epa.gov/ttnecas1/regdata/RIAs/PMRIACombinedFile_Bookmarked.pdf.*

health effects include premature mortality for adults and infants, cardiovascular morbidities such as heart attacks, hospital admissions, and respiratory morbidities such as asthma attacks, acute bronchitis, hospital and emergency department visits, work loss days, restricted activity days, and respiratory symptoms. The scientific literature also suggests that exposure to $PM_{2.5}$ is associated with adverse effects on birth weight, pre-term births, pulmonary function, and other cardiovascular and respiratory effects (U.S. EPA, 2009), but the EPA has not quantified these impacts in its benefits analyses.

VI. Request for Comments

We solicit comments on all aspects of 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.

VII. Submitting Data Corrections

The site-specific emissions profiles used in the source category risk and demographic analyses and instructions are available for download on the RTR Web site at: *http://www3.epa.gov/ttn/atw/rrisk/rtrpg.html.* 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 Web site, complete the following steps:

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

2. Fill in the commenter information fields for each suggested revision (*i.e.*, commenter name, commenter organization, commenter email address, commenter phone number, and revision comments).

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

4. Send the entire downloaded file with suggested revisions in Microsoft® Access format and all accompanying documentation to Docket ID No. EPA–HQ–OAR–2014–0741 (through one of the methods described in the **ADDRESSES** section of this preamble).

5. 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. We request that all data revision comments be submitted in the form of updated Microsoft® Excel files that are generated by the Microsoft® Access file. These files are provided on the RTR Web site at: *http://www3.epa.gov/ttn/atw/rrisk/rtrpg.html.*

VIII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *http://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 was therefore not submitted to OMB for review.

B. Paperwork Reduction Act (PRA)

The information collection activities in this proposed rule have been submitted for approval to OMB under the PRA. The ICR document that the EPA prepared has been assigned EPA ICR number 1805.08. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here.

The information collection requirements are not enforceable until OMB approves them. The information requirements are based on notification, recordkeeping, and reporting requirements in the NESHAP General Provisions (40 CFR part 63, subpart A), which are essential in determining compliance and mandatory for all operators subject to national emissions standards. These recordkeeping and reporting requirements are specifically authorized by CAA section 114 (42 U.S.C. 7414). All information submitted to the EPA pursuant to the recordkeeping and reporting requirements for which a claim of confidentiality is made is safeguarded according to Agency policies set forth in 40 CFR part 2, subpart B.

We are proposing changes to the paperwork requirements for 40 CFR part 63, subpart MM, in the form of eliminating the SSM reporting and SSM plan requirements, adding periodic emissions testing for selected process equipment, revising opacity monitoring provisions, adding parameter monitoring for ESPs, changing the frequency of all excess emissions reports to semiannual, and requiring electronic submittal of all compliance reports (including performance test reports).

Respondents/affected entities: Respondents include chemical pulp mills operating equipment subject to 40 CFR part 63, subpart MM.

Respondent's obligation to respond: Mandatory (authorized by section 114 of the CAA).

Estimated number of respondents: 108.

Frequency of response: The frequency of responses varies depending on the burden item. Responses include initial notifications, reports of periodic performance tests, and semiannual compliance reports.

Total estimated burden: The annual recordkeeping and reporting burden for this information collection, averaged over the first 3 years of this ICR, is estimated to total 139,600 labor hours per year. Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: $17.7 million per year, including $14.4 million per year in labor costs and $3.29 million per year in annualized capital and operation and maintenance costs.

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

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 rule. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to *OIRA_submission@omb.eop.gov*, Attention: Desk Officer for the EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than January 30, 2017. The EPA will respond to any ICR-related comments in the final rule.

C. 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. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule. The EPA estimates that all affected small entities will have annualized costs of less than 1 percent of their sales. We have, therefore, concluded that this action will have no net regulatory burden for all directly regulated small entities. For more information on the small entity impacts associated with this proposed rule, please refer to the Economic Impact and Small Business Analyses in the public docket.

D. Unfunded Mandates Reform Act (UMRA)

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. The action imposes no enforceable duty on any state, local, or tribal governments or the private sector.

E. 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 national government and the states, or on the distribution of power and responsibilities among the various levels of government.

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

This action does not have tribal implications as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments, 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. This rule imposes requirements on owners and operators of kraft, soda, sulfite, and stand-alone semichemical pulp mills and not tribal governments. The EPA does not know of any pulp mills owned or operated by Indian tribal governments, or located within tribal lands. However, if there are any, the effect of this rule on communities of tribal governments would not be unique or disproportionate to the effect on other communities. Thus, Executive Order 13175 does not apply to this action.

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

This action is not subject to Executive Order 13045 because it is not economically significant as defined in 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. This action's health and risk assessments are contained in sections III and IV of this preamble and further documented in the risk report, titled *Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the December 2016 Risk and Technology Review Proposed Rule*, in the docket for this action.

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

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR part 51

This action involves technical standards. While the EPA identified ASTM D6784–02 (Reapproved 2008), ''Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)'' as being potentially applicable, the Agency does not propose to use it. The use of this voluntary consensus standard would be impractical because this standard is only acceptable as an alternative to the portion of Method 29 for mercury, and mercury is not regulated under 40 CFR part 63, subpart MM.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action will not have potential disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). The documentation for this decision is contained in section IV.B of this preamble and the technical report titled *Risk and Technology Review—Analysis of Socio-Economic Factors for Populations Living Near Pulp Mill Combustion Sources*, which is located in the public docket for this action.

We examined the potential for any EJ issues that might be associated with the source category, by performing a demographic analysis of the population close to the facilities. In this analysis, we evaluated the distribution of HAP-related cancer and non-cancer risks from the 40 CFR part 63, subpart MM source category across different social, demographic, and economic groups within the populations living near facilities identified as having the highest risks. The methodology and the results of the demographic analyses are included in a technical report, *Risk and Technology Review—Analysis of Socio-Economic Factors for Populations Living Near Pulp Mill Combustion Sources*, available in the docket for this action.

The results of the 40 CFR part 63, subpart MM source category demographic analysis indicate that emissions from the source category expose approximately 7,600 people to a cancer risk at or above 1-in-1 million and no one exposed to a chronic non-cancer TOSHI greater than 1. The specific demographic results indicate that the percentage of the population potentially impacted by emissions is greater than its corresponding national percentage for the minority population (33 percent for the source category compared to 28 percent nationwide), the African American population (28 percent for the source category compared to 13 percent nationwide) and for the population over age 25 without a high school diploma (18 percent for the source category compared to 15 percent nationwide). The proximity results (irrespective of risk) indicate that the population percentages for certain demographic categories within 5 km of source category emissions are greater than the corresponding national percentage for those same demographics. The following demographic percentages for populations residing within close proximity to facilities with pulp mill combustion sources are higher than the corresponding nationwide percentage: African American, ages 65 and up, over age 25 without a high school diploma, and below the poverty level.

