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40 CFR Part 63
National Emissions Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA–HQ–OAR–2011–0797; FRL–9917–44–OAR]

RIN 2060–AQ92

National Emissions Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants

AGENCY: Environmental Protection Agency.

ACTION: Supplemental proposed rulemaking.

SUMMARY: This action supplements our proposed amendments to the national emission standards for hazardous air pollutants (NESHAP) for the Primary Aluminum Production source category published in the **Federal Register** on December 6, 2011. In that action, the Environmental Protection Agency (EPA) proposed amendments based on the initial residual risk and technology reviews (RTR) for this source category, and also proposed certain emission limits reflecting performance of Maximum Achievable Control Technology (MACT). Today's action reflects a revised technology review and a revised residual risk analysis for the Primary Aluminum Production source category and proposes new and revised emission standards based on those analyses, newly obtained emissions test data, and comments we received in response to the 2011 proposal, including certain revisions to the technology-based standards reflecting performance of MACT. This action also proposes new compliance requirements to meet the revised standards. This action, if adopted, will provide improved environmental protection regarding potential emissions of hazardous air pollutant (HAP) emissions from primary aluminum production facilities.

DATES: *Comments.* Comments must be received on or before January 22, 2015. A copy of comments on the information collection provisions should be submitted to the Office of Management and Budget (OMB) on or before January 7, 2015.

Public Hearing. If anyone contacts the EPA requesting to speak at a public hearing by December 15, 2014, a public hearing will be held on December 23, 2014 at the U.S. EPA building at 109 T.W. Alexander Drive, Research Triangle Park, NC 27711. If you are interested in requesting a public hearing or attending the public hearing, contact Ms. Virginia Hunt at (919) 541–0832 or at *hunt.virginia@epa.gov.* If the EPA holds a public hearing, the EPA will keep the record of the hearing open for 30 days after completion of the hearing to provide an opportunity for submission of rebuttal and supplementary information.

ADDRESSES: *Comments.* Submit your comments, identified by Docket ID No. EPA–HQ–OAR–2011–0797, by one of the following methods:

- *Federal eRulemaking Portal: http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Email: A-and-R-docket@epa.gov.* Include Attention Docket ID No. EPA–HQ–OAR–2011–0797 in the subject line of the message.
- *Fax:* (202) 566–9744. Attention Docket ID No. EPA–HQ–OAR–2011–0797.
- *Mail:* Environmental Protection Agency, EPA Docket Center (EPA/DC), Mail Code: 28221T, Attention Docket ID No. EPA–HQ–OAR–2011–0797, 1200 Pennsylvania Avenue NW., Washington, DC 20460. Please mail a copy of your comments on the information collection provisions to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), Attn: Desk Officer for EPA, 725 17th Street NW., Washington, DC 20503.
- *Hand/Courier Delivery:* EPA Docket Center, Room 3334, EPA WJC West Building, 1301 Constitution Avenue NW., Washington, DC 20004, Attention Docket ID No. EPA–HQ–OAR–2011–0797. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions. Direct your comments to Docket ID No. EPA–HQ–OAR–2011–0797. 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 confidential business information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *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–2011–0797. 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 Avenue 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: If anyone contacts the EPA requesting a public hearing by December 15, 2014, the public hearing will be held on December 23, 2014 at the EPA's campus at 109 T.W. Alexander Drive, Research Triangle Park, North Carolina. The hearing will begin at 10:00 a.m. (Eastern Standard Time) and conclude at 5:00 p.m. (Eastern Standard Time). There will be a lunch break from 12:00 p.m. to 1:00 p.m. Please contact Ms. Virginia Hunt at 919–541–0832 or at *hunt.virginia@epa.gov* to register to speak at the hearing or to inquire as to whether or not a hearing will be held. The last day to pre-register in advance to speak at the hearing will be December 22, 2014. 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 accommodated. If you require the service of a translator or special accommodations such as audio description, please let us know at the time of registration. If you require an accommodation, we ask that you pre-register for the hearing, as we may not be able to arrange such accommodations without advance notice. The hearing will provide interested parties the opportunity to present data, views or arguments concerning the proposed action. The EPA will make every effort to accommodate all speakers who arrive and register. Because these hearing are being held at U.S. government facilities, 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. The EPA may ask clarifying questions during the oral presentations, but will not respond to the presentations at that time. Written statements and supporting information submitted during the comment period will be considered with the same weight as oral comments and supporting information presented at the public hearing.

Docket: The EPA has established a docket for this rulemaking under Docket ID No. EPA–HQ–OAR–2011–0797. All documents in the docket are listed in the *www.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, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *www.regulations.gov* or in hard copy at the EPA Docket Center, EPA WJC West Building, Room 3334, 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 Air Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed action, contact Mr. David Putney, Sector Policies and Programs Division (D243–02), Office of Air Quality Planning and Standards, Environmental Protection Agency, Research Triangle Park, NC 27711; telephone (919) 541–2016; fax number: (919) 541–3207; and email address: *putney.david@epa.gov.* For specific information regarding the risk modeling methodology, contact Mr. Jim Hirtz, Health and Environmental Impacts Division (C539–02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC 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 Mr. Patrick Yellin, Office of Enforcement and Compliance Assurance, U.S. Environmental Protection Agency, EPA WJC West Building, Mail Code 2227A, 1200 Pennsylvania Avenue NW., Washington, DC 20460; telephone number: (202) 564–2970 and email address: *yellin.patrick@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:

As	arsenic
ADAF	age-dependent adjustment factor
AEGL	acute exposure guideline levels
AERMOD	air dispersion model used by the HEM–3 model
ATSDR	Agency for Toxic Substances and Disease Registry
BLDS	bag leak detection system
BTF	beyond-the-floor
CAA	Clean Air Act
CalEPA	California EPA
CBI	Confidential Business Information
Cd	cadmium
CE	Cost Effectiveness
CFR	Code of Federal Regulations
COS	carbonyl sulfide
Cr	chromium
Cr^{+3}	trivalent chromium
Cr^{+6}	hexavalent chromium
CWPB1	center-worked prebake one
CWPB2	center-worked prebake two
CWPB3	center-worked prebake three
D/Fs	polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans
EF	Emission Factors
EJ	environmental justice
EPA	Environmental Protection Agency
ERPG	Emergency Response Planning Guidelines
ERT	Electronic Reporting Tool
FR	**Federal Register**
HAP	hazardous air pollutants
HEM–3	Human Exposure Model, Version 1.1.0
HF	hydrogen fluoride
Hg	mercury
HI	Hazard Index
HQ	Hazard Quotient
HSS	horizontal stud Soderberg
IRIS	Integrated Risk Information System
km	kilometer
LOAEL	lowest-observed-adverse-effect level
LOEL	lowest-observed-effect level
MACT	maximum achievable control technology
MCEM	methylene chloride extractable matter
mg/dscm	milligrams per dry standard cubic meter
mg/kg-day	milligrams per kilogram-day
mg/m^3	milligrams per cubic meter
MIR	maximum individual risk
Mn	manganese
MRL	Minimal Risk Level
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NAS	National Academy of Sciences
NATA	National Air Toxics Assessment
NEI	National Emissions Inventory
NESHAP	National Emissions Standards for Hazardous Air Pollutants
Ni	nickel
NOAEL	no-observed-adverse-effect level
NRC	National Research Council
NTTAA	National Technology Transfer and Advancement Act
OAQPS	Office of Air Quality Planning and Standards
OECA	Office of Enforcement and Compliance Assurance
OMB	Office of Management and Budget
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PB–HAP	hazardous air pollutants known to be persistent and bio-accumulative in the environment
PCB	polychlorinated biphenyls
PEL	probable effect level
PM	particulate matter
POM	polycyclic organic matter
ppm	parts per million
RDL	representative method detection level
REL	reference exposure level
RFA	Regulatory Flexibility Act
RfC	reference concentration
RfD	reference dose
RTR	residual risk and technology review
SAB	Science Advisory Board
SBA	Small Business Administration
SSM	startup, shutdown and malfunction
SWPB	side-worked prebake
TF	total fluorides
TOSHI	target organ-specific hazard index
TPY	tons per year

TRIM.FaTE Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure model
TTN echnology Transfer Network
UF uncertainty factor
µg/dscm micrograms per dry standard cubic meter
µg/m³ micrograms per cubic meter
UMRA Unfunded Mandates Reform Act
UPL Upper Prediction Limit
URE unit risk estimate
VCS voluntary consensus standards
VSS1 vertical stud Soderberg one
VSS2 vertical stud Soderberg two

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

I. General Information

A. Does this action apply to me?

Table 1 of this preamble lists the industrial source category that is the subject of this supplemental proposal. Table 1 is not intended to be exhaustive but rather to provide 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 ''Primary Aluminum Production'' source category is any facility which produces primary aluminum by the electrolytic reduction process.[1]

TABLE 1—NESHAP AND INDUSTRIAL SOURCE CATEGORIES AFFECTED BY THIS PROPOSED ACTION

Source category	NESHAP	NAICS code [a]
Primary Aluminum Production	Primary Aluminum Reduction Plants	33131

[a] 2012 North American Industry Classification System.

B. 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 EPA's Technology Transfer Network (TTN) Web site, a forum for information and technology exchange in various areas of air pollution control. Following signature by the EPA Administrator, the EPA will post a copy of this proposed action at: *http://www.epa.gov/ttn/atw/alum/alumpg.html.* 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 the following Web site: *http://www.epa.gov/ttn/atw/rrisk/rtrpg.html.*

C. 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 Code of Federal Regulations (CFR) part 2. Send or deliver information identified as CBI

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[1] U.S. EPA. Documentation for Developing the Initial Source Category List—Final Report, EPA/OAQPS, EPA–450/3–91–030, July, 1992.

only to the following address: Roberto Morales, 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–2011–0797.

II. Background Information

A. What is the statutory authority for this action?

Section 112 of the Clean Air Act (CAA) establishes a two-stage regulatory process to address emissions of HAPs from stationary sources. In the first stage, after the EPA has identified categories of sources emitting one or more of the HAP listed in CAA section 112(b), CAA section 112(d) requires us to promulgate technology-based NESHAP for those sources. ''Major sources'' are those that emit or have the potential to emit 10 tons per year (tpy) or more of a single HAP or 25 tpy or more of any combination of 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) through (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) and (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, 672–73 (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). CAA section 112(f)(1) 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. CAA section 112(f)(2) 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 the emission standards 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 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

CAA section 112(f)(2) 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 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,[2] 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 38044–38045, September 14, 1989, we 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

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[2] ''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).

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 NESHAP for Primary Aluminum Reduction Plants were promulgated on October 7, 1997 (62 FR 52407), codified at 40 CFR part 63, subpart LL (referred to as subpart LL or MACT rule in the remainder of this preamble), and amended on November 2, 2005 (70 FR 66285). The MACT rule is applicable to facilities with affected sources associated with the production of aluminum by electrolytic reduction. These facilities are described in the following paragraph and collectively comprise what is commonly known as the Primary Aluminum Production source category.

Aluminum is produced from refined bauxite ore (also known as alumina), using an electrolytic reduction process in a series of cells called a ''potline.'' The raw materials include alumina, petroleum coke, pitch and fluoride salts. According to information available on the Web site of The Aluminum Association, Inc. (*http://www.aluminum.org*), approximately 40 percent of the aluminum produced in the U.S. comes from primary aluminum facilities. The two main potline types are prebake (a newer, higher efficiency, lower-emitting technology) and Soderberg (an older, lower efficiency, higher-emitting technology). There are currently 13 facilities located in the United States that are subject to the requirements of this NESHAP: 12 primary aluminum production plants and one carbon-only prebake anode production facility. These 12 primary aluminum production plants have approximately 45 potlines that produce aluminum. Ten primary aluminum production plants have a paste production operation, and 10 of the 12 primary aluminum production plants have anode bake furnaces. Eleven of the 12 primary aluminum facilities use prebake potlines; the other plant uses Soderberg potlines. Due to a decrease in demand for aluminum, four of the facilities are currently idle, including the Soderberg facility. The major HAPs emitted by these facilities are carbonyl sulfide (COS), hydrogen fluoride (HF), particulate HAP metals and polycyclic organic matter (POM), specifically polycyclic aromatic hydrocarbons (PAH).

The standards promulgated in 1997 and 2005 apply to emissions of HF, measured using total fluorides (TF) as a surrogate, from all potlines and anode bake furnaces and POM (as measured by methylene chloride extractables) from Soderberg potlines, anode bake furnaces, paste production plants and pitch storage tanks associated with primary aluminum production. Affected sources under the rules are each potline, each anode bake furnace (except for one that is located at a facility that only produces anodes for use off-site), each paste production plant and each new pitch storage tank.

The NESHAP designated seven subcategories of existing potlines based primarily on differences in the process operation and configuration. The control of primary emissions from the reduction process is typically achieved by a dry alumina scrubber (with a baghouse to collect the alumina and other particulate matter (PM)). The control technology typically used for anode bake furnaces is a dry alumina scrubber. A capture system vented to a dry coke scrubber is used for control of paste production plants. See Tables 2 and 3 for the applicable emission limits established under the 1997 NESHAP and the 2005 Amendments.

TABLE 2—SUMMARY OF CURRENT MACT EMISSION LIMITS FOR EXISTING SOURCES UNDER THE 1997 NESHAP, AND THE 2005 AMENDMENTS

Source	Pollutant	Emission limit
Potlines [1]		
CWPB1 potlines	TF	0.95 kg/Mg (1.9 lb/ton) of aluminum produced.
CWPB2 potlines	TF	1.5 kg/Mg (3.0 lb/ton) of aluminum produced.
CWPB3 potlines	TF	1.25 kg/Mg (2.5 lb/ton) of aluminum produced.
SWPB potlines	TF	0.8 kg/Mg (1.6 lb/ton) of aluminum produced.
VSS1 potlines	TF	1.1 kg/Mg (2.2 lb/ton) of aluminum produced.
	POM	1.2 kg/Mg (2.4 lb/ton) of aluminum produced.
VSS2 potlines	TF	1.35 kg/Mg (2.7 lb/ton) of aluminum produced.
	POM	2.85 kg/Mg (5.7 lb/ton) of aluminum produced.
HSS potlines	TF	1.35 kg/Mg (2.7 lb/ton) of aluminum produced.
	POM	2.35 kg/Mg (4.7 lb/ton) of aluminum produced.
Paste Production	POM	Install, operate and maintain equipment for capture of emissions and vent to a dry coke scrubber.
Anode Bake Furnace (collocated with a primary aluminum plant).	TF	0.10 kg/Mg (0.20 lb/ton) of green anode.
	POM	0.09 kg/Mg (0.18 lb/ton) of green anode.

[1] CWPB1 = Center-worked prebake potline with the most modern reduction cells; includes all center-worked prebake potlines not specifically identified as CWPB2 or CWPB3.

CWPB2 = Center-worked prebake potlines located at Alcoa in Rockdale, Texas; Kaiser Aluminum in Mead, Washington; Ormet Corporation in Hannibal, Ohio; Ravenswood Aluminum in Ravenswood, West Virginia; Reynolds Metals in Troutdale, Oregon; and Vanalco Aluminum in Vancouver, Washington.

CWPB3 = Center-worked prebake potline that produces very high purity aluminum, has wet scrubbers as the primary control system and is located at the Century Aluminum primary aluminum plant in Kentucky.

HSS = Horizontal stud Soderberg potline (no facilities remain in the U.S.).

SWPB = Side-worked prebake potline.

VSS1 = Vertical stud Soderberg potline (no facilities remain in the U.S.).

VSS2 = Vertical stud Soderberg potlines (located at an idle facility known as Columbia Falls Aluminum in Columbia Falls, Montana).

TABLE 3—SUMMARY OF CURRENT MACT EMISSION LIMITS FOR NEW SOURCES UNDER THE 1997 NESHAP, AND THE 2005 AMENDMENTS

Source	Pollutant	Emission limit
All Potlines	TF	0.6 kg/Mg (1.2 lb/ton) of aluminum produced.
VSS1, VSS2 and HSS potlines	POM	0.32 kg/Mg (0.63 lb/ton) of aluminum produced.
Paste Production	POM	Install, operate and maintain equipment for capture of emissions and vent to a dry coke scrubber.
Anode Bake Furnace (collocated with a primary aluminum plant).	TF	0.01 kg/Mg (0.020 lb/ton) of green anode.
	POM	0.025 kg/Mg (0.05 lb/ton) of green anode.
Pitch storage tanks	POM	Emission control system designed and operated to reduce inlet POM emissions by 95 percent or greater.

The 1997 NESHAP for primary aluminum reduction plants incorporates new source performance standards for potroom groups. These emission limits are listed in Table 3. The limits for new Soderberg facilities apply to any Soderberg facility that adds a new potroom group to an existing potline or is associated with a potroom group that meets the definition of a modified or reconstructed potroom group. Since these POM limits are very stringent, they effectively preclude the operation of any new Soderberg potlines. We expect any new potline would need to be a prebake potline to comply with the new source limits in the NESHAP.

Compliance with the emission limits in the current rule is demonstrated by performance testing which can be addressed individually for each affected source or according to emissions averaging provisions. Monitoring requirements include monthly measurements of TF secondary emissions, quarterly measurement of POM secondary emissions and annual measurement of primary emissions, continuous parametric monitoring for each emission control device, a monitoring device to track daily weight of aluminum produced and daily inspection for visible emissions. Recordkeeping for the rule is consistent with the General Provisions requirements with the addition of recordkeeping for daily production of aluminum, records supporting emissions averaging and records documenting the portion of TF measured as PM or gaseous form.