The risks due to HAP emissions from this source category are low for all populations (*e.g.*, inhalation cancer risks are less than 4-in-1 million for all populations and non-cancer hazard indices are less than 1). Furthermore, we do not expect this proposal to

achieve significant reductions in HAP emissions. Therefore, we conclude that this proposal will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it does not affect the level of protection provided to human health or the environment. However, this proposal, if finalized, will provide additional benefits to these demographic groups by improving the compliance, monitoring, and implementation of the NESHAP.

List of Subjects in 40 CFR Part 63

Environmental protection, Administrative practice and procedure, Air pollution control, Hazardous substances, Incorporation by reference, Intergovernmental relations, Pulp and paper mills, Reporting and recordkeeping requirements.

Dated: December 13, 2016.

Gina McCarthy,

Administrator.

For the reasons set out in the preamble, title 40, chapter I, part 63 of the Code of Federal Regulations is proposed to be amended as follows:

PART 63—[AMENDED]

■ 1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 et seq.

Subpart A—[Amended]

■ 2. Section 63.14 is amended by revising paragraph (m)(3) to read as follows:

§ 63.14 Incorporations by reference.

* * * * *

(m) * * *

(3) EPA–454/R–98–015, Office of Air Quality Planning and Standards (OAQPS), Fabric Filter Bag Leak Detection Guidance, September 1997, IBR approved for §§ 63.548(e), 63.864(e), 63.7525(j), 63.8450(e), 63.8600(e), and 63.11224(f).

Subpart MM—[Amended]

■ 3. Section 63.860 is amended by revising paragraphs (b)(5) and (7) and adding paragraph (d) to read as follows:

§ 63.860 Applicability and designation of affected source.

* * * * *

(b) * * *

(5) Each new or existing sulfite combustion unit located at a sulfite pulp mill, except such existing units at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. AP–10).

* * * * *

(7) The requirements of the alternative standard in § 63.862(d) apply to the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14).

* * * * *

(d) At all times, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved. Determination of whether a source is operating in compliance with operation and maintenance requirements will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

■ 4. Section 63.861 is amended by:

■ a. Removing the definitions for ''Black liquor gasification'' and ''Startup'';

■ b. Revising the definitions for ''Hazardous air pollutants (HAP) metals,'' ''Hog fuel dryer,'' ''Kraft recovery furnace,'' ''Modification,'' ''Particulate matter (PM),'' ''Recovery furnace,'' ''Semichemical combustion unit,'' ''Soda recovery furnace,'' and ''Total hydrocarbons (THC).''

The revisions read as follows:

§ 63.861 Definitions.

* * * * *

Hazardous air pollutants (HAP) metals means the sum of all emissions of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, and selenium as measured by EPA Method 29 (40 CFR part 60, appendix A–8).

Hog fuel dryer means the equipment that combusts fine particles of wood waste (hog fuel) in a fluidized bed and directs the heated exhaust stream to a rotary dryer containing wet hog fuel to be dried prior to combustion in the hog fuel boiler at Cosmo Specialty Fibers' Cosmopolis, Washington facility. The hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility is Emission Unit no. HD–14.

* * * * *

Kraft recovery furnace means a recovery furnace that is used to burn black liquor produced by the kraft pulping process, as well as any recovery furnace that burns black liquor produced from both the kraft and semichemical pulping processes, and includes the direct contact evaporator, if applicable.

* * * * *

Modification means, for the purposes of § 63.862(a)(1)(ii)(E)(1), any physical change (excluding any routine part replacement or maintenance) or operational change that is made to the air pollution control device that could result in an increase in PM emissions.

* * * * *

Particulate matter (PM) means total filterable particulate matter as measured by EPA Method 5 (40 CFR part 60, appendix A–3), EPA Method 17 (§ 63.865(b)(1)) (40 CFR part 60, appendix A–6), or EPA Method 29 (40 CFR part 60, appendix A–8).

* * * * *

Recovery furnace means an enclosed combustion device where concentrated black liquor produced by the kraft or soda pulping process is burned to recover pulping chemicals and produce steam.

* * * * *

Semichemical combustion unit means any equipment used to combust or pyrolyze black liquor at stand-alone semichemical pulp mills for the purpose of chemical recovery.

* * * * *

Soda recovery furnace means a recovery furnace used to burn black liquor produced by the soda pulping process and includes the direct contact evaporator, if applicable.

* * * * *

Total hydrocarbons (THC) means the sum of organic compounds measured as carbon using EPA Method 25A (40 CFR part 60, appendix A–7).

■ 5. Section 63.862 is amended by revising paragraphs (c)(1) and (d) to read as follows:

§ 63.862 Standards.

* * * * *

(c) *Standards for gaseous organic HAP.* (1) The owner or operator of any new recovery furnace at a kraft or soda pulp mill must ensure that the concentration or gaseous organic HAP, as measured by methanol, discharged to the atmosphere is no greater than 0.012 kg/Mg (0.025 lb/ton) of black liquor solids fired.

* * * * *

(d) *Alternative standard.* As an alternative to meeting the requirements of paragraph (a)(2) of this section, the owner or operator of the existing hog

fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14) must ensure that the mass of PM in the exhaust gases discharged to the atmosphere from the hog fuel dryer is less than or equal to 4.535 kilograms per hour (kg/hr) (10.0 pounds per hour (lb/hr)).

■ 6. Section 63.863 is amended by revising paragraph (c) to read as follows:

§ 63.863 Compliance dates.

* * * * *

(c) The owner or operator of an existing or new affected source or process unit must comply with the revised requirements published on [insert date of publication of final rule in the **Federal Register**] no later than [insert date 1 year after date of publication of final rule in the **Federal Register**], with the exception of the following:

(1) The first of the 5-year periodic performance tests must be conducted within 3 years of the effective date of the revised standards, by [insert date 3 years after date of publication of final rule in the **Federal Register**], and thereafter before renewing the facility's 40 CFR part 70 operating permit, but no longer than 5 years following the previous performance test; and

(2) The date to submit performance test data through the ERT is within 60 days after the date of completing each performance test.

■ 7. Section 63.864 is revised to read as follows:

§ 63.864 Monitoring requirements.

(a)–(c) [Reserved]

(d) *Continuous opacity monitoring system (COMS).* The owner or operator of each affected kraft or soda recovery furnace or lime kiln equipped with an ESP must install, calibrate, maintain, and operate a COMS in accordance with Performance Specification 1 (PS–1) in appendix B to 40 CFR part 60 and the provisions in §§ 63.6(h) and 63.8 and paragraphs (d)(1) through (5) of this section.

(1)–(2) [Reserved]

(3) As specified in § 63.8(c)(4)(i), each COMS must complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(4) As specified in § 63.8(g)(2), each 6-minute COMS data average must be calculated as the average of 36 or more data points, equally spaced over each 6-minute period.

(5) As specified in § 63.8(g)(4), each 6-minute COMS data average should be rounded to the nearest 1-percent opacity.

(e) *Continuous parameter monitoring system (CPMS).* For each CPMS required in this section, the owner or operator of each affected source or process unit must meet the requirements in paragraphs (e)(1) through (14) of this section.