C. What is the history of the Primary Aluminum Production source category risk and technology review?

Pursuant to section 112(f)(2) of the CAA, in 2011 we conducted an initial evaluation of the residual risk associated with the NESHAP for Primary Aluminum Reduction Plants. At that time, we also conducted an initial technology review pursuant to section 112(d)(6) of the CAA. Finally, we also reviewed the 2005 MACT rule to determine whether other amendments were appropriate. Based on the results of that initial RTR, and the MACT rule review, we proposed amendments to the NESHAP (also known as subpart LL) on December 6, 2011 (76 FR 76260) (referred to as the 2011 proposal in the remainder of this FR document). The proposed amendments in the 2011 proposal which we are revisiting in today's supplemental proposal include the following:

- Proposed emission limits for POM from prebake potlines;
- Amendments to the monitoring, notification, recordkeeping and testing requirements; and
- Proposed provisions establishing an affirmative defense to civil penalties for violations caused by malfunctions.

As explained below, we are also proposing provisions which have no analogue in the 2011 proposal.

The comment period for the December 2011 proposal opened on December 6, 2011, and ended on February 1, 2012. We received significant comments from industry representatives, environmental organizations and state regulatory agencies. After reviewing the comments, and after consideration of additional data and information received since the 2011 proposal, we determined it is appropriate to revise some of our analyses and to publish a supplemental proposal. After collecting and reviewing additional data, we are proposing technology-based emission limits pursuant to CAA sections 112(d)(2) and (3) for PM, as a surrogate for particulate HAP metals, for new and existing potlines, anode bake furnaces and paste plants. We are also proposing revised technology-based emissions limits for POM emissions from prebake potlines and amendments to the monitoring, notification, recordkeeping and testing requirements to implement these emission limits. Pursuant to CAA section 112(f)(2), we are also proposing risk-based emission standards for POM, nickel (Ni) and arsenic (As) emissions from potlines in the VSS2 subcategory and proposing testing and monitoring requirements to demonstrate compliance with the standards for Ni and As. We are also proposing revisions to the testing and compliance requirements for COS emissions.

In addition, we are withdrawing our 2011 proposal to include an affirmative defense in this rule in light of a recent court decision vacating an affirmative defense in one of the EPA's CAA section 112(d) regulations. *NRDC* v. *EPA,* 749 F. 3d 1055 (D.C. Cir. 2014) (vacating affirmative defense provisions in CAA section 112(d) rule establishing emission standards for Portland cement kilns).

Today's supplemental proposed rulemaking will allow the public an opportunity to review and comment on the revised analyses and revised proposed amendments described above.

However, we also proposed other requirements in the 2011 proposal (listed below) for which we have made no revisions to the analyses, are not proposing any changes and are not reopening for public comment. These are:

- POM standards for existing pitch storage tanks and related monitoring, reporting and testing requirements;
- Emissions limits for COS from potlines;
- Elimination of startup, shutdown and malfunction (SSM) exemptions; and
- Electronic reporting.

The comment period for the December 2011 proposal opened on December 6, 2011, and ended on February 1, 2012. We will address the comments we received during the public comment period for the 2011 proposal at the time we publish final RTR amendments for the Primary Aluminum Production source category based on the 2011 proposal and today's supplemental proposal.

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

The 2011 risk assessment was based on estimates of PAH emissions derived from test measurements conducted in the 1990's on facilities that may not have been representative of current operating practices and using test methods that were inferior to those currently available. In addition, data available to estimate emissions of HAP metals from potlines were very limited, and no data were available to estimate HAP metals emissions from anode bake furnaces and paste plants. Furthermore, no data were available to estimate dioxin/furan (D/F) and polychlorinated biphenyl (PCB) emissions from potlines, anode bake furnaces and paste plants.

The proposed emission limits for POM from prebake potlines included in the 2011 proposal were based on extremely limited data. Also lacking were reliable data on which to base MACT standards for PM (as a surrogate for HAP metals) emissions from potlines, anode bake furnaces and paste plants.

Therefore, in March 2013 we sent an information request to the primary aluminum companies pursuant to section 114 of the CAA to gather additional relevant emissions test data. In response to this request, selected facilities provided the following data:

- Additional emission test data for POM emissions from prebake potlines;
- Additional emission test data for PM emissions from prebake potlines, Soderberg potlines (which have subsequently shut down), anode bake furnaces and paste plants;
- Additional emission test data for speciated PAH, speciated HAP metals, speciated PCBs and speciated polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans from potlines, anode bake furnaces and paste plants.

III. Analytical Procedures

A. For purposes of this supplemental proposal, how did we estimate the post-MACT risks posed by the Primary Aluminum Production 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 HAP with the potential to cause noncancer health effects and the hazard quotient (HQ) for acute exposures to HAP with the potential to cause noncancer 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 eight 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 the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal.* The methods used to assess risks (as described in the eight 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;[3] they are also consistent with the key recommendations contained in that report.

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

Using the test reports from the 2013 information request we calculated annual emission rates of PAHs, D/Fs, PCBs and HAP metals from primary and secondary potline exhausts, anode bake furnace exhausts and paste plant exhausts. Where no test data were available we calculated and applied emission factors (EF) for these pollutants and emission points based on average emission rates from similarly operated sources to estimate emissions. However, it is important to note that only two facilities tested for D/F and PCBs. Furthermore, many of the test results for D/Fs and PCBs were below detection limits. More than half of the mercury (Hg) emissions tests results were also below detection limit. Therefore, there are greater uncertainties regarding D/F, PCB and Hg emissions compared to the other HAP. To estimate emissions in cases where some, but not all, data were below the detection limit, we assumed the undetected emissions were equal to one-half the detection limit, which is the established approach for dealing with non-detects in the EPA's RTR program when developing emissions estimates for input to the risk assessments. Subsequently, we developed EF based on these limited data to estimate emissions at the other facilities. We believe the emissions estimates for D/F and PCBs are quite conservative (*i.e.,* more likely to be overestimated rather than underestimated) because we assumed undetected emissions were equal to one half the detection limit. We note that EPA may, but is not obligated to amend MACT standards. In the case of D/F, Hg and PCB, where many of the emissions tests were below detection limit, and given the uncertainties and limitations of the data (for example, we have test data for D/F and PCBs for only one of the 11 prebake facilities), the EPA is choosing not to propose standards for these HAP at this time.

We also obtained test data from recent compliance tests for TF and estimated HF emissions from primary and secondary potline exhausts and anode bake furnace exhausts. We estimated COS emissions as described in the 2011 risk assessment. We did not receive any additional test data for COS. Thus, the emissions estimates for COS have not changed since the 2011 proposal. As noted above, we are not accepting further comment on either this analysis or the proposed emission limit for COS.

We also verified information regarding emissions release characteristics such as stack heights, stack gas exit velocities, stack temperatures and source locations. In addition to the quality assurance (QA) of the source data for the facilities contained in the dataset, we also checked the coordinates of every emission source in the dataset using tools such as Google Earth. Where coordinates used in the 2011 risk assessment were found to be incorrect, we identified and corrected them. We also performed a QA assessment of the emissions data and release characteristics to ensure the data were reliable and that there were no outliers. The emissions data and the methods used to estimate emissions from all the various emissions sources are described in more detail in the technical document: *Revised Draft Development of the RTR Emissions Dataset for the Primary Aluminum Production Source Category,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

2. How did we estimate MACT-allowable emissions?

The available emissions data in the RTR emissions dataset include estimates of the mass of HAP emitted during 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

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[3] 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.

emissions in the final Coke Oven Batteries residual risk rule (70 FR 19998–19999, April 15, 2005) and in the proposed and final Hazardous Organic NESHAP residual risk rules (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 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.

For this supplemental proposal, we evaluated allowable emissions based on responses to the information request. We estimated that allowable emissions for the currently regulated HAP (*i.e.,* PAHs and HF) were generally about 1.5 times higher than the actual emissions. Therefore, to calculate allowable emissions of PAHs and HF, we assumed that allowable emissions were 1.5 times the actual emissions for all facilities except for one idle Soderberg facility (Columbia Falls). For Columbia Falls, which has the highest potential for emissions of all the facilities, we evaluated site-specific data and estimated that allowable emissions for the regulated HAP (*i.e.,* PAHs and HF) were about 1.9 times higher than estimated actual emissions when the plant is operating. Regarding unregulated HAP, the NESHAP currently includes no standards for COS, PCB, D/F and HAP metal emissions. Since there is no standard in place for these HAP and, therefore, no defined level of ''MACT allowable'' emissions levels, we assumed that allowable emissions for COS, PCB, D/F and HAP metal emissions were equal to estimated actual emissions. Further explanation is provided in the technical document: *Revised Draft Development of the RTR Emissions Dataset for the Primary Aluminum Production Source Category,* which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

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 the Human Exposure Model (Community and Sector HEM–3 version 1.1.0). The HEM–3 performs three primary risk assessment activities: (1) Conducting dispersion modeling to estimate the concentrations of HAP in ambient air, (2) estimating long-term and short-term inhalation exposures to individuals residing within 50 kilometers (km) of the modeled sources,[4] 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.[5] 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 (2011) 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[6] 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 HAP and other toxic air pollutants. These values are available at *http://www2.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 EPA 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.

In the case of Ni compounds, to provide a health-protective estimate of potential cancer risks, we used the IRIS URE value for Ni subsulfide in the assessment for the 2011 proposed rule for the Primary Aluminum Production source category. Based on past scientific and technical considerations, the determination of the percent of Ni subsulfide was considered a major factor for estimating the extent and magnitude of the risks of cancer due to Ni-containing emissions. Nickel speciation information for some of the largest Ni-emitting sources (including oil combustion, coal combustion and others) suggested that at least 35 percent of total Ni emissions may be soluble compounds and that the URE for the mixture of inhaled Ni compounds (based on Ni subsulfide, and representative of pure insoluble crystalline Ni) could be derived to reflect the assumption that 65 percent of the total mass of Ni may be carcinogenic.

Based on consistent views of major scientific bodies (*i.e.,* National Toxicology Program (NTP) in their 12th Report of the Carcinogens (ROC),[7] International Agency for Research on

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

[5] 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).

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

[7] National Toxicology Program (NTP), 2011. *Report on Carcinogens.* 12th ed. Research Triangle Park, NC: US Department of Health and Human Services (DHHS), Public Health Service. Available online at *http://ntp.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf.*

Cancer (IARC)[8] and other international agencies)[9] that consider all Ni compounds to be carcinogenic, we currently consider all Ni compounds to have the potential of being carcinogenic to humans. The *12th Report of the Carcinogens* states that the ''combined results of epidemiological studies, mechanistic studies, and carcinogenic studies in rodents support the concept that Ni compounds generate Ni ions in target cells at sites critical for carcinogenesis, thus allowing consideration and evaluation of these compounds as a single group.'' Although the precise Ni compound (or compounds) responsible for the carcinogenic effects in humans is not always clear, studies indicate that Ni sulfate and the combinations of Ni sulfides and oxides encountered in the Ni refining industries cause cancer in humans (these studies are summarized in a review by Grimsrud et al., 2010[10]). The major scientific bodies mentioned above have also recognized that there are differences in toxicity and/or carcinogenic potential across the different Ni compounds.

In the inhalation risk assessment for this supplemental proposal, we chose to take a conservative approach: we considered all Ni compounds to be as carcinogenic as Ni subsulfide and applied the IRIS URE for Ni subsulfide without a factor to reflect the assumption that 100 percent of the total mass of Ni may be as carcinogenic as pure Ni subsulfide. However, given that there are two additional URE values[11] derived for exposure to mixtures of Ni compounds, as a group, that are 2–3 fold lower than the IRIS URE for Ni subsulfide, the EPA also considers it reasonable to use a value that is 50 percent of the IRIS URE for Ni subsulfide for providing an estimate of the lower end of the plausible range of cancer potency values for different mixtures of Ni compounds.

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[12]) emitted by the modeled sources. Cancer incidence and the distribution of individual cancer risks for the population within 50 km of the 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) (*http://www.epa.gov/riskassessment/glossary.htm*), 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 (MRL) (*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) over a specified duration of exposure''; (2) the CalEPA Chronic Reference Exposure Level (REL) (*http://www.oehha.ca.gov/air/hot_spots/pdf/HRAguidefinal.pdf*), which is defined as ''the concentration level (that is expressed in units of micrograms per cubic meter (μg/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.

POM, a carcinogenic HAP with a mutagenic mode of action, is emitted by the facilities in this source category.[13] For this compound group,[14] the EPA's analysis applies the age-dependent adjustment factors (ADAF) described in the EPA's *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens.*[15] This adjustment has the effect of increasing the estimated lifetime risks for POM by a factor of 1.6. In addition, although primary aluminum facilities reported most of their total POM emissions as individual compounds, the EPA expresses carcinogenic potency for compounds in this group in terms of benzo[a]pyrene equivalence, based on evidence that carcinogenic POM has the same mutagenic mechanism of action as benzo[a]pyrene. For this reason, the EPA's Science Policy Council[16] recommends applying the *Supplemental Guidance* to all carcinogenic PAH for which risk estimates are based on relative potency. Accordingly, we have applied the ADAF to the benzo[a]pyrene equivalent portion of all POM mixtures.

As mentioned above, in order to characterize non-cancer chronic effects, and in response to key

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[8] International Agency for Research on Cancer (IARC), 1990. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans.* Chromium, nickel, and welding. Vol. 49. Lyons, France: International Agency for Research on Cancer, World Health Organization Vol. 49:256.

[9] World Health Organization (WHO, 1991) and the European Union's Scientific Committee on Health and Environmental Risks (SCHER, 2006).

[10] Grimsrud TK and Andersen A. *Evidence of Carcinogenicity in Humans of Water-soluble Nickel Salts.* J Occup Med Toxicol 2010, 5:1–7. Available online at *http://www.ossup-med.com/content/5/1/7.*

[11] Two UREs (other than the current IRIS values) have been derived for nickel compounds as a group: One developed by the California Department of Health Services (*http://www.arb.ca.gov/toxics/id/summary/nickel_tech_b.pdf*) and the other by the Texas Commission on Environmental Quality (*http://www.epa.gov/ttn/atw/nata1999/99pdfs/healtheffectsinfo.pdf*).

[12] These classifications also coincide with the terms ''known carcinogen, probable carcinogen, and possible carcinogen,'' respectively, which are the terms advocated in the EPA's previous *Guidelines for Carcinogen Risk Assessment,* published in 1986 (51 FR 33992, September 24, 1986). 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.*

[13] U.S. EPA. Performing risk assessments that include carcinogens described in the *Supplemental Guidance* as having a mutagenic mode of action. *Science Policy Council Cancer Guidelines Implementation Work Group Communication II:* Memo from W.H. Farland, dated October 4, 2005.

[14] See the *Risk Assessment for Source Categories* document available in the docket for a list of HAP with a mutagenic mode of action.

[15] U.S. EPA. *Supplemental Guidance for Assessing Early-Life Exposure to Carcinogens.* EPA/630/R–03/003F, 2005. *http://www.epa.gov/ttn/atw/childrens_supplement_final.pdf.*

[16] U.S. EPA. *Science Policy Council Cancer Guidelines Implementation Workgroup Communication II:* Memo from W.H. Farland, dated June 14, 2006.

recommendations from the SAB, the EPA selects dose-response values that reflect the best available science for all HAP included in RTR risk assessments.[17] 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 the mandate of section 112(f)(2) 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://www.oehha.ca.gov/air/pdf/acuterel.pdf*) 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.

AEGL values were derived in response to recommendations from the National Research Council (NRC). As described in *Standing Operating Procedures (SOP) of the National Advisory Committee on Acute Exposure Guideline Levels for Hazardous Substances* (*http://www.epa.gov/oppt/aegl/pubs/sop.pdf*),[18] ''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.'' *Id.* at 2. This document also states that AEGL values ''represent threshold exposure limits for the general public and are applicable to emergency exposures ranging from 10 minutes to eight hours.'' *Id.* at 2.

The document lays out the purpose and objectives of AEGL by stating that ''the primary purpose of the AEGL program and the National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances 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. In detailing the intended application of AEGL values, the document states that ''[i]t is anticipated that the AEGL values will be used for regulatory and nonregulatory purposes by U.S. Federal and state agencies and possibly the international community in conjunction with chemical emergency response, planning and prevention programs. 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 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/m^3 (milligrams per cubic meter)) of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory 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, non-sensory 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.*

ERPG 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/ERP-SOPs2006.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.''[19] *Id.* at 1. The ERPG–1 value is defined as ''the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient adverse 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 it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.'' *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

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[17] 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.*

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

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

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 reflecting, where appropriate, circumstances of the particular source category at issue. The factor chosen also reflects a Texas study of short-term 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.[20] 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 the Primary Aluminum Production source category, information was available to determine process-specific factors. The processes in this source category are typically equipped with controls which will not allow startup of the emission source until the associated control device is operating and will automatically shut down the emission source if the associated controls malfunction. Further, some processes, for example, the potlines, operate continuously so there are no significant spikes in emissions. We, thus, believe emissions from the potlines are relatively consistent over time with minimal fluctuation. However, we realize that emissions vary over time. Furthermore, as described above, we estimate the maximum allowable emissions for this source category are about 1.5 times higher than the average long-term actual emissions for these sources. Therefore, we assume that hourly emissions rates from potlines could occasionally increase by a factor of up to 1.5 times the average hourly emissions, which, for the reasons stated above, we believe is a valid multiplier to estimate maximum acute emissions from potlines. Other processes, for example paste production and anode baking, may have specific cycles, with peak emissions occurring for a part of that cycle. We assume these peak emissions could be as high as 2 times the average emissions for paste plants and bake furnaces. As discussed in sections II.D and III.A.1 of this preamble, above, we collected data regarding the emissions from these processes. Those emissions data represent emissions during periods of normal operations (as opposed to during periods of peak emissions).

Therefore, based on the modes of operation and other factors described above, we applied an acute emissions multiplier of 1.5 to all potline emissions for input to the acute risk assessment, and for paste production and anode baking we applied an acute emissions multiplier of 2. We regard these factors as conservative (*i.e.,* they are designed not to underestimate variability). Even with data available to develop process-specific factors, our assessment of acute risk reflects conservative assumptions, in particular in its assumptions that every potline operates at the same hour and that every potline has emissions 1.5 times higher than the average at the same hour, that this is the same hour as the worst-case dispersion conditions, and that a person is at the location of maximum concentration during that hour. This results in a conservative exposure scenario.

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 for modeled HAPs (even under the conservative assumptions of the screening analysis), acute impacts were deemed negligible and no further analysis was performed for these HAPs. In cases where an acute HQ from the screening step was greater than 1, for some modeled HAPs additional site-specific data were considered to develop a more refined estimate of the potential for acute impacts of concern. These refinements are discussed more fully in the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797). 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.

As noted above, the agency may choose to refine the acute screen by also assessing the exposure that may occur at a centroid of census block. For this source category we first used conservative assumptions for emissions rates, meteorology and exposure location for our acute analysis. We then refined the acute assessment by also estimating the HQ for As at centroids of census blocks.

To better characterize the potential health risks associated with estimated acute exposures to HAP, and in response to a key recommendation from the SAB's peer review of the EPA's RTR risk assessment methodologies,[21] we generally examine a wider range of available acute health metrics (*e.g.,* RELs, AEGLs) than we do for our chronic risk assessments. This is in response to 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[22] for HAP have

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[20] See *http://www.tceq.state.tx.us/compliance/field_ops/eer/index.html* or the docket to access the source of these data.

[21] 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.*

[22] U.S. EPA. (2009) Chapter 2.9 *Chemical Specific Reference Values for Formaldehyde in Graphical*

Continued

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 any HAP known to be persistent and bioaccumulative in the environment (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 Primary Aluminum Production source category, we identified emissions of cadmium (Cd) compounds, D/F, POM, divalent Hg compounds and HF. However, as we explained in section III.A.1 of this preamble, many of the emissions tests for mercury and D/F were below detection limit or detection limit limited. Nevertheless, we estimated emissions of these HAP based on the conservative assumption that undetected emissions were equal to one half the detection limit. Therefore, we consider the estimates for D/F and Hg to be conservative (*i.e.,* more likely to be overestimated rather than underestimated).

Because one or more of the PB–HAP are emitted by at least one facility in the Primary Aluminum Production 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 developed emissions rate screening levels for several PB–HAP 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–HAP with emissions rate screening levels are: Cd, lead, D/F, Hg 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 rates of these PB–HAP were compared to the emission rate screening levels for these PB–HAP 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 emissions rates for our Tier 1 TRIM-screen, we derived emission levels for these PB–HAP (other than lead (Pb) compounds) at which the maximum excess lifetime cancer risk would be 1-in-1 million (*i.e.,* for D/F and POM) or, for HAP that cause non-cancer health effects (*i.e.,* Cd compounds and Hg 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 rate 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 rate 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 level for each PB–HAP for each facility based on an understanding of how exposure concentrations estimated for the screening scenarios for the subsistence fisher and the subsistence farmer 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. When facilities exceed the Tier 2 screening levels, it does not mean that multipathway impacts are significant, only that we cannot rule out that possibility based on the results of the screen.

If the PB–HAP emissions for a facility exceed the Tier 2 screening emissions rate, 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. For this source category, we conducted 3 Tier 3 screening assessments at Alcoa (Ferndale, WA), Alumax (Goose Creek, SC) and Reynolds Metals (Massena, NY). The Reynolds Metals facility is a Soderberg facility which was operating at the time we sent out the information request and when we collected the emissions data and initiated the modeling assessment. However, recently this facility permanently shut down all their Soderberg potline operations. It is our understanding that this facility will either convert to a prebake facility or remain permanently shut down. A detailed discussion of the approach for this multipathway risk assessment can be found in Appendix 9 (*Technical Support Document: Human Health Multipathway Residual Risk Screening Assessment for the Primary Aluminum Production Source Category*) of the risk assessment document.

In evaluating the potential multipathway risk from emissions of Pb 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 Pb.[23] Values below the level of the primary (health-based) Pb NAAQS were considered to have a low potential for multipathway risk.

For further information on the multipathway analysis approach, see the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

5. How did we assess risks considering the revised emissions control options?

In addition to assessing baseline inhalation risks and potential multipathway risks, we also estimated risks considering the emission

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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, and available online at *http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=211003.*

[23] 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 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 the primary lead NAAQS reflects an adequate margin of safety.

reductions that would be achieved by the control options under consideration in this supplemental proposal (*i.e.,* emission reductions reflecting the proposed standards reflecting MACT). In these cases, the expected emission reductions were applied to the specific HAP and emission points in the RTR emissions dataset to develop corresponding estimates of risk that would exist after implementation of the proposed amendments in today's action.

6. 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 HAP

The EPA focuses on seven HAP, which we refer to as ''environmental HAP,'' in its screening analysis: Five PB–HAP and two acid gases. The five PB–HAP are Cd, D/F, POM, Hg (both inorganic Hg and methylmercury) and Pb compounds. The two acid gases are hydrogen chloride (HCl) and HF. We have no data indicating primary aluminum plants emit HCl. Therefore, our analysis for this source category does not reflect HCl emissions. The rationale for including the remaining six HAP in the environmental risk screening analysis is presented below.

The HAP that persist and bioaccumulate are of particular environmental concern because they accumulate in the soil, sediment and water. The PB–HAP are taken up, through sediment, soil, water and/or 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–HAP in the animal tissues increase as does the potential for adverse effects. The five PB–HAP 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 National Emissions Inventory).

In addition to accounting for almost all of the mass of PB–HAP emitted, we note that the TRIM.FaTE model that we use to evaluate multipathway risk allows us to estimate concentrations of Cd compounds, D/F, POM and Hg in soil, sediment and water. For Pb 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 Pb compounds, we compare the estimated HEM–3 modeled exposures from the source category emissions of Pb with the level of the secondary NAAQS for Pb.[24] We consider values below the level of the secondary Pb NAAQS as unlikely to cause adverse environmental effects.

Due to its well-documented potential to cause direct damage to terrestrial plants, we include the acid gas HF emitted by primary aluminum sources, in the environmental screening analysis. 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 HAP 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 HAP beyond the seven HAP discussed above may have the potential to cause adverse environmental effects. Therefore, the EPA may include other relevant HAP in its environmental risk screening in the future, as modeling science and resources allow. The EPA invites comment on the extent to which other HAP 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.

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–HAP (other than Pb compounds), we evaluated the following community-level ecological assessment endpoints to screen for organisms directly exposed to HAP 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–HAP in the surface soil;
- Local benthic (*i.e.,* bottom sediment dwelling insects, amphipods, isopods and crayfish) communities exposed to PB–HAP 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–HAP (other than Pb compounds), we also evaluated the following population-level ecological assessment endpoint to screen for indirect HAP exposures of top consumers via the bioaccumulation of HAP in food chains:

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

For Cd compounds, D/F, POM and Hg, we identified the available ecological benchmarks for each assessment endpoint. An ecological benchmark represents a concentration of HAP (*e.g.,* 0.77 ug of HAP per liter of water) that has been linked to a particular environmental effect level through scientific study. For PB–HAP 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

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[24] 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.''

- 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 not, 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–HAP 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 HAP in the air.

The selection of ecological benchmarks for the effects of acid gases on plants followed the same approach as for PB–HAP (*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 determined whether any facilities in the Primary Aluminum Production source category emitted any of the seven environmental HAP. For the Primary Aluminum Production source category, we identified emissions of five of the PB–HAP (Cd, Hg, Pb, D/F and POM) and one acid gas (HF).

Because one or more of the seven environmental HAP evaluated are emitted by the facilities in the source category, we proceeded to the second step of the evaluation.

f. PB–HAP Methodology

For Cd, Hg, POM and D/F, the environmental screening analysis consists of two tiers, while Pb compounds are analyzed differently as discussed earlier. However, as we explained in section III.A.1 above, there are greater uncertainties in the emissions estimates for Hg or D/F because of the limitations in the available data and because a large portion of emissions tests results were below the detection limit for those HAP. Nevertheless, to be conservative (*i.e.,* more likely to overestimate risks rather than underestimate risks), we have included emissions estimates of Hg and D/F in the PB–HAP risk screen based on conservative assumptions (*i.e.,* emissions of one half the detection limit were assumed for those tests where no pollutants were detected).

In the first tier, we determined whether the maximum facility-specific emission rates of each of the emitted environmental HAP 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 eight 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 one 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 is typically 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 HF (we have no data regarding HCl emissions from primary aluminum facilities and, therefore, HCl was not analyzed). The environmental risk screening methodology for HF 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 HF 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 the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

7. 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 of interest, but also emissions of HAP from all other emissions sources at the facility for which we have data. We analyzed risks due to the inhalation of HAP that are emitted ''facility-wide'' for the populations residing within 50 km of each facility, consistent with the methods used for the source category analysis described above. The *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* available through the docket for this action, provides the methodology and results of the facility-wide analyses, including all facility-wide risks.

8. How did we consider uncertainties in risk assessment?

In the Benzene NESHAP, we 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. A more thorough discussion of these uncertainties is included in the *Revised Draft Development of the RTR Emissions Dataset for the Primary Aluminum Production Source Category,* and the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

a. Uncertainties in the RTR Emissions Dataset

Although the development of the RTR emissions dataset involved QA/quality control processes, the accuracy of emissions values will vary depending on the source of the data, the degree to which data are incomplete or missing, the degree to which assumptions made to complete the datasets are accurate, errors in emission estimates and other factors. The emission estimates considered in this analysis generally are 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 for each emission process group and applied to the average annual hourly emission rates, which are intended to account for emission fluctuations due to normal facility operations.

As described above and in the *Revised Draft Development of the RTR Emissions Dataset for the Primary Aluminum Production Source Category,* we gathered a substantial amount of emissions test data from currently operating facilities (plus test data from a then-operating, now closed Soderberg facility). Required testing under the CAA section 114 request included measurements of HAP metal emissions from primary and secondary potline exhausts at seven facilities, as well as measurements of HAP metal emissions from three anode bake furnace exhausts and three paste plant exhausts. We also received additional POM emissions data from eight facilities. Furthermore, we received speciated PAH, PCB and D/F emissions data from primary and secondary exhausts of two potlines (one Soderberg potline and one prebake potline), as well as exhausts from one anode bake furnace and one paste plant. We used these data to estimate emissions from emission points for which we had no emissions test data. Also, there is additional uncertainty concerning the estimated emissions of Hg and D/F since, as discussed in sections III.A.1 and IV.A of this preamble, a substantial portion of the emissions test results for those HAP were reported as below laboratory detection limits. Finally, we received hexavalent chromium (Cr^{+6}) emissions stack test data from primary and secondary potline exhausts at two facilities and an anode bake furnace and a paste plant at one facility. We used the average results from these tests to apportion emissions of Cr^{+6} and trivalent chromium (Cr^{+3}) for the remaining facilities that did not test. Therefore, there are some uncertainties regarding the split between Cr^{+6} and Cr^{+3} for these remaining facilities. Nevertheless, we believe the test data we used are representative. Thus, the uncertainties are not significant. Furthermore, since we used the average results of the available tests, the values we used as input for the risk assessment are equally likely to be overestimates or underestimates of the actual speciated emissions.

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.[25] 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 1-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 HAP, 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.[26]

In addition to the uncertainties highlighted above, there are several factors specific to the acute exposure assessment that the EPA conducts as part of the risk review under section 112(f) 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 presence 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 the primary aluminum source category, these assumptions would tend to be conservative 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.

For the primary aluminum source category, we refined the acute exposure assessment by estimating the HQ at a centroid of a census block. This reduces the uncertainty in the assessment because we are evaluating the potential for exposures to occur at locations where people could actually live, rather than at the point of maximum off-site concentration.

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 *Guidelines for Carcinogen Risk Assessment* (EPA/630/P–03/001B, March 2005); 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'' (*Guidelines for Carcinogen Risk Assessment,* 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 the Primary Aluminum Production Source Category in Support of the November 2014 Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

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).[27] In some circumstances, the true risk could be as low as zero; however, in other circumstances the risk could be greater. 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

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[25] 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.

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

[27] IRIS glossary (*http://ofmpub.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&glossaryName=IRIS%20Glossary*).

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 (RfC) or a daily oral exposure (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, 1994) which considers uncertainty, variability and gaps in the available data. The UF are applied to derive reference values that are intended to protect against appreciable risk of deleterious effects. The UF are commonly default values,[28] *e.g.,* factors of 10 or 3, used in the absence of compound-specific data; where data are available, UF may also be developed using compound-specific information. When data are limited, more assumptions are needed and more UF 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 UF 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 UF 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 UF 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 UF 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 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.

Although every effort is made to identify appropriate human health effect dose-response assessment values for all pollutants emitted by the sources in this risk assessment, some HAP emitted by this source category are lacking dose-response assessments. Accordingly, these pollutants cannot be included in the quantitative risk assessment, which could result in quantitative estimates understating HAP risk.

To help to alleviate this potential underestimate, where we conclude similarity with a HAP for which a dose-response assessment value is available, we use that value as a surrogate for the assessment of the HAP for which no value is available. To the extent use of surrogates indicates appreciable risk, we may identify a need to increase priority for new IRIS assessment of that substance. We additionally note that, generally speaking, HAP of greatest concern due to environmental exposures and hazard are those for which dose-response assessments have been performed, reducing the likelihood of understating risk.

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–HAP. 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

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[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 EPA, 2004, *An Examination of EPA Risk Assessment Principles and Practices,* EPA/100/B–04/001 available at: *http://www.epa.gov/osa/pdfs/ratf-final.pdf.*

[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.

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. The multipathway screens include some hypothetical elements, namely the hypothetical farmer and fisher scenarios. It is important to note that even though EPA conducted a multipathway assessment based on these scenarios, no data exist to verify the existence of either the farmer or fisher scenario outlined above.

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 5, *Technical Support Document for TRIM-Based Multipathway Tiered Screening Methodology for RTR.*

We completed a Tier 3 multipathway screen for this supplemental proposal. This assessment contains less uncertainty compared to the Tier 1 and Tier 2 screens. The Tier 3 screen improves the lake characterization used in the Tier 2 analysis and improves the screen by adjusting for emissions lost to the upper air sink through plume-rise calculations. The Tier 3 screen reduces uncertainty through improved lake evaluations used in the Tier 2 screen and by calculating the amount of mass lost to the upper air sink through plume rise. Nevertheless, some uncertainties also exist here. The Tier 3 multipathway screen and related uncertainties are described in detail in section 4 of the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

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–HAP, we configured the models to avoid underestimating exposure and risk to reduce the likelihood that the results 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–HAP (other than Pb compounds, which were evaluated by comparison to the secondary Pb 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–HAP, 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.

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[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.

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 not, 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 Pb compounds, which were evaluated through a comparison to the NAAQS for Pb and its compounds), we searched for benchmarks at the following three effect levels, as described in section III.A.6 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 HAP in the environmental risk screening assessment: Cd, D/F, POM, Hg (both inorganic Hg and methylmercury), Pb compounds, HCl[31] and HF, where applicable. These seven HAP represent pollutants that can cause adverse impacts for plants and animals either through direct exposure to HAP in the air or through exposure to HAP that is deposited from the air onto soils and surface waters. These seven HAP also represent those HAP for which we can conduct a meaningful environmental risk screening assessment. For other HAP 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 HAP beyond the seven HAP that we are evaluating may have the potential to cause adverse environmental effects and, therefore, the EPA may evaluate other relevant HAP in the future, as modeling science and resources allow.

Further information on uncertainties and the Tier 1 and 2 screening methods is provided in Appendix 5 of the document ‘‘Technical Support Document for TRIM-Based Multipathway Tiered Screening Methodology for RTR: Summary of Approach and Evaluation.’’ Also, see the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

B. How did we consider the risk results in making decisions for this supplemental 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)[32] 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.

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, 2007; 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

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[31] As noted above, we have no data regarding HCl emissions from primary aluminum plants so the EPA did not evaluate HCl in this screening assessment for this proposal.

[32] 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 of a pollutant for a lifetime.

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 HAP in addition to considering exposure to HAP emissions from the source category and facility. We recognize that such consideration may be particularly important when assessing 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.''[33]

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 bioaccumulative 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 hazard indices 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.

As discussed in more detail below, based on the results of these risk analyses and evaluation of control options, we are proposing revised limits for emissions of POM from potlines, and first ever emissions limits for emissions of PM (as a surrogate for HAP metals) from potlines, anode bake furnaces and paste production plants and for emissions of Ni and As, from the VSS2 potline subcategory.