(1) For any kraft or soda recovery furnace or lime kiln using an ESP emission control device, the owner or operator must use the continuous parameter monitoring devices specified in paragraphs (e)(1)(i) and (ii) of this section to determine and record parameters at least once every successive 15-minute period.

(i) A monitoring device for the continuous measurement of the secondary voltage of each ESP collection field.

(ii) A monitoring device for the continuous measurement of the secondary current of each ESP collection field.

(iii) Total secondary power may be calculated as the product of the secondary voltage and secondary current measurements for each ESP collection field and used to demonstrate compliance as an alternative to the secondary voltage and secondary current measurements.

(2) For any kraft or soda recovery furnace or lime kiln using an ESP followed by a wet scrubber, the owner or operator must use the continuous parameter monitoring devices specified in paragraphs (e)(1) and (10) of this section. The opacity monitoring system specified in paragraph (d) of this section is not required for combination ESP/wet scrubber control device systems.

(3)–(9) [Reserved]

(10) The owner or operator of each affected kraft or soda recovery furnace, kraft or soda lime kiln, sulfite combustion unit, or kraft or soda smelt dissolving tank equipped with a wet scrubber must install, calibrate, maintain, and operate a CPMS that can be used to determine and record the pressure drop across the scrubber and the scrubbing liquid flow rate at least once every successive 15-minute period using the procedures in § 63.8(c), as well as the procedures in paragraphs (e)(10)(i) and (ii) of this section:

(i) A monitoring device used for the continuous measurement of the pressure drop of the gas stream across the scrubber must be certified by the manufacturer to be accurate to within a gage pressure of ±500 pascals (±2 inches of water gage pressure); and

(ii) A monitoring device used for continuous measurement of the scrubbing liquid flow rate must be certified by the manufacturer to be accurate within ±5 percent of the design scrubbing liquid flow rate.

(iii) As an alternative to pressure drop measurement under paragraph (e)(3)(i) of this section, a monitoring device for measurement of fan amperage may be used for smelt dissolving tank dynamic scrubbers that operate at ambient pressure or for low-energy entrainment scrubbers where the fan speed does not vary.

(11) The owner or operator of each affected semichemical combustion unit equipped with an RTO must install, calibrate, maintain, and operate a CPMS that can be used to determine and record the operating temperature of the RTO at least once every successive 15-minute period using the procedures in § 63.8(c). The monitor must compute and record the operating temperature at the point of incineration of effluent gases that are emitted using a temperature monitor accurate to within ±1 percent of the temperature being measured.

(12) The owner or operator of the affected hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14) must meet the requirements in paragraphs (e)(12)(i) through (xi) of this section for each bag leak detection system.

(i) The owner or operator must install, calibrate, maintain, and operate each triboelectric bag leak detection system according to EPA–454/R–98–015, ''Fabric Filter Bag Leak Detection Guidance'' (incorporated by reference—see § 63.14). This document is available from the U.S. Environmental Protection Agency (U.S. EPA); Office of Air Quality Planning and Standards; Emissions, Monitoring and Analysis Division; Emission Measurement Center, MD–D205–02, Research Triangle Park, NC 27711. This document is also available on the EPA Technical Air Pollution Resources Emission Measurement Center Web page under Continuous Emission Monitoring. The owner or operator must install, calibrate, maintain, and operate other types of bag leak detection systems in a manner consistent with the manufacturer's written specifications and recommendations.

(ii) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(iii) The bag leak detection system sensor must provide an output of relative PM loadings.

(iv) The bag leak detection system must be equipped with a device to

continuously record the output signal from the sensor.

(v) The bag leak detection system must be equipped with an audible alarm system that will sound automatically when an increase in relative PM emissions over a preset level is detected. The alarm must be located where it is easily heard by plant operating personnel.

(vi) For positive pressure fabric filter systems, a bag leak detector must be installed in each baghouse compartment or cell.

(vii) For negative pressure or induced air fabric filters, the bag leak detector must be installed downstream of the fabric filter.

(viii) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(ix) The baseline output must be established by adjusting the range and the averaging period of the device and establishing the alarm set points and the alarm delay time according to section 5.0 of the ''Fabric Filter Bag Leak Detection Guidance'' (incorporated by reference—see § 63.14).

(x) Following initial adjustment of the system, the sensitivity or range, averaging period, alarm set points, or alarm delay time may not be adjusted except as detailed in the site-specific monitoring plan. In no case may the sensitivity be increased by more than 100 percent or decreased more than 50 percent over a 365-day period unless such adjustment follows a complete fabric filter inspection which demonstrates that the fabric filter is in good operating condition, as defined in section 5.2 of the ''Fabric Filter Bag Leak Detection Guidance,'' (incorporated by reference—see § 63.14). Record each adjustment.

(xi) The owner or operator must record the results of each inspection, calibration, and validation check.

(13) The owner or operator of each affected source or process unit that uses an ESP, wet scrubber, RTO, or fabric filter may monitor alternative control device operating parameters subject to prior written approval by the Administrator. The request for approval must also include the manner in which the parameter operating limit is to be set.

(14) The owner or operator of each affected source or process unit that uses an air pollution control system other than an ESP, wet scrubber, RTO, or fabric filter must provide to the Administrator an alternative monitoring request that includes the site-specific monitoring plan described in paragraph (a) of this section, a description of the control device, test results verifying the performance of the control device, the appropriate operating parameters that will be monitored, how the operating limit is to be set, and the frequency of measuring and recording to establish continuous compliance with the standards. The alternative monitoring request is subject to the Administrator's approval. The owner or operator of the affected source or process unit must install, calibrate, operate, and maintain the monitor(s) in accordance with the alternative monitoring request approved by the Administrator. The owner or operator must include in the information submitted to the Administrator proposed performance specifications and quality assurance procedures for the monitors. The Administrator may request further information and will approve acceptable test methods and procedures. The owner or operator must monitor the parameters as approved by the Administrator using the methods and procedures in the alternative monitoring request.

(f) *Data quality assurance.* The owner or operator shall keep CMS data quality assurance procedures consistent with the requirements in § 63.8(d)(1) and (2) on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan in § 63.8(d)(2) is revised, the owner or operator shall keep previous (*i.e.,* superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. The program of corrective action should be included in the plan required under § 63.8(d)(2).

(g) *Gaseous organic HAP.* The owner or operator of each affected source or process unit complying with the gaseous organic HAP standard of § 63.862(c)(1) through the use of an NDCE recovery furnace equipped with a dry ESP system is not required to conduct any continuous monitoring to demonstrate compliance with the gaseous organic HAP standard.

(h) *Monitoring data.* As specified in § 63.8(g)(5), monitoring data recorded during periods of unavoidable CMS breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high level adjustments must not be included in any data average computed under this part.

(i) [Reserved]

(j) *Determination of operating limits.* (1) During the initial or periodic performance test required in § 63.865, the owner or operator of any affected source or process unit must establish operating limits for the monitoring parameters in paragraphs (e)(1) and (2) and (e)(10) through (14) of this section, as appropriate; or

(2) The owner or operator may base operating limits on values recorded during previous performance tests or conduct additional performance tests for the specific purpose of establishing operating limits, provided that test data used to establish the operating limits are or have been obtained using the test methods required in this subpart. The owner or operator of the affected source or process unit must certify that all control techniques and processes have not been modified subsequent to the testing upon which the data used to establish the operating parameter limits were obtained.

(3) The owner or operator of an affected source or process unit may establish expanded or replacement operating limits for the monitoring parameters listed in paragraphs (e)(1) and (2) and (e)(10) through (14) of this section and established in paragraph (j)(1) or (2) of this section during subsequent performance tests using the test methods in § 63.865.

(4) The owner or operator of the affected source or process unit must continuously monitor each parameter and determine the arithmetic average value of each parameter during each performance test. Multiple performance tests may be conducted to establish a range of parameter values.

(5) New, expanded, or replacement operating limits for the monitoring parameter values listed in paragraphs (e)(1) and (2) and (e)(10) through (14) of this section should be determined as described in paragraphs (j)(5)(i) through (iii) below.

(i) The owner or operator of an affected source or process unit that uses a wet scrubber must set a minimum scrubber pressure drop operating limit as the average of the pressure drop values associated with each test run.

(A) For a smelt dissolving tank dynamic wet scrubber operating at ambient pressure or for low-energy entrainment scrubbers where fan speed does not vary, the minimum fan amperage operating limit must be set as the average of the fan amperage values associated with each test run.

(B) [Reserved]

(ii) The owner operator of an affected source equipped with an ESP must set the minimum operating secondary current and secondary voltage as the

average of the values associated with each test run.

(iii) The owner operator of an affected source equipped with an RTO must set the minimum operating temperature of the RTO as the average of the values associated with each test run.

(6) [Reserved]

(k) *On-going compliance provisions.* (1) Following the compliance date, owners or operators of all affected sources or process units are required to implement corrective action if the monitoring exceedances in paragraphs (k)(1)(ii) through (vii) of this section occur during times when spent pulping liquor or lime mud is fired (as applicable). Corrective action can include completion of transient startup and shutdown conditions as expediently as possible.

(i) [Reserved]

(ii) For a new or existing kraft or soda recovery furnace, kraft or soda smelt dissolving tank, kraft or soda lime kiln, or sulfite combustion unit equipped with a wet scrubber, when any 3-hour average parameter value is below the minimum operating limit established in paragraph (j) of this section, with the exception of pressure drop during periods of startup and shutdown.

(iii) For a new or existing kraft or soda recovery furnace or lime kiln equipped with an ESP followed by a wet scrubber, when:

(A) Any 3-hour average scrubber parameter value is below the minimum operating limit established in paragraph (j) of this section, with the exception of pressure drop during periods of startup and shutdown; and

(B) Any 3-hour average ESP secondary voltage and secondary current (or total secondary power) values are below the minimum operating limits established during performance testing, with the exception of secondary current (or total secondary power) during periods of startup and shutdown.

(iv) For a new or existing semichemical combustion unit equipped with an RTO, when any 1-hour average temperature falls below the minimum temperature operating limit established in paragraph (j) of this section.

(v) For the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14), when the bag leak detection system alarm sounds.

(vi) For an affected source or process unit equipped with an ESP, wet scrubber, RTO, or fabric filter and monitoring alternative operating parameters established in paragraph (e)(13) of this section, when any 3-hour average value does not meet the operating limit established in paragraph (j) of this section.

(vii) For an affected source or process unit equipped with an alternative air pollution control system and monitoring operating parameters approved by the Administrator as established in paragraph (e)(14) of this section, when any 3-hour average value does not meet the operating limit established in paragraph (j) of this section.

(2) Following the compliance date, owners or operators of all affected sources or process units are in violation of the standards of § 63.862 if the monitoring exceedances in paragraphs (k)(2)(i) through (ix) of this section occur during times when spent pulping liquor or lime mud is fired (as applicable):

(i) For a new or existing kraft or soda recovery furnace equipped with an ESP, when opacity is greater than 20 percent for 2 percent or more of the operating time within any semiannual period;

(ii) For a new or existing kraft or soda lime kiln equipped with an ESP, when opacity is greater than 20 percent for 1 percent or more of the operating time within any semiannual period;

(iii) For a new or existing kraft or soda recovery furnace or lime kiln equipped with an ESP, when the ESP secondary voltage and secondary current (or total secondary power) averaged over the semiannual period are below the minimum operating limits established during the performance test, with the exception of secondary current (or total secondary power) during periods of startup and shutdown;

(iv) For a new or existing kraft or soda recovery furnace, kraft or soda smelt dissolving tank, kraft or soda lime kiln, or sulfite combustion unit equipped with a wet scrubber, when six or more 3-hour average parameter values within any 6-month reporting period are below the minimum operating limits established in paragraph (j) of this section, with the exception of pressure drop during periods of startup and shutdown;

(v) For a new or existing kraft or soda recovery furnace or lime kiln equipped with an ESP followed by a wet scrubber, when:

(A) Six or more 3-hour average scrubber parameter values within any 6-month reporting period are outside the range of values established in paragraph (j) of this section, with the exception of pressure drop during periods of startup and shutdown; and

(B) Six or more 3-hour average ESP secondary voltage and secondary current (or total secondary power) values within any 6-month reporting period are below the minimum operating limits established during performance testing, with the exception of secondary current (or total secondary power) during periods of startup and shutdown;

(vi) For a new or existing semichemical combustion unit equipped with an RTO, when any 3-hour average temperature falls below the temperature established in paragraph (j) of this section;

(vii) For the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14), when corrective action is not initiated within 1 hour of a bag leak detection system alarm and the alarm is engaged for more than 5 percent of the total operating time in a 6-month block reporting period. In calculating the operating time fraction, if inspection of the fabric filter demonstrates that no corrective action is required, no alarm time is counted; if corrective action is required, each alarm is counted as a minimum of 1 hour; if corrective action is not initiated within 1 hour, the alarm time is counted as the actual amount of time taken to initiate corrective action;

(viii) For an affected source or process unit equipped with an ESP, wet scrubber, RTO, or fabric filter and monitoring alternative operating parameters established in paragraph (e)(13) of this section, when six or more 3-hour average values within any 6-month reporting period do not meet the operating limits established in paragraph (j) of this section; and

(ix) For an affected source or process unit equipped with an alternative air pollution control system and monitoring operating parameters approved by the Administrator as established in paragraph (e)(14) of this section, when six or more 3-hour average values within any 6-month reporting period do not meet the operating limits established in paragraph (j) of this section.

(3) [Reserved]

■ 8. Section 63.865 is amended by revising the introductory text and paragraphs (b)(1) through (5), (c)(1), and (d)introductory text to read as follows:

§ 63.865 Performance test requirements and test methods.