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 our decision of whether it is ''necessary'' to revise the emissions standards, within the meaning of CAA section 112(d)(6), 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, we considered any of the following to be a ''development'':

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

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[33] The EPA's responses to this and all other key recommendations 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 memo 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.*

development of the original MACT standards.

- Any significant changes in the cost (including cost effectiveness) of applying controls (including controls the EPA considered during the development of the original MACT standards).

Since we are proposing some first-time MACT standards in this action, we considered the same factors with respect to these proposed MACT standards. In addition to reviewing the practices, processes and control technologies that were considered at the time we originally developed (or last updated) the NESHAP, we also reviewed a variety of data sources in our investigation of potential practices, processes or controls to consider. Among the sources we reviewed were the NESHAP for various industries that were promulgated since the MACT standards being reviewed in this action. We reviewed the regulatory requirements and/or technical analyses associated with these regulatory actions to identify any practices, processes and control technologies considered in these efforts that could be applied to emission sources in the Primary Aluminum Production source category, as well as the costs, non-air impacts and energy implications associated with the use of these technologies. Additionally, we requested information from facilities regarding developments in practices, processes or control technology. Finally, we reviewed information from other sources, such as state and/or local permitting agency databases and industry-supported databases.

For the 2011 proposal, our initial technology review focused on the identification and evaluation of developments in practices, processes and control technologies that have occurred since the EPA promulgated the 1997 NESHAP. We then made decisions on whether it is necessary to propose amendments to the 1997 NESHAP to require standards reflecting performance of the identified developments. Based on our analyses of the data and information collected and our general understanding of the industry and other available information on potential controls for this industry, we identified no developments in practices, processes and control technologies, other than the proposed startup work practices described in the December 2011 proposal (76 FR 76260).

Additional details regarding the previously conducted technology review can be found in the *Draft Technology Review for Primary Aluminum Reduction Plants* (Docket ID No. EPA–HQ–OAR–2011–0797–0149) and are discussed in the preamble to the December 2011 proposal (76 FR 76260). We conducted an additional review of developments in practices, processes and control technologies since the 2011 proposal and updated the technology review to reflect changes in the number and type of currently operating and idled facilities. As noted, this analysis indicates what developments may be possible assuming the EPA adopts the proposed amendments to the MACT standards discussed in the following section of this preamble. The *Revised Draft Technology Review for the Primary Aluminum Production Source Category* is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

IV. Revised Analytical Results and Proposed Decisions for the Primary Aluminum Production Source Category

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

As described previously, CAA section 112(d) requires the EPA to promulgate technology-based NESHAP for listed source categories, including this source category. The EPA did so in the 1997 primary aluminum NESHAP. As described above (in section II.B), the 1997 NESHAP included MACT standards for TF from all types of existing and new potlines and bake furnaces and MACT standards for POM from existing and new Soderberg potlines, paste plants, bake furnaces and new pitch storage tanks. In the 2011 proposal, we proposed emissions limits pursuant to CAA sections 112(d)(2) and (3) for a number of HAP or emissions points that were not previously covered by the NESHAP, including limits for POM from prebake potlines, COS from prebake and Soderberg potlines and POM from existing pitch storage tanks. After proposal, in response to the 2013 CAA section 114 information request, we received a substantial amount of additional data on POM emissions from prebake potlines and therefore we re-analyzed the proposed limits for emissions of POM from prebake potlines.[34] Based on those analyses we have determined it is appropriate to propose revised emission limits for POM from these existing potlines in these subcategories, and to propose different POM limits for new potlines.

Additionally, after the 2011 proposal, in response to the 2013 CAA section 114 information request, we received data regarding PM and HAP metals emissions from potlines, anode bake furnaces and paste plants. These pollutants are not covered by the 1997 NESHAP. Based on those analyses, we have determined it is appropriate to propose emission limits for PM, as a surrogate for HAP metals, from existing potlines and new potlines, as well as from new and existing anode bake furnaces and new and existing paste plants. We have used PM as a surrogate for HAP metals in many other NESHAP (*e.g.,* secondary aluminum, see 65 FR 15692 (March 23, 2000), and Portland cement, 64 FR 31900 (June 14, 1999)). The agency believes PM is an appropriate surrogate for non-mercury HAP metals because those metals and particulate are captured indiscriminately by PM control technology. See *National Lime Ass'n* v. *EPA,* 233 F. 3d 625, 639 (D.C. Cir. 2000) (upholding use of PM as a surrogate for HAP metal for purposes of CAA section 112(d) MACT standard). We do not consider TF to be a suitable surrogate for HAP metals since the HF portion of TF is very reactive and controlled very effectively via adsorption in dry alumina scrubbers in the Primary Aluminum Production source category. The HAP metals would not be as effectively controlled via these mechanisms and, therefore, we would not expect good correlation, for this source category, between HAP metal emissions and TF emissions. Similarly, we do not consider POM to be a suitable surrogate for HAP metals as POM is more effectively controlled via adsorption in the dry alumina scrubbers than HAP metals. Again, we would not expect good correlation, for this source category, between HAP metal emissions and POM emissions. See 61 FR 50592 (Sept. 26, 1996). We expect better correlations may exist between these pollutants in some other source categories that use other types of control devices to minimize emissions. However, as explained above, we do not expect good correlation in the Primary Aluminum Production source category, which uses dry alumina scrubbers as a primary control technology and is the only source category we are aware of that controls emissions with dry alumina scrubbers. Therefore, we are proposing MACT limits for both POM and PM for Primary Aluminum Production sources in this action.

In this section, we summarize how we developed the revised proposed

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[34] As explained above, the EPA did not have POM emissions data for prebake potlines at the time of the December 2011 proposal. The EPA developed the POM emissions MACT floor limits for prebake potlines in that proposal by estimating POM emissions based on a ratio of POM emissions to TF emissions, an approach which found no support in the public comments. Today's proposal is based entirely on the new emission data obtained since the December 2011 proposal. See section II.D, above.

standards for POM emissions from prebake potlines and the newly proposed PM emission standards for potlines, anode bake furnaces and paste plants (including how we calculated MACT floors, how we accounted for variability in those floor calculations, and how we considered beyond-the-floor (BTF) options). For more information on these analyses, see the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

With regard to Hg, D/F and PCBs, as discussed in section III.A.1 of this preamble, there are considerable limitations in the emissions data for these HAP. For example, many of the available emissions test results were reported as below detection limit (BDL) for these HAP. Furthermore, we have test data for PCBs and D/F for only one of the 11 prebake facilities. Nevertheless, based on the available data (including applying conservative assumptions that non-detectable Hg is actually emitted), we estimate that the total Hg emissions for the entire source category are less than 60 pounds per year and the average Hg emissions per facility are less than 5 pounds per year. We estimate the total D/F toxicity equivalent (TEQ) emissions for the entire source category are less than 7 grams per year (again assuming that non-detectable D/F are actually emitted) and that the average D/F TEQ emissions per facility are less than 1 gram per year. Furthermore, there are significant uncertainties regarding these emissions and we have insufficient data to develop appropriate standards for these HAP. As discussed in section III.A.1 of this preamble, the EPA may, but is not obligated to, amend MACT standards [35] and, in the case of D/F, Hg and PCB, where data are insufficient to develop appropriate standards, the EPA is choosing not to propose standards for these HAP at this time.

1. How do we develop MACT floor limits?

As discussed in the 2011 proposal (76 FR 76260), the MACT floor limit for existing sources is calculated based on the average performance of the best performing units in each category or subcategory, and also on a consideration of these units' variability. The MACT floor for new sources is based on the single best performing source, with a similar consideration of that source's variability. The MACT floor for new sources cannot be less stringent than the emissions performance that is achieved in practice by the best-controlled similar source. To account for variability in the operation and emissions, the stack test data were used to calculate the average emissions and the 99 percent upper prediction limit (UPL) to derive the MACT floor limits. For more information regarding the general use of the UPL and why it is appropriate for calculating MACT floors, see the memorandum titled, *Use of the Upper Prediction Limit for Calculating MACT Floors* (UPL Memo), which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797). Furthermore, with regard to calculation of MACT floor limits based on limited datasets, we considered additional factors as summarized below and described in more detail in the memorandum titled, *Approach for Applying the Upper Prediction Limit to Limited Datasets for the Primary Aluminum Production Source Category* (*i.e.,* Limited Dataset Memo), which is available in the docket for this action.

2. What is our approach for applying the UPL to limited datasets?

The UPL approach addresses variability of emissions data from the best performing source or sources in setting MACT standards. The UPL also accounts for uncertainty associated with emission values in a dataset, which can be influenced by components, such as the number of samples available for developing MACT standards and the number of samples that will be collected to assess compliance with the emission limit. The UPL approach has been used in many environmental science applications. As explained in more detail in the UPL Memo, the EPA uses the UPL approach to reasonably estimate the emissions performance of the best performing source or sources to establish MACT floor standards.

With regard to the derivation of MACT limits using limited datasets, in a recent DC Circuit Court of Appeals decision in *National Association of Clean Water Agencies* v. *EPA (NACWA),* 734 F. 3d 1115 (2013), which involved challenges to the EPA's MACT standards for sewage sludge incinerators, questions were raised by the court regarding the application of the UPL to limited datasets. We have since addressed these questions, as explained in detail in the Limited Dataset Memo, which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797). We seek comments on the approach described in the Limited Dataset Memo and whether there are other approaches we should consider for such datasets.

3. How did we apply the approach for limited datasets to limited datasets in the Primary Aluminum Production source category?

For the Primary Aluminum Production source category, we have limited datasets for the following pollutants and subcategories: POM and PM from existing CWPB2 potlines, CWPB3 potlines and SWPB potlines; POM and PM from all new potlines; and PM from new anode bake furnaces and paste production plants. Therefore, we evaluated these specific datasets to determine whether it is appropriate to make any modifications to the approach used to calculate MACT floors for each of these datasets.

For each dataset, we performed the steps outlined in the Limited Dataset Memo, including: ensuring that we selected the data distribution that best represents each dataset; ensuring that the correct equation for the distribution was then applied to the data; and comparing individual components of each limited dataset to determine if the standards based on limited datasets reasonably represent the performance of the units included in the dataset. The results of each analysis are summarized below and described in more detail in the Limited Dataset Memo and in the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category* document, which are available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

4. POM Emissions From Potlines

a. Background

As described above, since the 2011 proposal, we obtained additional data on POM emissions from prebake potlines. In particular, we obtained data from eight facilities that operate prebake potlines, including at least one facility in each prebake potline subcategory. Today's proposal is based exclusively on these new data, which the EPA regards as much more reliable than the data used in the 2011 proposal because the new data are based on direct testing of POM emissions, whereas the data used in the 2011 proposal were emissions estimates based on a ratio of POM emissions to TF emissions. Data were obtained from performance tests conducted by each of these facilities on both its primary control system exhaust and its secondary emissions. POM emissions are generated from volatilization of organic matter in anodes used to reduce alumina. All primary aluminum plants control these

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[35] See, *e.g. Portland Cement Ass'n* v. *EPA,* 665 F. 3d 177, 189 (D.C. Cir. 2011).

POM emissions (and PM emissions) by capturing them from the area near the pots and directing them through a dry alumina scrubber, except for one plant which directs these emissions through wet scrubbers. The one plant with wet scrubbers produces a very high purity aluminum, is in a subcategory known as the Center-Worked Prebake 3 subcategory, and is the only facility in that subcategory. Uncaptured (secondary) emissions of POM and PM are emitted from vents in the roof of the potroom. One plant operates wet roof scrubbers to control these secondary emissions. This is the sole facility in the Side-Worked Prebake subcategory. The MACT floor limits were determined based on the sum of the primary and secondary emissions. As in the current NESHAP and the 2011 proposal, these results are normalized to units of production, and expressed as pounds of pollutant (in this case, POM) per ton of aluminum produced (lb/ton aluminum).

Pursuant to CAA sections 112(d)(2) and 112(d)(3), we are proposing to revise the 1997 NESHAP to include emission limits for POM emissions from prebake potlines. Regarding Soderberg potlines, the 1997 NESHAP already includes MACT limits for POM from Soderberg plants. Furthermore, the additional emissions data we gathered since the 2011 proposal do not support any revisions of the MACT limits for POM emissions from Soderberg potlines based solely on control technology considerations. Therefore, we are not proposing to revise the emissions limits for POM emissions from Soderberg potlines under CAA sections 112(d)(2), 112(d)(3) or 112(d)(6) in today's action. However, as described in section IV.C of this preamble, we also evaluated POM limits as part of our risk review and based on the results of the risk assessment we concluded that it was appropriate to tighten the POM limits for Soderberg facilities because of unacceptable risks. Therefore, as described in detail in section IV.C., we are proposing significantly tighter POM limits for Soderberg facilities based on our risk review pursuant to section 112(f) of the CAA.

b. Calculation of MACT Floors for POM for Potlines

As discussed in the 2011 proposal and in section II.A of this preamble, the MACT floor for existing sources is based on the performance of best performing existing sources, and the MACT floor for new sources is based on the single best performing source. These MACT floor values include a calculation of variability calculated from these best performers' test runs (76 FR 76260). More specifically, to account for normal variability in the operation and emissions, we calculated the MACT floors using the 99 percent UPLs. For more information regarding the use of the UPL and why it is appropriate for calculating MACT floors, see the UPL Memo. For more information on the calculation of the MACT floors for the Primary Aluminum Production source category, see the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

With regard to new sources, as explained above, the MACT floor for new sources cannot be less stringent than the emissions performance that is achieved in practice by the best-controlled similar source. The EPA performed a variability analysis similar to that used for existing sources to calculate a 99 percent UPL using the test runs from the lowest emitting facility without regard to subcategory to derive the new source MACT floor limit. This new source MACT floor limit for POM emissions from potlines is lower (*i.e.,* more stringent) than the MACT floor limit for POM emissions from existing potlines for all subcategories. We are not proposing separate emission limits for subcategories for new potlines because we expect that any new potlines will be designed to use the cleanest, most efficient technology available, or to improve capture and control systems to achieve emissions no greater than the best existing plant.[36] A summary of the proposed MACT floor limits for POM is provided in Table 4.

TABLE 4—PROPOSED MACT FLOOR EMISSION LIMITS FOR POM FROM POTLINES

Affected source	Emission limit (in lb POM/ton aluminum)
Existing CWPB1 Potlines	1.1
Existing CWPB2 Potlines	12
Existing CWPB3 Potlines	2.7
Existing SWPB Potlines	19
New or Reconstructed Potlines	0.77

c. BTF Analysis for POM for Existing Potlines

The next step in establishing MACT standards is the BTF analysis. In this step, we investigate other mechanisms for further reducing HAP emissions that are more stringent than the MACT floor level of control in order to ''require the maximum degree of reduction in emissions'' of HAP. In setting such standards, CAA section 112(d)(2) requires the agency to consider the cost of achieving the additional emission reductions, any non-air quality health and environmental impacts associated with more stringent standards and energy requirements associated with more stringent standards. Historically, these factors have included factors such as solid waste impacts of a control and the energy impacts of various potential control strategies.

As described below, we considered BTF control options to further reduce emissions of POM. The BTF POM control options were developed based on the application of wet roof scrubbers to the 11 facilities that currently do not have them.

We estimated the capital costs, annualized costs, emissions reductions and cost effectiveness for the BTF limits for this control technology. The details regarding how these limits were derived, and the estimated costs and expected reductions of POM and POM HAP through the installation of wet roof scrubbers, are provided in the *Revised Draft Cost Impacts for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

Under this option (*i.e.,* BTF controls for POM), we estimate the capital costs for installation and operation of the wet roof scrubbers at the 11 facilities would be $490 million, the annualized costs would be $155 million, and the controls would achieve about 1,000 tons per year of reductions in POM and 1.9 tons per year in speciated PAHs (a subset of POM). This results in an estimated cost effectiveness of about $155,000 per ton of POM and $82 million per ton of speciated PAHs. We believe our estimated costs are unacceptably high and not cost effective. When the primary aluminum NESHAP was proposed in 1996, we considered a cost effectiveness of $91,000 per ton of POM to be unacceptably high (*Basis and Purpose Document for the Development of Proposed Standards for the Primary Aluminum Industry,* July 19, 1996). Furthermore, industry sources provided additional information (Docket ID No. EPA–HQ–OAR–2011–0797, Johnson, C.D., Aluminum Association, July 9, 2014) indicating that most existing prebake facilities would also likely require structural modification and reinforcement to accommodate the wet roof scrubbers, which could increase our estimated costs by 2 to 3 times, or

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[36] We are not reconsidering, reopening, or otherwise considering comment on the subcategorization structure for existing sources in this source category.

more. Note also that we have previously determined that there are technical problems with using these wet scrubbers at those facilities located in colder climates (see 62 FR 52392 (Oct. 7, 1997)). Furthermore, based on our memo titled, *Economic Impact Analysis for National Emissions Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants,* which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797), we project that this option would pose significant economic burden on the companies and that several facilities would be at risk of closure under this option. There would also be collateral environmental impacts (more waste generated and more energy use), although these are not the most significant factors in the EPA's proposed decision.

Based on consideration of all the factors described above, we are not proposing BTF limits for POM emissions from existing sources. A summary of the estimated costs and reductions for the BTF option of wet scrubbers is provided in Table 5.