The owner or operator of each affected source or process unit subject to the requirements of this subpart is required to conduct an initial performance test and periodic performance tests using the test methods and procedures listed in § 63.7 and paragraph (b) of this section. The owner or operator must conduct the first of the periodic performance tests within 3 years of the effective date of the

revised standards and thereafter before renewing their 40 CFR part 70 operating permit but at intervals no longer than 5 years following the previous performance test. Performance tests shall be conducted under such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Representative conditions exclude periods of startup and shutdown. The owner or operator may not conduct performance tests during periods of malfunction. The owner or operator must record the process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent normal operation. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

* * * * *

(b) * * *

(1) For purposes of determining the concentration or mass of PM emitted from each kraft or soda recovery furnace, sulfite combustion unit, smelt dissolving tank, lime kiln, or the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14), Method 5 in appendix A–3 of 40 CFR part 60 or Method 29 in appendix A–8 of 40 CFR part 60 must be used, except that Method 17 in appendix A–6 of 40 CFR part 60 may be used in lieu of Method 5 or Method 29 if a constant value of 0.009 g/dscm (0.004 gr/dscf) is added to the results of Method 17, and the stack temperature is no greater than 205 °C (400 °F). For Methods 5, 29, and 17, the sampling time and sample volume for each run must be at least 60 minutes and 0.90 dscm (31.8 dscf), and water must be used as the cleanup solvent instead of acetone in the sample recovery procedure.

(2) For sources complying with § 63.862(a) or (b), the PM concentration must be corrected to the appropriate oxygen concentration using Equation 7 of this section as follows:

$$C_{corr} = C_{meas} \times (20.9-X)/(20.9-Y) \qquad \text{(Eq. 7)}$$

Where:

C_{corr} = the measured concentration corrected for oxygen, g/dscm (gr/dscf);

C_{meas} = the measured concentration uncorrected for oxygen, g/dscm (gr/dscf);

X = the corrected volumetric oxygen concentration (8 percent for kraft or soda recovery furnaces and sulfite combustion units and 10 percent for kraft or soda lime kilns); and

Y = the measured average volumetric oxygen concentration.

(3) Method 3A or 3B in appendix A–2 of 40 CFR part 60 must be used to determine the oxygen concentration. The voluntary consensus standard ANSI/ASME PTC 19.10–1981—Part 10 (incorporated by reference—see § 63.14) may be used as an alternative to using Method 3B. The gas sample must be taken at the same time and at the same traverse points as the particulate sample.

(4) For purposes of complying with of § 63.862(a)(1)(ii)(A), the volumetric gas flow rate must be corrected to the appropriate oxygen concentration using Equation 8 of this section as follows:

$$Q_{corr} = Q_{meas} \times (20.9-Y)/(20.9-X) \qquad \text{(Eq. 8)}$$

Where:

Q_{corr} = the measured volumetric gas flow rate corrected for oxygen, dscm/min (dscf/min).

Q_{meas} = the measured volumetric gas flow rate uncorrected for oxygen, dscm/min (dscf/min).

Y = the measured average volumetric oxygen concentration.

X = the corrected volumetric oxygen concentration (8 percent for kraft or soda recovery furnaces and 10 percent for kraft or soda lime kilns).

(5)(i) For purposes of selecting sampling port location and number of traverse points, Method 1 or 1A in appendix A–1 of 40 CFR part 60 must be used;

(ii) For purposes of determining stack gas velocity and volumetric flow rate, Method 2, 2A, 2C, 2D, or 2F in appendix A–1 of 40 CFR part 60 or Method 2G in appendix A–2 of 40 CFR part 60 must be used;

(iii) For purposes of conducting gas analysis, Method 3, 3A, or 3B in appendix A–2 of 40 CFR part 60 must be used. The voluntary consensus standard ANSI/ASME PTC 19.10–1981—Part 10 (incorporated by reference—see § 63.14) may be used as an alternative to using Method 3B; and

(iv) For purposes of determining moisture content of stack gas, Method 4 in appendix A–3 of 40 CFR part 60 must be used.

* * * * *

(c) * * *

(1) The owner or operator complying through the use of an NDCE recovery furnace equipped with a dry ESP system is required to conduct periodic performance testing using Method 308 in appendix A of this part, as well as the methods listed in paragraphs (b)(5)(i) through (iv) of this section to demonstrate compliance with the gaseous organic HAP standard. The requirements and equations in paragraph (b)(2) of this section must be met and utilized, respectively.

* * * * *

(d) The owner or operator seeking to determine compliance with the gaseous organic HAP standards in § 63.862(c)(2) for semichemical combustion units must use Method 25A in appendix A–7 of 40 CFR part 60, as well as the methods listed in paragraphs (b)(5)(i) through (iv) of this section. The sampling time for each Method 25A run must be at least 60 minutes. The calibration gas for each Method 25A run must be propane.

* * * * *

■ 9. Section 63.866 is revised to read as follows:

§ 63.866 Recordkeeping requirements.

(a) [Reserved]

(b) The owner or operator of an affected source or process unit must maintain records of any occurrence when corrective action is required under § 63.864(k)(1), and when a violation is noted under § 63.864(k)(2). Record the time corrective action was initiated and completed, and the corrective action taken.

(c) In addition to the general records required by § 63.10(b)(2)(iii) and (vi) through (xiv), the owner or operator must maintain records of the information in paragraphs (c)(1) through (8) of this section:

(1) Records of black liquor solids firing rates in units of Mg/d or ton/d for

all recovery furnaces and semichemical combustion units;

(2) Records of CaO production rates in units of Mg/d or ton/d for all lime kilns;

(3) Records of parameter monitoring data required under § 63.864, including any period when the operating parameter levels were inconsistent with the levels established during the performance test;

(4) Records and documentation of supporting calculations for compliance determinations made under § 63.865(a) through (d);

(5) Records of parameter operating limits established for each affected source or process unit;

(6) Records certifying that an NDCE recovery furnace equipped with a dry ESP system is used to comply with the gaseous organic HAP standard in § 63.862(c)(1);

(7) For the bag leak detection system on the hog fuel dryer fabric filter at Cosmo Specialty Fibers' Cosmopolis, Washington facility (Emission Unit no. HD–14), records of each alarm, the time of the alarm, the time corrective action was initiated and completed, and a brief description of the cause of the alarm and the corrective action taken; and

(8) Records of the date, time, and duration of each startup and/or shutdown period, recording the periods when the affected source was subject to the standard applicable to startup and shutdown.

(d)(1) In the event that an affected unit fails to meet an applicable standard, including any emission limit or operating limit, record the number of failures. For each failure record the date, start time, and duration of each failure along with a brief explanation of the cause.

(2) For each failure to meet an applicable standard, record and retain a list of the affected sources or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit and a description of the method used to estimate the emissions.

(3) Record actions taken to minimize emissions in accordance with § 63.860(d) and any corrective actions taken to return the affected unit to its normal or usual manner of operation.

■ 10. Section 63.867 is revised to read as follows:

§ 63.867 Reporting requirements.

(a) *Notifications.* (1) The owner or operator of any affected source or process unit must submit the applicable notifications from subpart A of this part, as specified in Table 1 of this subpart.

(2) [Reserved]

(3) In addition to the requirements in subpart A of this part, the owner or operator of the hog fuel dryer at Cosmo Specialty Fibers' Cosmopolis, Washington, facility (Emission Unit no. HD–14) must include analysis and supporting documentation demonstrating conformance with EPA guidance and specifications for bag leak detection systems in § 63.864(e)(12) in the Notification of Compliance Status.

(b) *Additional reporting requirements for HAP metals standards.* (1) Any owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) must submit the PM emissions limits determined in § 63.865(a) for each affected kraft or soda recovery furnace, smelt dissolving tank, and lime kiln to the Administrator for approval. The emissions limits must be submitted as part of the notification of compliance status required under subpart A of this part.

(2) Any owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) must submit the calculations and supporting documentation used in § 63.865(a)(1) and (2) to the Administrator as part of the notification of compliance status required under subpart A of this part.

(3) After the Administrator has approved the emissions limits for any process unit, the owner or operator of a process unit must notify the Administrator before any of the actions in paragraphs (b)(3)(i) through (iv) of this section are taken:

(i) The air pollution control system for any process unit is modified or replaced;

(ii) Any kraft or soda recovery furnace, smelt dissolving tank, or lime kiln in a chemical recovery system at a kraft or soda pulp mill complying with the PM emissions limits in § 63.862(a)(1)(ii) is shut down for more than 60 consecutive days;

(iii) A continuous monitoring parameter or the value or range of values of a continuous monitoring parameter for any process unit is changed; or

(iv) The black liquor solids firing rate for any kraft or soda recovery furnace during any 24-hour averaging period is increased by more than 10 percent above the level measured during the most recent performance test.

(4) An owner or operator of a group of process units in a chemical recovery system at a mill complying with the PM emissions limits in § 63.862(a)(1)(ii) and seeking to perform the actions in paragraph (b)(3)(i) or (ii) of this section must recalculate the overall PM emissions limit for the group of process units and resubmit the documentation required in paragraph (b)(2) of this section to the Administrator. All modified PM emissions limits are subject to approval by the Administrator.

(c) *Excess emissions report.* The owner or operator must submit semiannual excess emissions reports containing the information specified in paragraphs (c)(1) through (5) of this section. The owner or operator must submit semiannual excess emission reports following the procedure specified in paragraph (d)(2) of this section.

(1) If the total duration of excess emissions or process control system parameter exceedances for the reporting period is less than 1-percent of the total reporting period operating time, and CMS downtime is less than 5-percent of the total reporting period operating time, only the summary report is required to be submitted in accordance with § 63.10(e)(3)(vii). This report will be titled ''Summary Report—Gaseous and Opacity Excess Emissions and Continuous Monitoring System Performance'' in accordance with § 63.10(e)(3)(vi) and must contain the information required in § 63.10(e)(3), as specified in paragraphs (c)(1)(i) through (x) of this section. When no exceedances of parameters have occurred, the owner or operator must submit the summary report stating that no excess emissions occurred during the reporting period. In addition to a statement verifying that no excess emissions occurred during the reporting period, this report must contain the information required in § 63.10(e)(3) only as specified in paragraphs (c)(1)(i) through (x) of this section. The summary report must be submitted following the procedure specified in paragraph (d)(2) of this section.

(i) The company name and address and name of the affected facility.

(ii) Beginning and ending dates of the reporting period.

(iii) An identification of each process unit with the corresponding air pollution control device, being included in the semiannual report, including the pollutants monitored at each process unit, and the total operating time for each process unit.

(iv) An identification of the applicable emission limits, operating parameter limits, and averaging times.

(v) An identification of the monitoring equipment used for each process unit and the corresponding model number.

(vi) Date of the last CMS certification or audit.

(vii) An emission data summary, including the total duration of excess

emissions (recorded in minutes for opacity and hours for gases), the duration of excess emissions expressed as a percent of operating time, and reason for the excess emissions (*e.g.,* startup/shutdown, control equipment problems, other known reasons, or other unknown reasons).

(viii) A CMS performance summary, including the total duration of CMS downtime, the duration of downtime expressed as a percent of operating time, and reason for the downtime (e.g., monitoring equipment malfunction, non-monitoring equipment malfunction, quality assurance, quality control calibrations, other known causes, or other unknown causes).

(ix) A description of changes to CMS, processes, or controls since last reporting period.

(x) A certification by a certifying official of truth, accuracy and completeness. This will state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(2) [Reserved]

(3) If measured parameters meet any of the conditions specified in § 63.864(k)(1) or (2), the owner or operator of the affected source must submit a semiannual report describing the excess emissions that occurred. If the total duration of monitoring exceedances for the reporting period is 1-percent or greater of the total reporting period operating time, or the total CMS downtime for the reporting period is 5-percent or greater of the total reporting period operating time, or any violations according to § 63.864(k)(2) occurred, information from both the summary report and the excess emissions and continuous monitoring system performance report must be submitted. This report will be titled ''Excess Emissions and Continuous Monitoring System Performance Report'' and must contain the information specified in paragraphs (c)(1)(i) through (x) of this section, in addition to the information required in § 63.10(c)(5) through (14), as specified in paragraphs (c)(3)(i) through (vi) of this section. Reporting monitoring exceedances does not constitute a violation of the applicable standard unless the criteria in § 63.864(k)(2) are reached.

(i) An identification of the date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks.

(ii) An identification of the date and time identifying each period during which the CMS was out of control, as defined in § 63.8(c)(7).

(iii) The specific identification of each period of excess emissions and parameter monitoring exceedances as described in paragraphs (c)(3)(iii)(A) through (C) of this section.

(A) For opacity:

(*1*) The total number of 6-minute averages in the reporting period (excluding process unit downtime).

(*2*) The number of 6-minute averages in the reporting period removed due to invalid readings.

(*3*) The number of 6-minute averages in the reporting period that exceeded the 20-percent opacity limit.

(*4*) The percent of 6-minute averages in the reporting period that exceed the 20-percent opacity limit.

(*5*) An identification of each exceedance by start time, date, and cause of exceedance (including startup/shutdown, control equipment problems, other known reasons, or other unknown reasons).

(B) For ESP operating parameters:

(*1*) The type of operating parameters monitored for compliance (total secondary power, or secondary voltage and secondary current).

(*2*) The operating limits established during the performance test.

(*3*) For systems only controlled with an ESP, the operating parameters averaged over the semiannual reporting period.

(*4*) For combined ESP and wet scrubber control systems, the number of 3-hour ESP and wet scrubber parameter averages below the minimum operating limit established during the performance test.

(*5*) An identification of each exceedance by start time, date, and cause of exceedance (including startup/shutdown, control equipment problems, other known reasons, or other unknown reasons).

(C) For wet scrubber operating parameters:

(*1*) The operating limits established during the performance test for scrubbing liquid flow rate and pressure drop across the scrubber (or fan amperage if used for smelt dissolving tank scrubbers).

(*2*) The number of 3-hour wet scrubber parameter averages below the minimum operating limit established during the performance test, if applicable.

(*3*) An identification of each exceedance by start time, date, and cause of exceedance (including startup/shutdown, control equipment problems, other known reasons, or other unknown reasons).

(D) For RTO operating temperature:

(*1*) The operating limit established during the performance test.