TABLE 5—ESTIMATED COSTS AND REDUCTIONS FOR BTF CONTROL OPTIONS

Annualized costs ($/yr)	Pollutant	Reduction (ton/yr)	Cost effectiveness ($/ton)
Retrofit Wet Scrubber for Potline Secondary Emissions:			
$155 million	POM	1,000	155,000.
	Speciated PAHs	1.9	82 million.
	PM	2,900	53,000.
	PM–HAP metals	23	6.73 million.
Upgrade filter bags for anode bake furnaces:			
$7.9 million	PM	7.3	1.1 million.
	PM–HAP metals	0.027	292 million.
Upgrade filter bags for paste plants:			
$560,000	PM	5.31	110,000.
	PM–HAP metals	0.0058	96 million.

Note: As described in sections above, the potline control costs shown in Table 5 could be 2 to 3 times higher or more because of need for building modifications and reinforcement to support the wet roof scrubbers.

d. BTF Analysis for POM for New Potlines

We estimate that a new primary aluminum plant of 200,000 ton per year capacity could install wet roof scrubbers for $28 million capital cost and $11 million per year total annualized cost. This is equivalent to $55 per ton of aluminum. Assuming a new or reconstructed plant would be similar to the best performing existing source, we estimate that it would achieve reductions of 21 tons per year of POM by installing a wet roof scrubber. Therefore, the estimated cost effectiveness would be $540,000 per ton of POM reductions. We believe these costs and cost effectiveness are unacceptably high. Furthermore, the MACT floor level of control is based on the best performing existing source which already has relatively low POM emissions (which explains the poor cost effectiveness of further control). Therefore, we are not proposing BTF limits for emissions of POM from new or reconstructed sources.

e. Proposed Standards for POM for Existing, New and Reconstructed Potlines

Based on the results of all our analyses for existing, new and reconstructed sources, and after considering the estimated costs and reductions of the possible options for existing, new and reconstructed sources, we are proposing prebake potline emission standards for POM at the MACT floor for existing, new and reconstructed sources (as shown in Table 4).

As discussed earlier, these MACT floor-based standards are based on the 99 percent UPL. We estimate that all existing prebake potlines will be able to meet these MACT floor limits for POM without the need to install additional controls because the performance of all sources in the category is similar, all of the potlines within each of the subcategories utilize very similar emissions control technology and the average emissions from each source are well below the MACT floor limit. Therefore, in assessing the costs of the proposed MACT standards for potline POM emissions, the only associated additional costs we estimate are for compliance testing, monitoring and recordkeeping.

5. PM Emissions From Potlines

a. Background

The 1997 NESHAP does not contain emission limits for HAP metals (or for a surrogate). However, as described above, since the 2011 proposal, we obtained significant amounts of data on PM emissions from potlines. In particular, we obtained PM data from nine prebake potline facilities (including at least one facility in each prebake potline subcategory) and one Soderberg facility when the facility was operating. We obtained data from each of these facilities from performance tests of both the primary control system exhaust and the secondary emissions. The PM emissions are generated from suspension of alumina feed material and the condensation or precipitation of metals, organic compounds and fluoride salts emitted from the pots. The PM includes HAP metals that are in particulate form (such as Ni, Cd, Cr, Pb, manganese (Mn) and As). The particulate HAP metals emitted by primary aluminum facilities are part of their PM emissions, and, as noted above, are captured indiscriminately by the PM control equipment. All primary aluminum plants control these emissions by capturing them from the area near the pots and directing them through a dry alumina scrubber, followed by a particulate control device, except for one facility which directs the captured emissions through a wet scrubber. This one facility is in the Center-Worked Prebake 3 potline subcategory which produces a very high purity aluminum and is the only facility in that subcategory.

The uncaptured (secondary) PM emissions are emitted from vents in the roof of the potroom. One plant operates wet roof scrubbers which are assumed to provide some control (about a 50 percent reduction) of these secondary emissions. This one facility is in the Side-Worked Prebake subcategory and is the only facility in the U.S. that is in that subcategory.

The MACT floor limits were determined based on the sum of the primary and secondary emissions. As in the current NESHAP, these results were normalized to units of production, and are expressed as pounds of pollutant (in this case, PM) per ton of aluminum produced.

Pursuant to CAA sections 112(d)(2) and (3), we are proposing to revise the 1997 NESHAP to include emission limits for PM emissions (as a surrogate for particulate HAP metals) from potlines.

b. Calculation of MACT Floor Limits for PM for Potlines

As described in sections II.A and IV.A.4.b of this preamble, the MACT floor limit reflects the performance of best performing sources for existing sources (or the single best performing source, for new sources), including a calculation of variability. More specifically, to account for variability, we calculated the MACT floors using the 99 percent UPL. For more information on how we calculated the MACT floors, see the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

With regard to new sources, as explained above, the MACT floor cannot be less stringent than the emissions performance that is achieved in practice by the best-controlled similar source. The MACT floor limit for PM for new potlines was calculated based on the 99 percent UPL using the test data from the lowest emitting facility without regard to subcategory. This new source MACT floor limit for PM emissions from potlines is lower (*i.e.,* more stringent) than the MACT floor limit for PM emissions from existing potlines. This emission limit is based on the best performing source and is equal to the lowest emission limit proposed for any existing potline subcategory. We are not proposing subcategories for new potlines because we expect that any new potlines will be designed to use the cleanest, most efficient technology available, or to improve capture and control systems to achieve emissions no greater than the best existing plant. We are proposing that the MACT floor emissions limit for all types of new potlines will be based on the single best performing existing potline, which for PM is a potline at the SWPB facility. A summary of the MACT floor limits for PM for existing and new potlines is provided in Table 6.

TABLE 6—MACT FLOOR EMISSION LIMITS FOR PM FROM POTLINES

Affected source	PM emission limit (lb PM/ton aluminum)
Existing CWPB1 Potlines	7.2
Existing CWPB2 Potlines	11
Existing CWPB3 Potlines	20
Existing SWPB Potlines	4.6
Existing VSS2 Potlines	26
New and Reconstructed Potlines	4.6

c. BTF Analysis for PM for Existing Potlines

The next step in establishing MACT standards is the BTF analysis. In this step, we investigate other mechanisms for further reducing HAP emissions that are more stringent than the MACT floor level of control in order to ''require the maximum degree of reduction in emissions'' of HAP. In setting such standards, CAA section 112(d)(2) requires the agency to consider the cost of achieving the additional emission reductions, any non-air quality health and environmental impacts associated with more stringent standards and energy requirements associated with more stringent standards.

As described below, we considered BTF control options to further reduce emissions of PM. The BTF PM control options were developed based on the application of wet roof scrubbers to the 11 facilities that currently do not have them, which are the same BTF controls assessed for POM.

We estimated the capital costs, annualized costs, emissions reductions and cost effectiveness for the BTF limits for this control technology. These are the same costs used for estimating POM control costs. The details regarding calculation of these estimated costs and expected reductions of PM and HAP metals through the installation of wet roof scrubbers are provided in the *Revised Draft Cost Impacts for the Primary Aluminum Production Source Category* document which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

Under this option (*i.e.,* BTF controls for PM and HAP metals), we estimate the capital costs for 11 facilities to install and operate wet roof scrubbers would be about $490 million, annualized costs of about $155 million, and would achieve about 2,900 tons per year of reductions in PM, 780 tons per year of $PM_{2.5}$ and 23 tons per year in HAP metals, which results in estimated cost effectiveness of about $200,000 per ton of $PM_{2.5}$ and $6.7 million per ton of HAP metals. Furthermore, industry sources provided additional information (Docket ID No. EPA–HQ–OAR–2011–0797, Johnson, C.D., Aluminum Association, July 9, 2014) indicating that most existing prebake facilities would likely require structural modification and reinforcement to accommodate the wet roof scrubbers, which could increase our estimated costs by 2 to 3 times, or more. Therefore, we believe the costs for these BTF controls would be unacceptably high. Note also that we have previously determined that there are technical problems with using these wet scrubbers at those facilities located in colder climates (see 62 FR 52392, October 7, 1997). Furthermore, based on our *Economic Impact Analysis for National Emissions Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants,* which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797), we project that this option would pose significant economic burden on the companies and that several facilities would be at risk of closure. There would also be collateral environmental impacts (more waste generated and more energy use), although these are not significant factors in the EPA's proposed decision.

Based on consideration of all the factors described above, we are not proposing BTF limits for PM emissions from existing sources. A summary of the costs and reductions for the BTF option of wet scrubbers is provided in Table 5.

d. BTF Analysis for PM for New Potlines

We estimate that a new primary aluminum plant of 200,000 ton per year capacity could install wet roof scrubbers for $28 million per year capital cost and $11 million per year total annualized cost. This is equivalent to $55 per ton of aluminum. Assuming a new or reconstructed plant would be similar to the best performing existing source, we estimate that it would achieve 110 tons per year reductions of PM and 32 tons per year reductions of $PM_{2.5}$ by installing a wet roof scrubber. Therefore, the estimated cost effectiveness would be $98,000 per ton of PM reductions and $350,000 per ton of $PM_{2.5}$ reductions. We believe these costs are unacceptably high and not cost effective. Therefore, we are not proposing BTF limits for PM for new or reconstructed sources.

e. Proposed Standards for PM for Existing, New and Reconstructed Potlines

Based on the results of all our analyses for existing, new and reconstructed sources, and after considering the estimated costs and reductions of the possible options for existing, new and reconstructed sources, we are proposing PM potline emission standards at the MACT floor for existing, new and reconstructed sources (as shown in Table 6). As discussed earlier, these MACT floor-based standards are based on the 99 percent UPL. We estimate that all existing prebake potlines will be able to meet these MACT floor limits for PM without the need to install additional controls because the performance of all sources in the category is similar, all of the potlines within each of the subcategories utilize very similar emissions control technology, the average emissions from each source are well below the MACT floor limit and emissions data from every facility that performed emissions testing were included in the dataset used to develop the MACT floor. Therefore, in assessing the costs of the proposed MACT standards for potline PM emissions, the only associated costs we estimate are for compliance testing, monitoring and recordkeeping.

6. PM Emissions From Anode Bake Furnaces

a. Background

The 1997 NESHAP does not contain emission limits for HAP metals (or for a surrogate). However, as described above, we obtained significant data on PM emissions from anode bake furnaces since the 2011 proposal. In particular, we obtained data from 7 of the 8 anode bake furnaces presently in operation. Data were obtained by facilities from performance tests of their control device exhausts. As in the current NESHAP, these results are normalized to units of production, and expressed as pounds of pollutant (in this case, PM) per ton of green anode. PM emissions are generated from dust and condensed pitch hydrocarbons and fluorides generated when green anodes are baked. All currently operating anode bake furnaces are controlled with dry alumina scrubbers and fabric filters, which capture particulate HAP metals indiscriminately as a subset of total captured PM.

Pursuant to CAA sections 112(d)(2) and (3), we are proposing to revise the 1997 NESHAP to include emission limits for PM (as a surrogate for HAP metals) from anode bake furnaces.

b. Calculation of MACT Floor Limits for PM for Anode Bake Furnaces

We followed the same general approach, using the 99 percent UPL, to calculate MACT floor limits for anode bake furnaces as we used for the potlines (described in section IV.A.4.b of this preamble). Using this approach we calculate the MACT floor limit for existing anode bake furnaces to be 0.068 lbs PM per ton of green anode (lbs/ton green anode). For more information on how we calculated the MACT floors, see the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

With regard to new sources, as explained above, the MACT floor cannot be less stringent than the emissions performance that is achieved in practice by the best-controlled similar source. A variability analysis similar to that used for existing sources was then performed to calculate a 99 percent UPL using the test data from the lowest emitting facility. This new source MACT floor limit for PM emissions from anode bake furnaces is lower (*i.e.,* more stringent) than the MACT floor limit for PM emissions from existing anode bake furnaces. The new source MACT floor limit is based on the performance of the best existing anode bake furnace. Using this approach, we calculate the MACT floor limit for new sources to be 0.036 lbs/ton green anode.

c. BTF Analysis for PM for Existing Anode Bake Furnaces

The next step in establishing MACT standards is the BTF analysis. As described above, in this step, we investigate other mechanisms for further reducing HAP emissions that are more stringent than the MACT floor level of control in order to ''require the maximum degree of reduction in emissions'' of HAP.

We considered BTF control options to further reduce emissions of PM from anode bake furnaces. The BTF PM control options were developed based on the replacement of cloth filter bags with membrane bags which are expected to provide better particulate control.

We estimated the capital costs, annualized costs, emissions reductions and cost effectiveness for the BTF limits for this control technology. The details regarding how these limits were derived, and the estimated costs and expected reductions of PM and HAP metals through the replacement of conventional filter bags with membrane bags are provided in the *Revised Draft Cost Impacts for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

Under this option (*i.e.,* BTF controls for PM and HAP metals), we estimate annualized costs for 10 facilities of about $7.9 million. This option would achieve about 7.3 tons per year of reductions in PM and 0.027 tons per year of HAP metals, which results in estimated cost effectiveness of about $1.1 million per ton of PM and $292 million per ton of HAP metals. We believe these costs and cost effectiveness are unacceptably high. There would also be collateral environmental impacts (more waste generated and more energy use), although these are not the most significant factors in the EPA's proposed decision. Based on consideration of all the factors described above, we are not proposing BTF limits for PM emissions from existing sources.

A summary of the costs and reductions for the BTF option based on the performance of fabric filters with membrane bag upgrades is given in Table 5.

d. BTF Analysis for PM for New Bake Furnaces

We estimate that a new primary aluminum plant of 200,000 ton per year capacity could use membrane filter bags in fabric filters used to control PM from anode bake furnaces for an incremental annualized cost of $680,000 per year. Cost effectiveness is expected to be comparable to that estimated for existing plants. We believe these costs and cost effectiveness are unacceptably high. Therefore, we are not proposing BTF limits for PM emissions from new anode bake furnaces.

e. Proposed Standards for PM for Existing, New and Reconstructed Anode Bake Furnaces

Based on the results of all our analyses for existing, new and reconstructed sources, and after considering the estimated costs and reductions of the possible options for existing, new and reconstructed sources, we are proposing a PM emission limit at the MACT floor for existing bake furnaces of 0.068 pounds of PM per ton of green anode (lbs PM/ton green anode) and we are proposing a MACT floor limit of 0.036 lbs PM/ton green anode for new and reconstructed sources.

As discussed earlier, these MACT floor-based standards are based on the 99 percent UPL. We estimate that all existing bake furnaces will be able to meet these MACT floor limits for PM without the need to install additional controls because the performance of all sources in the category is similar, all of these furnaces utilize very similar emissions control technology and the average emissions from each source for which we have reliable data are well below the MACT floor limit. Therefore, the only additional costs are estimated to be for compliance testing, monitoring and recordkeeping. Therefore, in assessing the costs of the proposed MACT standards for PM for bake furnaces, the only associated costs we estimate are for compliance testing, monitoring and recordkeeping.

7. PM Emissions From Paste Plants

a. Background

The 1997 NESHAP does not contain emission limits for emissions of HAP metals (or for a surrogate) from paste plants. However, as described above, we obtained a substantial amount of data on PM emissions from paste plants since the 2011 proposal. In particular, we obtained emissions test data from seven of the eight paste plants presently in operation. Data were obtained from tests of control device exhausts. As in the current NESHAP, these results are normalized to units of production, and expressed as pounds of pollutant (in this case, PM) per ton of green anode. All currently operating paste plants are controlled with dry coke scrubbers and fabric filters. PM emissions are generated from crushing and grinding coke and mixing ground coke with heated pitch to produce green anodes.

Pursuant to CAA sections 112(d)(2) and (3), we are proposing to revise the 1997 NESHAP to include emission limits for PM emissions from paste plants.

b. Calculation of MACT Floor Limits for PM for Paste Plants

We followed the same general approach, using the 99 percent UPL, to calculate MACT floor limits for paste plants as we used for the potlines (described in section IV.A.4.b of this preamble). Using this approach, we calculate the MACT floor limit for existing paste plants to be 0.082 lbs of PM per ton of green anode. For more information on how we calculated the MACT floors, see the *Revised Draft MACT Floor Analysis for the Primary Aluminum Production Source Category* document, which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

With regard to new sources, a variability analysis similar to that used for existing sources was then performed to calculate a 99 percent UPL using the test data from the lowest emitting facility. This new source MACT floor limit for PM emissions from paste plants is based on the best performing existing paste plant and is lower (*i.e.,* more stringent) than the proposed MACT floor limit for PM emissions from existing paste plants. Using this approach, we calculate the MACT floor limit for new paste plants to be 0.0054 lbs of PM/ton green anode.

c. BTF Analysis for PM for Existing Paste Plants

The next step in establishing MACT standards is the BTF analysis. In this step, we investigate other mechanisms for further reducing HAP emissions that are more stringent than the MACT floor level of control in order to ''require the maximum degree of reduction in emissions'' of HAP.

We considered BTF control options to further reduce emissions of PM from paste plants. The BTF PM control options were developed based on the replacement of cloth filter bags with membrane bags which are expected to provide better particulate control.

We estimated the capital costs, annualized costs, emissions reductions and cost effectiveness for the BTF limits for this control technology. We also considered if there were non-air environmental impacts or energy usage implications. The details regarding how these limits were derived, and the estimated costs and expected reductions of PM and HAP metals through the replacement of conventional filter bags with membrane bags are provided in the *Revised Draft Cost Impacts for the Primary Aluminum Production Source Category* document which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

Under this option (*i.e.,* BTF controls for PM and HAP metals), we estimate the annualized costs for 11 facilities to be about $560,000, and would achieve about 5.3 tons per year of reductions in PM, 1.5 tons of reductions in $PM_{2.5}$ and 0.0058 tons per year of HAP metals. This results in estimated cost effectiveness of about $110,000 per ton of PM, $370,000 per ton of $PM_{2.5}$ and $96 million per ton of HAP metals. We believe these costs and cost effectiveness are unacceptably high and minimal HAP reductions would be achieved. There would also be collateral environmental impacts (more waste generated and more energy use), although these are not significant factors in the EPA's proposed decision. Therefore, we are not proposing BTF limits for PM emissions from existing paste plants.