(*2*) The number of 1-hour and 3-hour temperature averages below the minimum operating limit established during the performance test.

(*3*) An identification of each exceedance by start time, date, and cause of exceedance including startup/shutdown, control equipment problems, other known reasons, or other unknown reasons).

(iv) The nature and cause of any malfunction (if known).

(v) The corrective action taken or preventative measures adopted.

(vi) The nature of repairs and adjustments to the CMS that was inoperative or out of control.

(4) If a source fails to meet an applicable standard, report such events in the semiannual excess emissions report. Report the number of failures to meet an applicable standard. For each instance, report the date, time and duration of each failure. For each failure the report must include a list of the affected sources or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, and a description of the method used to estimate the emissions.

(5) The owner or operator of an affected source or process unit subject to the requirements of this subpart and subpart S of this part may combine excess emissions and/or summary reports for the mill.

(d) *Electronic reporting.* (1) Within 60 days after the date of completing each performance test (as defined in § 63.2) required by this subpart, the owner or operator must submit the results of the performance test following the procedure specified in either paragraph (d)(1)(i) or (ii) of this section.

(i) For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT Web site (*https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert*) at the time of the test, the owner or operator must submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI). (CEDRI can be accessed through the EPA's Central Data Exchange (CDX) (*https://cdx.epa.gov/*).) Performance test data must be submitted in a file format generated through the use of the EPA's ERT or an alternate electronic file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT Web site. If the owner or operator claims that some of the performance test information being submitted is confidential business information (CBI), the owner or operator must submit a complete file generated

through the use of the EPA's ERT or an alternate electronic file consistent with the XML schema listed on the EPA's ERT Web site, including information claimed to be CBI, on a compact disc, flash drive, or other commonly used electronic storage media to the EPA. The electronic media must be clearly marked as CBI and mailed to U.S. EPA/OAPQS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404–02, 4930 Old Page Rd., Durham, NC 27703. The same ERT or alternate file with the CBI omitted must be submitted to the EPA via the EPA's CDX as described earlier in this paragraph (d)(1)(i).

(ii) For data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT Web site at the time of the test, the owner or operator must attach an electronic copy of the complete performance test report containing the methods not included in the ERT in the attachment module of the ERT in portable document format (PDF) and submit the results of the performance test to the EPA via CEDRI.

(2) The owner or operator must submit notification and semiannual reports to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX (*https://cdx.epa.gov*).) The owner or operator must use the appropriate electronic report in CEDRI for this subpart or an alternative electronic file format consistent with the XML schema listed on the CEDRI Web site (*https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri*). If neither the reporting form nor the spreadsheet template specific to this subpart are available in CEDRI at the time that the report is due, you must upload an electronic copy of the report in CEDRI. Once the form or spreadsheet template has been available in CEDRI for at least 90 calendar days, you must begin submitting all subsequent reports via CEDRI using the form or spreadsheet template. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted.

■ 11. Section 63.868 is amended by revising paragraphs (b)(2) through (4) to read as follows:

§ 63.868 Delegation of authority.

* * * * *

(b) * * *

(2) Approval of a major change to test method under § 63.7(e)(2)(ii) and (f) and as defined in § 63.90.

(3) Approval of a major change to monitoring under § 63.8(f) and as defined in § 63.90.

(4) Approval of a major change to recordkeeping/reporting under § 63.10(f) and as defined in § 63.90.

■ 12. Table 1 to subpart MM of part 63 is revised to read as follows:

TABLE 1 TO SUBPART MM OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.1(a)(1)	General applicability of the General Provisions.	Yes	Additional terms defined in § 63.861; when overlap between subparts A and MM of this part, subpart MM takes precedence.
63.1(a)(2)–(14)	General applicability of the General Provisions.	Yes.	
63.1(b)(1)	Initial applicability determination	No	Subpart MM specifies the applicability in § 63.860.
63.1(b)(2)	Title V operating permit—see 40 CFR part 70	Yes	All major affected sources are required to obtain a title V permit.
63.1(b)(3)	Record of the applicability determination	No	All affected sources are subject to subpart MM according to the applicability definition of subpart MM.
63.1(c)(1)	Applicability of subpart A of this part after a relevant standard has been set.	Yes	Subpart MM clarifies the applicability of each paragraph of subpart A of this part to sources subject to subpart MM.
63.1(c)(2)	Title V permit requirement	Yes	All major affected sources are required to obtain a title V permit. There are no area sources in the pulp and paper mill source category.
63.1(c)(3)	[Reserved]	No.	
63.1(c)(4)	Requirements for existing source that obtains an extension of compliance.	Yes.	
63.1(c)(5)	Notification requirements for an area source that increases HAP emissions to major source levels.	Yes.	
63.1(d)	[Reserved]	No.	
63.1(e)	Applicability of permit program before a relevant standard has been set.	Yes.	
63.2	Definitions	Yes	Additional terms defined in § 63.861; when overlap between subparts A and MM of this part occurs, subpart MM takes precedence.
63.3	Units and abbreviations	Yes.	
63.4	Prohibited activities and circumvention	Yes.	
63.5(a)	Construction and reconstruction—applicability	Yes.	
63.5(b)(1)	Upon construction, relevant standards for new sources.	Yes.	
63.5(b)(2)	[Reserved]	No.	
63.5(b)(3)	New construction/reconstruction	Yes.	
63.5(b)(4)	Construction/reconstruction notification	Yes.	
63.5(b)(5)	Construction/reconstruction compliance	Yes.	
63.5(b)(6)	Equipment addition or process change	Yes.	

TABLE 1 TO SUBPART MM OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM—Continued