A summary of the costs and reductions for the BTF option of membrane bag upgrades is provided in Table 5.

d. BTF Analysis for PM for New Paste Plants

We estimate that a new primary aluminum plant with the capacity of 200,000 ton per year could use membrane filter bags in fabric filters used to control PM from a paste plant for an incremental annualized cost of $51,000 per year, which would achieve approximately 0.0005 tpy reductions. This results in estimated cost effectiveness of about $98 million per ton of HAP metals. We believe these costs and cost effectiveness are unacceptably high, especially given that minimal HAP reductions would be achieved. Furthermore, the metal HAP emissions are already quite low from existing paste plants under the current NESHAP. Therefore, we are not proposing BTF limits for PM emissions from new or reconstructed paste plants.

e. Proposed Standards for PM for Existing, New and Reconstructed Paste Plants

Based on the results of all our analyses for existing, new and reconstructed sources, and after considering the estimated costs and reductions of the possible options for existing, new and reconstructed sources, we are proposing paste plant PM emission standards at the MACT floor for existing, new and reconstructed sources (as shown in Table 7). Since all of the paste plants utilize similar emissions control technology and the average emissions from each source were well below the MACT floor, all presently operating facilities are expected to meet the proposed MACT floor emission standards without the need to install additional controls. Therefore, in assessing the costs of the proposed MACT standards for PM for paste plants, the only associated costs we estimate are for compliance testing, monitoring and recordkeeping.

A summary of the proposed MACT standards pursuant to CAA sections 112(d)(2) and (3) for POM and PM for the various processes at primary aluminum reduction plants is provided in Table 7.

TABLE 7—PROPOSED MACT EMISSION LIMITS FOR POM AND PM FOR PRIMARY ALUMINUM REDUCTION PLANTS PURSUANT TO SECTION 112(d)(2)

Affected source	Pollutant	Emission limit
Existing CWPB1 Potlines	POM	1.1 lb/ton aluminum.
Existing CWPB2 Potlines	POM	12 lb/ton aluminum.
Existing CWPB3 Potlines	POM	2.7 lb/ton aluminum.
Existing SWPB Potlines	POM	19 lb/ton aluminum.
New or Reconstructed Potlines	POM	0.77 lb/ton aluminum.
Existing CWPB1 Potlines	PM	7.2 lb/ton aluminum.
Existing CWPB2 Potlines	PM	11 lb/ton aluminum.
Existing CWPB3 Potlines	PM	20 lb/ton aluminum.
Existing SWPB Potlines	PM	4.6 lb/ton aluminum.
Existing VSS2 Potlines	PM	26 lb/ton aluminum.
New and Reconstructed Potlines	PM	4.6 lb/ton aluminum.
Existing Bake Furnaces	PM	0.068 lb/ton green anode.
New Bake Furnaces	PM	0.036 lb/ton green anode.
Existing Paste Plants	PM	0.082 lb/ton green anode.
New and Reconstructed Paste Plants	PM	0.0056 lb/ton green anode.

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

1. Inhalation Risk Assessment Results

Table 8 provides an overall summary of the results of the inhalation risk assessment.

TABLE 8—PRIMARY ALUMINUM PRODUCTION SOURCE CATEGORY INHALATION RISK ASSESSMENT RESULTS

Maximum individual cancer risk (-in-1 million)[a]	Estimated population at increased risk levels of cancer	Estimated annual cancer incidence (cases per year)	Maximum chronic non-cancer TOSHI[b]	Refined maximum acute non-cancer HQ[c]
Actual Emissions				
70	≥ 1-in-1 million: 881,000 ≥ 10-in-1 million: 65,000 ≥ 100-in-1 million: 0	0.06	1 Cadmium and Nickel Compounds.	HQ_{REL} = 10 (Arsenic Compounds). Residential.
Allowable Emissions[d]				
300	≥ 1-in-1 million: 950,000 ≥ 10-in-1 million: 76,000 ≥ 100-in-1 million: 200	0.06	2 Nickel and Arsenic Compounds.	

[a] Estimated maximum individual excess lifetime cancer risk due to HAP emissions from the source category.

[b] Maximum TOSHI. The target organ with the highest TOSHI for the Primary Aluminum Production source category for actual emissions is the kidney and respiratory system and for allowable emissions is the respiratory, immunological and developmental systems.

[c] The maximum off-site HQ acute value of 10 at a residential location for actuals is driven by emissions of As from the potline roof vents. See section III.A.3 of this preamble for explanation of acute dose-response values. Acute assessments are not performed on allowable emissions.

[d] The development of allowable emission estimates can be found in the memoranda titled, *Revised Draft Development of the RTR Emissions Dataset for the Primary Aluminum Production Source Category* which is available in the docket.

The inhalation risk modeling performed to estimate risks based on actual and allowable emissions relied primarily on emissions data from the information requests. The results of the chronic baseline inhalation cancer risk assessment indicate that, based on estimates of current actual emissions, the maximum individual lifetime cancer risk (MIR) posed by the Primary Aluminum Production source category is 70-in-1 million, with As, Ni and Cr^{+6} compounds from the potline roof vents accounting for 99 percent of the MIR. The total estimated cancer incidence from primary aluminum production sources based on actual emission levels is 0.06 excess cancer cases per year, with emissions of As, Ni and Cr^{+6} compounds contributing 64 percent, 21 percent and 8 percent, respectively, to this cancer incidence. In addition, we note that approximately 900,000 people are estimated to have cancer risks greater than or equal to 1-in-1 million as a result of actual emissions from this source category, with 65,000 people having cancer risks greater than 10-in-1 million.

When considering MACT-allowable emissions, the maximum individual lifetime cancer risk is estimated to be up to 300-in-1 million, driven by potential emissions of As, Ni and PAH compounds from the potline roof vents of the one idle Soderberg facility. The estimated cancer incidence is estimated to be 0.06 excess cancer cases per year. Approximately 950,000 people were estimated to have potential cancer risks greater than or equal to 1-in-1 million considering allowable emissions from primary aluminum plants with 76,000 people with potential cancer risks greater than 10-in-1 million and 200 people with potential cancer risks greater than 100-in-1 million. The maximum modeled chronic non-cancer

HI (TOSHI) value based on actual emissions was estimated to be 1, for both Ni and Cd compounds emissions from the potline roof vents. When considering MACT-allowable emissions, the maximum chronic non-cancer TOSHI value was estimated to be 2, for both Ni and As compounds from potline roof vent emissions.

2. Acute Risk Results

Worst-case acute HQs were calculated for every emitted HAP that has an appropriate acute benchmark. For cases where the screening HQ was greater than 1, we further determined the highest HQ value that might occur outside facility boundaries. Based on estimated actual peak baseline emissions, the highest off-site acute screening HQ is 30 for As and the highest off-site acute screening HQ for HF is 3.

We refined the acute As assessment by evaluating exposures at the centroids of census blocks—these are locations around the facilities where people could actually live. Based on this refinement, the maximum HQ was 10, for As. We estimate that about 170 people could be exposed to concentrations leading to an acute HQ of 10 for As, about 1,500 people could be exposed to a concentration leading to an acute HQ greater than 5, and that about 8,500 people could be exposed to a concentration leading to an acute HQ greater than 1. This assessment still assumes in order to reach an HQ greater than 1 that peak emissions from the source category and worst-case meteorological conditions co-occur. We then assume further that an individual will be present to be exposed at that time. These are a conservative series of assumptions. We expect that this would happen for very few hours of the 8,760 hours that are in a year.

We did not conduct any refinements to the HF acute screen because the maximum off-site HQ of 3 is at a location where we would not expect people to be for 1 hour. For more details see the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

3. Multipathway Risk Screening Results

Results of the worst-case Tier 1 screening analysis indicate that 13 facilities exceeded the PB–HAP emission screening rates (based on estimates of actual emissions) for D/F, Hg and PAH with six facilities exceeding the screening rate for Cd. For the PB–HAPs 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 conservative, high-end assumptions about consumption of local fish and locally grown or raised foods (adult female angler at 99th percentile consumption for fish [37] for the subsistence fisherman scenario and 90th percentile for consumption of locally grown or raised foods [38] for the farmer scenario) which, as noted above, may not occur for this source category. It is important to note that, even with the inclusion of some site-specific information in the Tier 2 analysis, the multipathway screening analysis is still a very conservative, health-protective assessment (*e.g.,* upper-bound consumption of local fish and locally grown and/or raised foods) and in all likelihood will yield 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.

Based on this Tier 2 non-cancer screening analysis, emissions of Hg [39] and Cd exceeded the site-specific levels for those PB–HAP by a factor of 2 from two different facilities. With regard to the Tier 2 cancer screening analysis, 10 facilities have estimated D/F emissions, as 2,3,7,8-tetrachlorodibenzo-p-dioxin TEQ, above the Tier 2 cancer screening thresholds and 12 facilities have estimated PAH emissions, as benzo(a)pyrene (BaP), above the Tier 2 cancer screening threshold. The highest cancer exceedance for D/F was 40 times and 7 times for PAH's for the subsistence fisherman scenario (total cancer screen value of 50 for the MIR site). Thus, these results indicate that the maximum cancer risks due to multipathway exposures to D/F and PAH emissions for the subsistence fisher scenario are less than 50-in-1 million.[40] For the subsistence farmer scenario, the highest cancer exceedance for D/F was 10 times and PAHs was 4 times (total cancer screen value of 20 for the MIR site).

Results of the analysis for Pb compounds indicate that based on the baseline, actual emissions, the maximum annual off-site ambient Pb concentration was below the primary NAAQS for Pb.

4. Environmental Risk Screening Results

We conducted an environmental risk screening assessment for the Primary Aluminum Production source category for the following HAP: Cd, Hg, PAHs, D/F and HF. The results of the environmental screening analysis are summarized in Table 9.

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[37] Burger, J. 2002. *Daily Consumption of Wild Fish and Game: Exposures of High End Recreationists.* International Journal of Environmental Health Research 12:343–354.

[38] U.S. EPA. *Exposure Factors Handbook 2011 Edition (Final).* U.S. Environmental Protection Agency, Washington, DC, EPA/600/R–09/052F, 2011.

[39] As noted earlier, mercury values used in the analysis are likely to be inflated because EPA assumed mercury was emitted even from sources where no mercury was detected.

[40] As noted earlier, D/F emissions used in this analysis are likely to be overstated because EPA imputed values for D/F congeners even from plants and process units where those D/F congeners were not detected in the emissions tests.

TABLE 9—SUMMARY OF ENVIRONMENTAL RISK SCREEN RESULTS FOR THE PRIMARY ALUMINUM PRODUCTION SOURCE CATEGORY

Environmental HAP		Number of facilities in category exceeding				Percent of modeled area in category exceeding[2]	
		Tier 1 Screen		Tier 2 Screen[1]		NOAEL (%)	LOAEL (%)
		NOAEL	LOAEL	NOAEL	LOAEL		
PB–HAP	D/F	None	None			0.40	0
	MeHg	None	None			0	0
	Cd	1	1	None	None	0	0
	PAH	1	1	1	None	[4] NA	0
Acid Gases	HF[3]	NA	None			NA	0.2

[1] Tier 2 screen is performed for PB–HAP when there are exceedances of the Tier 1 screen. The acid gas screen is a one tier screen.

[2] A value of 0% indicates that none of the modeled data points exceeded the benchmark. For PB–HAP the percent area is based on the Tier 2 results, if a Tier 2 analysis is performed. Otherwise, the percent area is based on the Tier 1 results.

[3] For HF, we evaluated two benchmarks, one from Canada and the other from the state of Washington. Although, they are both considered to be LOELs—the level between a NOAEL and a LOAEL, we have listed the results under the LOAEL column for the Canadian benchmark, which is the more protective of the two.

[4] One facility had a Tier 2 exceedance for the sediment NOAEL benchmark at one lake. For PB–HAP the percent area is calculated for soil benchmarks only.

NA = Not Applicable. MeHg = methylmercury.

In our Tier 1 analysis, emissions of D/F and methylmercury did not exceed the threshold emission rates for any of the ecological benchmarks for any facility in the source category. In our Tier 1 analysis, emissions of Cd and PAHs exceeded some ecological benchmarks for one facility. Therefore, we performed a Tier 2 analysis. In the Tier 2 analysis, emissions of Cd did not exceed the threshold emission rates for any of the ecological benchmarks for any facility in the source category. In the Tier 2 analysis, emissions of PAHs exceeded the NOAEL sediment benchmark for one lake by 2 times, but did not exceed the threshold effect level. For 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 the ecological benchmarks. For Pb compounds, we did not estimate any exceedances of the secondary Pb NAAQS.

5. Facility-Wide Risk Assessment Results

The facility-wide chronic MIR and TOSHI are based on actual emissions from all sources. Considering facility-wide emissions, the MIR is estimated to be 70-in-1 million driven by As, Ni and Cr^{+6} emissions and the chronic non-cancer TOSHI value is calculated to be 1 driven by emissions of Cd compounds. In both cases, the source of these emissions are from potline roof vents.

6. Multipathway Refined Risk Results

In the Tier 2 screening, emissions of Cd exceeded the fisher threshold at Alcoa in Ferndale, WA (NEIWA19906), and emissions of Hg exceeded the fisher threshold at Alumax in Goose Creek, SC (NEI41217) by a factor of 2. We also conducted a refined risk assessment for the Reynolds Metals (Alcoa—Massena East) (NEI46970) plant in Massena, NY. For more details on these assessments, see the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal,* which is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797). We then proceeded to a Tier 3 screen. We examined the set of lakes from which the (hypothetical) fisher ingested fish. 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 which critical lakes were fishable and their respective adjustment to the Tier 2 values, we analyzed plume rise data. All three of these sites required plume rise analysis. Approximately, 33 percent of the Cd emissions at NEIWA19906 and six percent of the Hg emissions at NEI41217 were lost due to plume rise, resulting in the Tier 2 non-cancer screening values for both sites for the fisher scenario going from 2 to 1.

Reynolds Metals (NEI46970) permanently ceased operating their Soderberg process in March of 2014. The multipathway and inhalation risk characterization for this site will not be reflective of any future operations that may be conducted at this site, but provides valuable information showing how, through the use of more efficient and cleaner technologies, the industry has improved its environmental performance. This facility had the highest Tier 2 cancer screen value for the source category based upon actual emissions of PAHs and D/F with a value of 70 for the subsistence fisher scenario and a value of 200 for the subsistence farmer scenario.

An analysis of the fishable lakes did not change the Tier 2 cancer screening values, and analysis of the hourly plume-rise data resulted in only 4 percent of the mass being lost to the upper air sink. The Tier 3 screen did not reduce the Tier 2 cancer screen values for either PAH's or D/F for this facility. The subsistence fisher and subsistence farmer scenarios are conservative screens that provide upper bound estimates of screening values with high levels of uncertainty. The multipathway scenarios for the Tier screens include some hypothetical elements, namely the location and actual site-specific ingestion rates for exposed individuals. It is important to note that even though the multipathway assessment has been conducted, no data exist to verify the existence of either the farmer or fisher for each site. With regard to the farmer scenario, the uncertainty is even higher due to lack of site-specific information on where sustainable farms are located in addition to the make-up and quantities of food ingested.

7. Demographic Analysis Results

To examine the potential for any environmental justice (EJ) issues that might be associated with the source category, we performed a demographic analysis, which is an assessment of risks to individual demographic groups, of the population close to the facilities. In this analysis, we evaluated the distribution of HAP-related cancer risks and non-cancer hazards from the Primary Aluminum Production 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 Primary Aluminum Facilities,* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

The results of the demographic analysis are summarized in Table 10 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. The results (shown in Table 10) indicate there are no significant disproportionate risks to any particular minority, low income, or indigenous population. The results of the Primary Aluminum Production source category demographic analysis indicate that emissions from the source category expose approximately 881,307 people to a cancer risk at or above 1-in-1 million. The percentages of the at-risk population in each demographic group (except for White and non-Hispanic) are similar to or lower than their respective nationwide percentages.

TABLE 10—PRIMARY ALUMINUM PRODUCTION 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	881,307	0
Race by Percent			
White	72	80	0
All Other Races	28	20	0
Race by Percent			
White	71.9	80.1	0
African American	13	13	0
Native American	1.1	0.9	0
Other and Multiracial	14	6	0
Ethnicity by Percent			
Hispanic	17	5	0
Non-Hispanic	83	95	0
Income by Percent			
Below Poverty Level	14	14	0
Above Poverty Level	86	86	0
Education by Percent			
Over 25 and without High School Diploma	15	14	0
Over 25 and with a High School Diploma	85	86	0

C. What are our proposed decisions regarding risk acceptability, ample margin of safety and adverse environmental effects based on our revised analyses?

1. Risk Acceptability

As noted in section II.A.1 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 maximum individual lifetime cancer risk (MIR) of approximately 1 in 10 thousand [41].’’ (54 FR 38045, September 14, 1989.)

In this proposal, the EPA estimated risks based on both actual and allowable emissions from primary aluminum facilities. In determining acceptability, we considered risks based on both actual and allowable emissions.

a. Estimated Risks From Actual Emissions

The baseline inhalation cancer risk to the individual most exposed to emissions from sources regulated by subpart LL is 70-in-1 million based on actual emissions from prebake facilities. The estimated incidence of cancer due to inhalation exposures is 0.06 excess cancer cases per year, or 1 case every 17 years. Approximately 881,000 people face an estimated increased cancer risk greater than 1-in-1 million due to inhalation exposure to actual HAP emissions from the Primary Aluminum Production source category, and approximately 65,000 people face an estimated increased risk greater than 10-in-1 million and up to 70-in-1 million. The agency estimates that the maximum chronic non-cancer TOSHI from inhalation exposure is 1. As, Ni, Cd and chromium (Cr) are the main HAP contributing to the estimated chronic cancer and chronic non-cancer risks.

The Tier 2 multipathway screening analysis of actual emissions from operating plants indicates the potential for PAH and D/F emissions is about 50 times the screening level for cancer for the fisher scenario and 20 times the cancer threshold for the farming scenario. These results indicate that the maximum cancer risks due to multipathway exposures to D/F and PAH emissions from this source category are less than 50-in-1 million. Non-cancer impacts from Cd and Hg were at the Tier 2 screening thresholds,

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[41] 1-in-10 thousand is equivalent to 100-in-1 million. The EPA currently describes cancer risks as ‘‘n-in-1 million.’’

which indicates that the maximum HI due to multipathway exposures to Hg and Cd emissions from this source category is less than 1.

As noted above, the Tier 2 multipathway screen is conservative in that it incorporates many health-protective assumptions (and, as noted, reflects further assumptions here as to amounts of certain HAP being emitted). For example, the EPA chooses inputs from the upper end of the range of possible values for the influential parameters used in the Tier 2 screen and assumes that the exposed individual exhibits ingestion behavior that would lead to a high total exposure. A Tier 2 exceedance cannot be equated with a risk value or a HQ or HI. Rather, it represents a high-end bounding estimate of what the risk or hazard may be. For example, an exceedance of 2 for a non-carcinogen can be interpreted to mean that we have high confidence that the HI would be lower than 2. Similarly, an exceedance of 30 for a carcinogen means that we have high confidence that the risk is lower than 30-in-1-million. Confidence comes from the conservative, or health-protective, assumptions that are used in the Tier 2 screen.

The refined multipathway analysis that the EPA conducted for one specific Soderberg facility which has recently permanently shut down its Soderberg potlines found that the Tier 3 cancer screen resulted in the same potential risk as identified in the Tier 2 analysis with a cancer screen value of 70 for the subsistence fisher and 200 for the subsistence farmer. These results indicate that the maximum cancer risks due to multipathway exposures to emissions from that facility could have been up to 200-in-1 million. However, since that plant has permanently ceased operations of the Soderberg potlines (*i.e.,* the emissions sources that were driving the risk at that facility), the future risks due to emissions at this location (*i.e.,* if the company decides to replace its Soderberg potlines with lower-emitting prebake potlines and resume operations) will be substantially less than 100-in-1 million.

The assessment of maximum acute inhalation impacts from baseline actual peak emissions (*i.e.,* based on the standards in the 1997 NESHAP and the proposed standards in the 2011 proposal and this supplemental proposal) indicates the potential for As to exceed an HQ value of 1 based on the REL value, with an estimated maximum off-site acute HQ of 30 based on the REL value and 10 at a residential location. There are no AEGL values for comparison. We refined the acute As assessment by evaluating exposures at the centroids of census blocks—these are locations around the facilities where people could actually live. Based on this refinement, the maximum HQ was 10. We estimate that about 170 people could be exposed to concentrations leading to an acute HQ of 10, about 1,500 people could be exposed to a concentration leading to an acute HQ greater than 5, and about 8,500 people could be exposed to a concentration leading to an acute HQ greater than 1. This assessment still assumes in order to reach an HQ greater than one, peak emissions from each emission source at the source category and worst-case meteorological conditions co-occur at a time when an individual is present. In other words, the analysis includes the conservative assumption that every process releases its peak emissions at the same hour as the worst-case dispersion conditions. We expect that this would happen for very few hours of the 8,760 hours that are in a year.

We did not conduct any refinements to the HF acute screen because the maximum off-site HQ of 3 is at a location where we would not expect people to be for 1 hour.

For more information, refer to Appendix 8 of the *Residual Risk Assessment for the Primary Aluminum Production Source Category in Support of the 2014 Supplemental Proposal* (Docket ID No. EPA–HQ–OAR–2011–0797).

b. Estimated Risks from Allowable Emissions

The EPA estimates that the baseline inhalation cancer risk to the individual most exposed to emissions from sources regulated by subpart LL is up to 300-in-1 million based on allowable emissions from Soderberg facilities, with As, Ni and POM driving the risks. The EPA estimates that the incidence of cancer due to inhalation exposures could be up to 0.06 excess cancer cases per year, or 1 case approximately every 17 years. About 950,000 people could face an increased cancer risk greater than 1-in-1 million due to inhalation exposure to allowable HAP emissions from this source category (assuming facilities emit at allowable levels for much of their operations, a highly conservative assumption), and approximately 76,000 people could face an increased risk greater than 10-in-1 million and 200 people to excess cancer risks up to 300-in-1 million due to allowable emissions.

The risk assessment estimates that the maximum chronic non-cancer TOSHI from inhalation exposure values is up to 2, driven by allowable Ni and As emissions with approximately 30 people exposed at this value.

c. Acceptability Determination

In proposing a determination of whether risks are acceptable for this source category, the EPA considered all available health information and risk estimation uncertainty as described above.

The risk results indicate that actual inhalation cancer risks from the Primary Aluminum Production source category to the individual most exposed are up to, but no greater than, approximately 70-in-1 million and that allowable inhalation cancer risks to the individual most exposed are up to, but no greater than, approximately 300-in-1 million, which is 3 times higher than the presumptive limit of acceptability. The MIR based on actual emissions is well below the presumptive limit, while the MIR based on allowable emissions is well above the presumptive limit. The maximum chronic non-cancer results show no exceedance of the human health values for actual emissions and exceedance by up to a factor of approximately 2 based on allowable emissions.

Regarding the acute risks, the refined maximum HQ at a residential location is 10 for As. We expect that these exceedances would happen for very few hours of the 8,760 hours that are in a year. For HF the maximum off-site HQ of 3 is at a location where we would not expect people to be for 1 hour.

The excess cancer risks from the multipathway screen from actual D/F emissions from operating plants indicate that the risk to the individual most exposed could be up to but no greater than 50-in-1 million for the fisher scenario and 20-in-1 million for the farmer scenario. These results (which reflect very conservative assumptions) are considerably less than 100-in-1 million, the presumptive limit of acceptability. The multipathway Tier 2 screen for non-cancer is at the Tier 2 screening value of 1 for Hg and Cd. The estimated cancer risks from the multipathway assessment for operating facilities were well below 100-in-1 million. The refined multipathway results for the Massena East Soderberg plant indicated potential cancer risks of up to 200-in-1 million at that location. However, since this facility has permanently shut down its Soderberg operations, we are not concerned about the potential future emissions from this facility.

Nevertheless, given all the information presented above, the EPA proposes that the risks due to potential HAP emissions at baseline from the

Soderberg subcategory are unacceptable due to the allowable cancer risks of 300-in-1 million based on potential emissions from the idle Soderberg facility (Columbia Falls Aluminum Company).

Regarding the prebake subcategories, the EPA has some concerns regarding the potential acute risks due to As emissions (with a maximum acute HQ of 10). However, given the conservative nature of the acute analysis (described above), and the fact that the inhalation cancer MIR is well below 100-in-1 million (MIR = 70-in-1 million), the chronic non-cancer risks are low (*e.g.,* HI = 1) and that the multipathway assessment indicated the maximum cancer risks due to multipathway exposures to HAP from prebake facilities was no higher than 50-in-1 million, we propose that the risks due to actual emissions from the prebake subcategories are acceptable.

2. Proposed Controls To Address Unacceptable Risks for Soderberg Facilities

a. VSS2 Potline Emissions

In order to ensure that the risks associated with Soderberg facilities are acceptable, we evaluated the potential to reduce MACT-allowable VSS2 potline emissions for the primary HAP driving the cancer risks (*i.e.,* POM, As and Ni). Regarding POM, the current NESHAP includes an emissions limit for POM of 5.7 lbs/ton of aluminum. As noted above, the one facility driving the allowable risks has been idle for 5 years. All indications are that this facility will not reopen. However, based on available data from the most recent years that they were operating, we estimate that if this one VSS2 facility did reopen and if they installed wet roof top scrubbers that they could achieve a POM emissions limit of 1.9 lb/ton (0.85 Kg/Mg) of aluminum, which would be a significant reduction in potential POM emissions. This limit is 3 times lower than the current limit for POM. Furthermore, given that there would be variability in emissions, in order for the facility to comply with a limit of 1.9 lbs/ton at all times, they would need to have average POM emissions considerably lower than 1.9 lb/ton. Therefore, under the authority of CAA section 112(f)(2), we propose a POM emission limit for VSS2 potlines of 1.9 lb/ton (0.85 Kg/Mg) of aluminum. As mentioned above, the one remaining Soderberg plant has been idle for 5 years and we believe it is highly unlikely that the facility will reopen, due to its less efficient aluminum production method. However, if it does reopen, we estimate that the capital costs for the roof top wet scrubbers would be about $30 million and that annualized costs would be about $8 million.

These controls would also achieve reductions of HAP metal emissions. We estimate that wet roof scrubbers would achieve a 50 percent reduction in secondary potline emissions of metals. See *CFAC BART Analysis* in the docket (Docket ID No. EPA–HQ–OAR–2011–0797). Nevertheless, to ensure that the primary HAP metals (*i.e.,* As and Ni) that are driving the allowable cancer risks are limited to acceptable levels of emissions, we are proposing facility-wide total potline emissions limits for As and Ni that reflect a 50 percent reduction in the estimated facility-wide secondary potline emissions of those metals. We are doing so pursuant to CAA section 112(f)(2) in order to ensure risks will be acceptable from the VSS2 subcategory. Given that these reductions would be achieved using the same controls used for POM, there would be no added cost of control, and there would be risk reductions associated with reduced HAP metal emissions. Based on our analysis of available data, we estimated that, if this facility resumed operations, facility-wide emissions of Ni would be less than 0.14 pounds per ton of aluminum produced and facility-wide emissions of As would be less than 0.012 pounds per ton of aluminum produced, using their current controls. Assuming wet roof scrubbers are installed, and assuming the wet roof scrubbers would achieve a 50 percent reduction in HAP metal emissions, and assuming the facility would run 3 potlines, which is the most potlines it operated in the past 13 years, we estimate that the roof top wet scrubbers would be able to limit emissions of Ni and As from potlines to no more than 0.07 pounds of Ni per ton of aluminum produced and no more than 0.006 pounds of As per ton of aluminum produced, on a facility-wide basis. Therefore, under the authority of CAA section 112(f), we are proposing potline emission limits of 0.07 pounds of Ni per ton of aluminum produced and 0.006 pounds of As per ton of aluminum produced. For more information regarding the development of these risk-based standards, see the memorandum titled, *Development of Emissions Standards to Address Risks for the Primary Aluminum Production Source Category Pursuant to Section 112(f) of the Clean Air Act,* in the docket for this action (Docket ID No. EPA–HQ–OAR–2011–0797).

Regarding post-control risks, we estimate that with a POM emission limit that is 3 times lower than the current POM emission limit and with Ni and As emission limits that reflect a 50 percent reduction in potential emissions of those metals, that the post control risks would be approximately 100-in-1 million, if the plant did reopen.

Based on our analyses, we conclude that the one existing VSS2 facility, if it chose to reopen, could meet these limits with the installation of wet roof scrubbers on their potrooms. We note that it is very unlikely that any new Soderberg plants would be constructed in the U.S. because the Soderberg method of aluminum reduction is less cost effective than the prebake method and due to the cost that would be incurred to comply with the stringent POM limits for any new or reconstructed potline in the NESHAP. New or reconstructed sources would be subject to a POM limit of 0.77 pounds per ton of aluminum produced as opposed to existing sources being subject to a POM limit of 5.7 pounds per ton of aluminum produced under the 1997 NESHAP, or 1.9 pounds per ton of aluminum produced if the proposed revised limit of 1.9 pounds per ton of aluminum produced in this supplemental proposal is adopted. Nevertheless, to ensure that any possible future Soderberg plant has acceptable metals emissions, we are proposing that any new Soderberg potlines would need to meet new source MACT limits for POM and the risk-based standards for As and Ni.

We propose that compliance with the As and Ni emissions limits for existing VSS2 potlines and new Soderberg potlines will be demonstrated by annual performance testing along with various parametric monitoring on a more frequent basis. The proposed compliance testing requirements for POM are described in section IV.E of this preamble.

3. Ample Margin of Safety Analysis

Under the ample margin of safety analysis, we again consider all of the health factors and evaluate the cost and feasibility of available control technologies and other measures (including the controls, measures and costs reviewed under the technology review) that could be applied in this source category to further reduce the risks due to emissions of HAP identified in our risk assessment.

Under the ample margin of safety analysis, we evaluated possible options to reduce HAP metal and POM emissions from the prebake potline roof vents. The main option we evaluated is based on requiring most prebake facilities to install wet roof scrubbers to reduce secondary HAP metals emissions from their potline roof vents. Under this option we estimate that post-control cancer MIR would be 40-in-1 million for prebake facilities (down from 70-in-1 million). We estimate that under this option chronic non-cancer hazards would be below 1. The As maximum acute HQ would be reduced from 10 down to 7. With regard to the acute As exposures, we estimate that about 60 people could be exposed to concentrations leading to an acute HQ of 7, about 154 people could be exposed to a concentration leading to an acute HQ greater than 5, and that about 3,600 people could be exposed to a concentration leading to an acute HQ greater than 1. This assessment still assumes, in order to reach an HQ greater than 1, peak emissions from the source category and worst-case meteorological conditions co-occur. We expect that this would happen for very few hours of the 8,760 hours that are in a year. For HF, the maximum off-site HQ would be reduced from 3 to 2 and is at a location where we would not expect people to be for 1 hour.

We estimate that the total capital costs would be at least $415 million ($46 million per facility), annualized costs would be at least $133 million ($15 million per facility), with cost effectiveness (CE) of $6 million per ton HAP metals and $130,000 per ton POM or higher. This option would also achieve 715 tpy $PM_{2.5}$ reductions with CE of $185,000 per ton $PM_{2.5}$. We believe these costs are substantial. Furthermore, based on our economic analysis, we project that this option would pose a significant economic burden on the companies and that several facilities would be at risk of closure under this option. The option would also be associated with potentially adverse environmental effects (more wastewater discharge), and increased energy usage (with attendant carbon pollution), although these are not the most significant factors in the EPA's proposed decision. Therefore, given all the factors described above, we are not proposing this option in today's action.

In regards to the Soderberg facilities, we estimate that the actions proposed under CAA section 112(f)(2), as described above to address unacceptable risks, will reduce the MIR associated with allowable emissions of As, Ni and PAHs from 300-in-1 million to 100-in-1 million (assuming the highly unlikely scenario wherein the Soderberg plant was to resume operation). The potential cancer incidence due to allowable emissions from this one facility will be reduced from 0.007 to 0.003 with a potential of 1 case every 330 years versus 1 case every 170 years, and the number of people estimated to potentially have cancer risks greater than 1-in-1 million will remain the same at 65,000 people. The chronic noncancer inhalation TOSHI due to allowable emissions will be reduced from 2 to 1. Based on our research and analysis, we did not identify any cost effective controls beyond those proposed above that would achieve further reduction in risk. Therefore, we conclude that the controls to achieve acceptable risks (described above) will also achieve an ample margin of safety.

4. Adverse Environmental Effects

Based on the results of our environmental risk screening assessment, we conclude that there is not an adverse environmental effect as a result of HAP emissions from the Primary Aluminum Production source category. We are proposing that it is not necessary to set a more stringent standard to prevent, taking into consideration costs, energy, safety and other relevant factors, an adverse environmental effect.

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

We updated the technology review conducted for the 2011 proposal and determined that there have been no developments in practices, processes and control technologies that would be considered feasible and cost effective to apply to this source category since the 2011 proposal. The analysis is very similar to that outlined above with respect to potential BTF standards. Additional details regarding the technology review can be found in the *Revised Draft Technology Review for the Primary Aluminum Production Plant Source Category,* which can be found in the docket (Docket ID No. EPA–HQ–OAR–2011–0797). This same information underlies the EPA's determination not to propose BTF limits and is summarized above.

E. What other actions are we proposing?

In addition to the proposed actions described above, we re-evaluated compliance requirements associated with the 2011 proposed amendments to determine whether we should make changes to those proposed amendments. Based on this re-evaluation, we are proposing the following changes to what was proposed in the 2011 proposal.

1. Frequency for Testing of Prebake Potline POM

The December 2011 proposal included a testing frequency of once every 5 years for POM from prebake potlines and provisions for estimating potline roof vent emissions based on potline stack POM emissions and potline stack and vent TF emissions. These provisions were proposed based on a belief that prebake potline POM emissions would be relatively low and that potline vent POM emissions would be difficult to determine. Based on the results of testing conducted in response to our 2013 information request, we determined that POM emissions from prebake potlines are higher than we expected and that methods exist for testing prebake vent emissions. As a result, we are proposing annual testing of POM emissions from prebake potline stacks and testing three times each semiannual period for POM emissions from prebake potline roof vents, with compliance demonstrated by summing emissions from these two locations.