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.5(c)	[Reserved]	No.	
63.5(d)	Application for approval of construction/reconstruction.	Yes.	
63.5(e)	Construction/reconstruction approval	Yes.	
63.5(f)	Construction/reconstruction approval based on prior State preconstruction review.	Yes.	
63.6(a)(1)	Compliance with standards and maintenance requirements—applicability.	Yes.	
63.6(a)(2)	Requirements for area source that increases emissions to become major.	Yes.	
63.6(b)	Compliance dates for new and reconstructed sources.	Yes.	
63.6(c)	Compliance dates for existing sources	Yes, except for sources granted extensions under § 63.863(c).	Subpart MM specifically stipulates the compliance schedule for existing sources.
63.6(d)	[Reserved]	No.	
63.6(e)(1)(i)	General duty to minimize emissions	No	See § 63.860(d) for general duty requirement.
63.6(e)(1)(ii)	Requirement to correct malfunctions ASAP	No.	
63.6(e)(1)(iii)	Operation and maintenance requirements enforceable independent of emissions limitations.	Yes.	
63.6(e)(2)	[Reserved]	No.	
63.6(e)(3)	Startup, shutdown, and malfunction plan (SSMP).	No.	
63.6(f)(1)	Compliance with nonopacity emissions standards except during SSM.	No.	
63.6(f)(2)–(3)	Methods for determining compliance with nonopacity emissions standards.	Yes.	
63.6(g)	Compliance with alternative nonopacity emissions standards.	Yes.	
63.6(h)(1)	Compliance with opacity and visible emissions (VE) standards except during SSM.	No.	
63.6(h)(2)–(9)	Compliance with opacity and VE standards	Yes	Subpart MM does not contain any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.6(i)	Extension of compliance with emission standards.	Yes.	
63.6(j)	Exemption from compliance with emissions standards.	Yes.	
63.7(a)(1)	Performance testing requirements—applicability.	Yes.	
63.7(a)(2)	Performance test dates	Yes.	
63.7(a)(3)	Performance test requests by Administrator under CAA section 114.	Yes.	
63.7(a)(4)	Notification of delay in performance testing due to force majeure.	Yes.	
63.7(b)(1)	Notification of performance test	Yes.	
63.7(b)(2)	Notification of delay in conducting a scheduled performance test.	Yes.	
63.7(c)	Quality assurance program	Yes.	
63.7(d)	Performance testing facilities	Yes.	
63.7(e)(1)	Conduct of performance tests	No	See § 63.865.
63.7(e)(2)–(3)	Conduct of performance tests	Yes.	
63.7(e)(4)	Testing under section 114	Yes.	
63.7(f)	Use of an alternative test method	Yes.	
63.7(g)	Data analysis, recordkeeping, and reporting	Yes.	
63.7(h)	Waiver of performance tests	Yes	§ 63.865(c)(1) specifies the only exemption from performance testing allowed under subpart MM.
63.8(a)(1)	Monitoring requirements—applicability	Yes	See § 63.864.
63.8(a)(2)	Performance Specifications	Yes.	
63.8(a)(3)	[Reserved]	No.	
63.8(a)(4)	Monitoring with flares	No	The use of flares to meet the standards in subpart MM is not anticipated.
63.8(b)(1)	Conduct of monitoring	Yes	See § 63.864.
63.8(b)(2)–(3)	Specific requirements for installing and reporting on monitoring systems.	Yes.	
63.8(c)(1)	Operation and maintenance of CMS	Yes	See § 63.864.
63.8(c)(1)(i)	General duty to minimize emissions and CMS operation.	No.	

TABLE 1 TO SUBPART MM OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM—Continued

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.8(c)(1)(ii)	Reporting requirements for SSM when action not described in SSMP.	Yes.	
63.8(c)(1)(iii)	Requirement to develop SSM plan for CMS	No.	
63.8(c)(2)–(3)	Monitoring system installation	Yes.	
63.8(c)(4)	CMS requirements	Yes.	
63.8(c)(5)	Continuous opacity monitoring system (COMS) minimum procedures.	Yes.	
63.8(c)(6)	Zero and high level calibration check requirements.	Yes.	
63.8(c)(7)–(8)	Out-of-control periods	Yes.	
63.8(d)(1)–(2)	CMS quality control program	Yes	See § 63.864.
63.8(d)(3)	Written procedures for CMS	No	See § 63.864(f).
63.8(e)(1)	Performance evaluation of CMS	Yes.	
63.8(e)(2)	Notification of performance evaluation	Yes.	
63.8(e)(3)	Submission of site-specific performance evaluation test plan.	Yes.	
63.8(e)(4)	Conduct of performance evaluation and performance evaluation dates.	Yes.	
63.8(e)(5)	Reporting performance evaluation results	Yes.	
63.8(f)	Use of an alternative monitoring method	Yes.	
63.8(g)	Reduction of monitoring data	Yes.	
63.9(a)	Notification requirements—applicability and general information.	Yes.	
63.9(b)	Initial notifications	Yes.	
63.9(c)	Request for extension of compliance	Yes.	
63.9(d)	Notification that source subject to special compliance requirements.	Yes.	
63.9(e)	Notification of performance test	Yes.	
63.9(f)	Notification of opacity and VE observations	Yes	Subpart MM does not contain any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.9(g)(1)	Additional notification requirements for sources with CMS.	Yes.	
63.9(g)(2)	Notification of compliance with opacity emissions standard.	Yes	Subpart MM does not contain any opacity or VE emissions standards; however, § 63.864 specifies opacity monitoring requirements.
63.9(g)(3)	Notification that criterion to continue use of alternative to relative accuracy testing has been exceeded.	Yes.	
63.9(h)	Notification of compliance status	Yes.	
63.9(i)	Adjustment to time periods or postmark deadlines for submittal and review of required communications.	Yes.	
63.9(j)	Change in information already provided	Yes.	
63.10(a)	Recordkeeping requirements—applicability and general information.	Yes	See § 63.866.
63.10(b)(1)	Records retention	Yes.	
63.10(b)(2)(i)	Recordkeeping of occurrence and duration of startups and shutdowns.	No	See § 63.866(c)(8) for recordkeeping of the date, time, and duration of each startup and/or shutdown period.
63.10(b)(2)(ii)	Recordkeeping of failures to meet a standard	No	See § 63.866(d) for recordkeeping of (1) date, time and duration; (2) listing of affected source or equipment, and an estimate of the quantity of each regulated pollutant emitted over the standard; and (3) actions to minimize emissions and correct the failure.
63.10(b)(2)(iii)	Maintenance records	Yes.	
63.10(b)(2)(iv)–(v)	Actions taken to minimize emissions during SSM.	No.	
63.10(b)(2)(vi)	Recordkeeping for CMS malfunctions	Yes.	
63.10(b)(2)(vii)-(xiv)	Other CMS requirements	Yes.	
63.10(b)(3)	Records retention for sources not subject to relevant standard.	Yes	Applicability requirements are given in § 63.860.
63.10(c)(1)–(14)	Additional recordkeeping requirements for sources with CMS..	Yes.	
63.10(c)(15)	Use of SSM plan	No.	
63.10(d)(1)	General reporting requirements	Yes.	
63.10(d)(2)	Reporting results of performance tests	Yes.	

TABLE 1 TO SUBPART MM OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART MM—Continued

General provisions reference	Summary of requirements	Applies to subpart MM	Explanation
63.10(d)(3)	Reporting results of opacity or VE observations.	Yes	Subpart MM does not include any opacity or VE standards; however, § 63.864 specifies opacity monitoring requirements.
63.10(d)(4)	Progress reports	Yes.	
63.10(d)(5)(i)	Periodic startup, shutdown, and malfunction reports.	No	See § 63.867(c)(3) for malfunction reporting requirements.
63.10(d)(5)(ii)	Immediate startup, shutdown, and malfunction reports.	No	See § 63.867(c)(3) for malfunction reporting requirements.
63.10(e)	Additional reporting requirements for sources with CMS.	Yes.	
63.10(f)	Waiver of recordkeeping and reporting requirements.	Yes.	
63.11	Control device requirements for flares	No	The use of flares to meet the standards in subpart MM is not anticipated.
63.12	State authority and delegations	Yes.	
63.13	Addresses of State air pollution control agencies and EPA Regional Offices.	Yes.	
63.14	Incorporations by reference	Yes.	
63.15	Availability of information and confidentiality	Yes.	
63.16	Requirements for Performance Track member facilities.	Yes.	

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