2. Reduced Testing Frequency for TF From Potlines and POM From Soderberg Potlines

The NESHAP currently requires the owner/operator of an affected source to measure and record the emission rate of TF from potline stacks at least three times each year and from potline roof vents at least three times each month, unless they apply for, and receive, authorization to measure and record the roof vent TF emission rate three times per quarter. The NESHAP currently requires the owner/operator to measure and record the emission rate of POM from Soderberg potline stacks at least three times each year and from their roof vents at least three times per quarter. We are proposing to decrease the required frequencies of measuring and recording emission rates of TF from potline roof vents and POM from Soderberg roof vents to three times each semiannual period because, based on the consistency of previous test results and considering the potline work practices included in this supplemental proposal, we believe that this testing frequency is adequate to determine compliance with these emission limits. However, as discussed in section VI of this preamble, we are seeking comments regarding other potential testing frequencies.

3. Testing, Monitoring and Reporting for PM, Metals and COS

We are proposing testing, monitoring and reporting requirements to demonstrate compliance with the proposed emission limits for PM, Ni and As emissions, including the use of EPA Method 29 for determination of the emission rates of Ni and As. Furthermore, based on comments received on the December 2011 proposal, we are proposing the use of an alternate method of determination of sulfur in coke, for use in demonstrating compliance with the potline COS emission limit.

4. Revisions to the Tables of Emission Limits for Averaging

The current NESHAP allows emissions averaging across similar process vents. In this action, we are proposing revised limits applicable to the emission averaging to reflect the proposed revised and proposed additional emission standards described in section IV.A of this preamble.

5. Alternative Emissions Limits for Co-Controlled New and Existing Anode Bake Furnaces

We are proposing alternative emission limits for certain co-controlled new and existing anode bake furnaces to simplify compliance demonstration. This provision will allow a facility which uses one control device to control TF and POM emissions from a comingled exhaust from new and existing anode bake furnaces to comply with alternative production weighted average emission limits for those pollutants. These production weighted average emission limits are more protective than the emission limits that would otherwise apply to those sources, but will simplify compliance determinations and reduce costs for the sources because multiple emissions sources can be controlled and monitored at a single location.

6. Deletion of Provisions for HSS Potlines

Following the publication of the December 2011 proposal, the only existing HSS potlines were permanently shut down and have been dismantled. We are proposing to remove the definition and emissions standards for this subcategory.

7. Startup, Shutdown, Malfunction

In the 2011 proposal, we proposed to eliminate two provisions that exempt sources from the requirement to comply with the otherwise applicable CAA section 112(d) emission standards during periods of SSM. We also included provisions for affirmative defense to civil penalties for violations of emission standards caused by malfunctions. 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. As explained in the 2011 proposal, 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 United States Court of Appeals for the District of Columbia Circuit 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 CAA section 112 standards.

Further, accounting for malfunctions in setting emission standards would be difficult, if not impossible, given the myriad 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. Therefore, 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. Therefore, 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.

Further, to the extent the EPA files an enforcement action against a source for violation of an emission standard, 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.

As noted above, the 2011 proposal included an affirmative defense to civil penalties for violations caused by malfunctions. The EPA included the affirmative defense in the 2011 proposal as it had in several prior rules in an effort to create a system that incorporates some flexibility, recognizing that there is a tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission standards may be violated under circumstances entirely beyond the control of the source. Although the EPA recognized that its case-by-case enforcement discretion provides sufficient flexibility in these circumstances, it included the affirmative defense in the 2011 proposal and in several prior rules to provide a more formalized approach and more regulatory clarity. See *Weyerhaeuser Co.* v. *Costle,* 590 F.2d 1011, 1057–58 (D.C. Cir. 1978) (holding that an informal case-by-case enforcement discretion approach is adequate); but see *Marathon Oil Co.* v. *EPA,* 564 F.2d 1253, 1272–73 (9th Cir. 1977) (requiring a more formalized approach to consideration of ''upsets beyond the control of the permit holder.''). Under the EPA's regulatory affirmative defense provisions, if a source could demonstrate in a judicial or administrative proceeding that it had met the requirements of the affirmative defense in the regulation, civil penalties would not be assessed. Recently, the United States Court of Appeals for the District of Columbia Circuit vacated an affirmative defense in one of the EPA's CAA section 112(d) regulations. *NRDC* v. *EPA,* 749 F. 3d 1055 (D.C. Cir. 2014) 2014 U.S. App. LEXIS 7281 (vacating affirmative defense provisions in CAA section 112(d) rule establishing emission standards for Portland cement kilns). The court found that the EPA lacked authority to establish an affirmative defense for private civil suits and held that under the CAA, the authority to determine civil penalty amounts lies exclusively with the courts, not the EPA. Specifically, the court found: ''As the language of the statute makes clear, the courts determine, on a case-by-case basis, whether civil penalties are 'appropriate.' '' See *NRDC* v. *EPA,* 749 F.3d 1055, 1063 (D.C. Cir. 2014) (''[U]nder this statute, deciding whether penalties are 'appropriate' in a given private civil suit is a job for the courts, not EPA.''). In light of NRDC, the EPA is withdrawing its proposal to include a regulatory affirmative defense provision in this rulemaking. As explained above, if a source is unable to comply with emissions standards as a result of a malfunction, the EPA may use its case-by-case enforcement discretion to provide flexibility, as appropriate. Further, as the United States Court of Appeals for the District of Columbia Circuit recognized, in an EPA or citizen enforcement action, the court has the discretion to consider any defense raised and determine whether penalties are appropriate. Cf. *NRDC* v. *EPA,* 749 F. 3d 1055, 1064 (D.C. Cir. 2014) (arguments that violation were caused by unavoidable technology failure can be made to the courts in future civil cases when the issue arises). The same logic applies to the EPA administrative enforcement actions.

F. What compliance dates are we proposing?

In this supplementary proposal we are proposing changes to some of the compliance dates that we proposed in 2011. Specifically, we propose that facilities must comply with the changes set out in this supplementary proposal which are being proposed under CAA section 112(d) no later than one year after the effective date of the final rule. In the 2011 proposal, we proposed that the facilities would be allowed up to three years after the effective date of the final rule to comply with the proposed changes under CAA section 112(d). Upon further review and analysis of available data, we believe that one year will be sufficient time to comply with the proposed CAA section 112(d) standards, which would include: conducting testing to demonstrate compliance with the proposed MACT standards for POM from existing prebake potlines and COS emissions from all existing potlines; implementing the proposed work practice standards for potlines, paste production plants and anode bake furnaces; and installing any necessary controls on existing pitch tanks.

We also believe that one year will be sufficient time to conduct testing to demonstrate compliance with the new MACT standards in this supplemental proposal for PM emissions from existing potlines, paste production plants and anode bake furnaces, since equipment modifications will not be necessary.

Finally, we propose that facilities must comply with the risk-based emission limits for POM, Ni and As emissions from VSS2 potlines and new Soderberg potlines no later than two years after the effective date of the final rule. We believe that it is appropriate to allow the maximum amount of time for compliance with these risk-based standards permissible pursuant to CAA section 112(f) (*i.e.,* 2 years) since a subject facility would be required to install wet roof scrubbers in order to comply with those standards.

V. Summary of the Revised Cost, Environmental and Economic Impacts

A. What are the affected sources?

The affected sources are new and existing potlines, new and existing pitch storage tanks, new and existing anode bake furnaces (except for one that is located at a facility that only produces anodes for use off-site) and new and existing paste plants.

B. What are the air quality impacts?

We estimate that the proposed lower VSS2 potline POM emissions limits would reduce POM emissions from the one VSS2 facility by approximately 53 tons per year if the facility were to resume operation. Furthermore, we estimate that these proposed standards would also result in about 1 tpy reduction of HAP metals and 40 tpy reduction of $PM_{2.5}$ if the one Soderberg facility reopened.

C. What are the cost impacts?

Under the proposed amendments, prebake facilities would be required to conduct annual POM testing on potlines, and all facilities would be required to conduct annual PM testing on potlines, anode bake furnaces and paste plants. Facilities would also be required to monitor 12 anode bake furnaces and 11 paste plants at an estimated cost of $129,375 per year. These testing costs are offset by reduced frequency testing of TF from all potlines, resulting in a reduction in testing costs of $2,050,000 per year. The total estimated cost of the rule is a savings of $959,000 assuming that the Columbia Falls Soderberg plant does not reopen.

The one Soderberg facility, if it reopens, will be expected to install and operate wet roof scrubbers on their potrooms to comply with risk-based standards for POM, As and Ni at a total estimated capital cost of $30 million and annual cost of $8 million. This facility, if it reopens, would be also required to conduct annual Ni and As emissions tests on three potlines. Under this scenario, the total estimated cost of the rule is $7,100,000 per year. The memorandum, *Revised Draft Cost Impacts for the Primary Aluminum Production Source Category* includes a description of the assumptions used for this analysis and is available in the docket (Docket ID No. EPA–HQ–OAR–2011–0797).

D. What are the economic impacts?

We performed an economic impact analysis for the proposed modifications in this action. That analysis estimates a net savings for each open facility based on the assumption that the Columbia Falls Soderberg facility will not reopen. If Columbia Falls does reopen, the total estimated cost of the rule is $7,100,000 per year. For more information, please refer to the memo titled, *Economic Impact Analysis for National Emissions Standards for Hazardous Air Pollutants: Primary Aluminum Reduction Plants* for this proposed rulemaking that is available in the public docket for this proposed rulemaking.

E. What are the benefits?

If the Soderberg facility were to resume operations, the proposed standards in this supplemental proposal would achieve an estimated reduction in annual HAP emissions of about 53 tons, which would provide significant benefits to public health. In addition to the HAP reductions, which would ensure an ample margin of safety, we also estimate that this supplemental proposal would achieve about 230 tons of reductions in PM (including 40 tons of $PM_{2.5}$) emissions as a co-benefit of the HAP reductions annually (again assuming resumption of the Soderberg plant operations).

This rulemaking is not an ‘‘economically significant regulatory action’’ under Executive Order 12866 because it is not likely to have an annual effect on the economy of $100 million or more. Therefore, we have not conducted a Regulatory Impact Analysis (RIA) for this rulemaking or a benefits analysis. While we expect that these avoided emissions will improve air quality and reduce health effects associated with exposure to air pollution associated with these emissions, we have not quantified or monetized the benefits of reducing these emissions for this rulemaking. This does not imply that there are no benefits associated with these emission reductions. We provide a qualitative description of benefits associated with reducing these pollutants below. When determining whether the benefits of an action exceed its costs, Executive Orders 12866 and 13563 direct the agency to consider qualitative benefits that are difficult to quantify but nevertheless essential to consider.

Directly emitted particles are precursors to secondary formation of fine particles ($PM_{2.5}$). Controls installed to reduce HAP would also reduce ambient concentrations of $PM_{2.5}$ as a co-benefit. 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).[42] When adequate data and resources are available and an RIA is required, the EPA generally quantifies several health effects associated with exposure to $PM_{2.5}$ (*e.g.,* U.S. EPA, 2012).[43] These 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. $PM_{2.5}$ also increases light extinction, which is an important aspect of visibility.

The supplemental proposed rulemaking is also anticipated to reduce emissions of other HAP, including HAP metals (As, Cd, Cr (both total and hexavalent), Pb, Mn and Ni) and PAHs, assuming the Soderberg plant resumes operations. Some of these HAP are carcinogenic (*e.g.,* As, PAHs) and some have effects other than cancer (*e.g.,* kidney disease from Cd, respiratory and immunological effects from Ni). While we cannot quantitatively estimate the benefits achieved by reducing emissions of these HAP, we would expect benefits by reducing exposures to these HAP. More information about the health effects of these HAP can be found on the IRIS,[44] ATSDR,[45] and California EPA[46] Web pages.

VI. Request for Comments

As stated above, we are not opening comment on aspects of the 2011 proposal (76 FR 76260) that have not changed and are not addressed in this supplemental proposal. Comments received on the 2011 proposal along with comments received on this supplemental proposal will be addressed in the EPA's Response to Comment document and final rule preamble for the Primary Aluminum Production source category.

We are soliciting comments on the revised risk assessment and technology review and proposed changes to the previously-proposed amendments.

We are seeking comments on an alternative approach for demonstrating compliance with the emissions limits for potlines. Facilities face challenges when measuring secondary emissions from potlines, as these emissions are fugitive in nature. Some facilities employ a manifold system which captures a portion of the emissions that would exit the roof of the building. These emissions can be sampled using standard EPA reference methods, and the results can be extrapolated to account for the emissions from the entire roof. Other facilities sample the emissions near the roof using a series of elevated cassettes that contain removable filters. The EPA has a standard reference method for the measurement of TF using these cassettes, but there is not a standard reference method for other pollutants.

In the 2013 CAA section 114 information request, we requested facilities use filters meeting the requirements of EPA Method 315 in the cassettes and then recover and analyze the filters for filterable PM and POM using Method 315. In reviewing the results, we noted that there was no appreciable difference in the results of facilities that tested using the reference method in the manifold and facilities that tested using filters in cassettes. We, therefore, think it is reasonable to require facilities with manifolds to test at ambient conditions instead of heating the filter and probe. We also think it is reasonable to allow facilities that

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[42] 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 *http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546.*

[43] 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 Triangle Park, NC. Available on the Internet at *http://www.epa.gov/ttn/ecas/regdata/RIAs/finalria.pdf.*

[44] US EPA, 2006. Integrated Risk Information System. *http://www.epa.gov/iris/index.html.*

[45] US Agency for Toxic Substances and Disease Registry, 2013. Minimum Risk Levels (MRLs) for Hazardous Substances. *http://www.atsdr.cdc.gov/mrls/index.html.*

[46] CA Office of Environmental Health Hazard Assessment. Chronic Reference Exposure Levels Adopted by OEHHA as of December 2008. *http://www.oehha.ca.gov/air/chronic_rels.*

sample in manifolds to forego the use of the back half of the train altogether. In this case, the filterable POM results would be a surrogate for total POM, and the measurement data for the cassettes and manifolds would be most directly comparable.

We are seeking comments on the frequency with which the owner/operator of affected potlines must measure and record emission rates of TF, POM and PM from roof vents. The frequency proposed in this action is at least three times each semiannual period. However, we are considering frequencies of at least three times each quarter or at least three times each year. We request that any commenter who would like the EPA to consider a different frequency include specific rationale and factual basis, including supporting data, for why a different frequency would be appropriate.

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://www.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 page, 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–2011–0797 (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://www.epa.gov/ttn/atw/rrisk/rtrpg.html.*

VIII. Statutory and Executive Order Reviews

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'' under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) and is, therefore, not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011).

B. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the OMB under the *Paperwork Reduction Act,* 44 U.S.C. 3501 *et seq.* The Information Collection Request (ICR) document prepared by the EPA has been assigned EPA ICR number 2447.01.

We are proposing changes to the paperwork requirements to the Primary Aluminum Production source category. In this supplemental proposal, we are proposing less frequent testing of POM emissions from Soderberg potlines and less frequent testing of TF emissions from all potlines. In addition, we are removing from this proposal the burden associated with the affirmative defense provisions included in the December 2011 proposal.

We estimate 13 regulated entities are currently subject to subpart LL (NESHAP for Primary Aluminum Reduction Plants) and will be subject to this action. The annual monitoring, reporting and recordkeeping burden for this collection (averaged over the first 3 years after the effective date of the standards) as a result of the supplemental proposal revised amendments to subpart LL is estimated to be −$1,179,000 per year.

This includes −427 labor hours per year at a total labor cost of −$32,350 per year, and total non-labor capital and operation and maintenance costs of −$1,212,000 per year. This estimate includes performance tests, notifications, reporting and recordkeeping associated with the new requirements for primary aluminum reduction plant operations. The total burden for the federal government (averaged over the first 3 years after the effective date of the standard) is estimated to be 199 hours per year at a total labor cost of $9,072 per year. Burden is defined at 5 CFR 1320.3(b).

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.

To comment on the agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden, the EPA has established a public docket for this rule, which includes this ICR, under Docket ID No. EPA–HQ–OAR–2011–0797. Submit any comments related to the ICR to the EPA and OMB. See **ADDRESSES** section at the beginning of this preamble for where to submit comments to the EPA. Send comments to OMB at the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street NW., Washington, DC 20503, Attention: Desk Office for EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after December 8, 2014, a comment to OMB is best assured of having its full effect if OMB receives it by January 7, 2015. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act, or any other statute, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field. For this source category, which has the NAICS code 331312, the SBA small business size standard is 1,000 employees according to the SBA small business standards definitions.

After considering the economic impacts of today's action on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. None of the companies affected by this rule is considered to be a small entity per the definition provided in this section.

D. Unfunded Mandates Reform Act

This action does not contain a federal mandate under the provisions of Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538 for state, local or tribal governments, or the private sector. The action would not result in expenditures of $100 million or more for state, local and tribal governments, in aggregate, or the private sector in any 1 year. This supplemental proposal imposes no enforceable duties on any state, local or tribal governments, or the private sector. Thus, this action is not subject to the requirements of sections 202 or 205 of the UMRA.

This action is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments as it contains no requirements that apply to such governments nor does it impose obligations upon them.

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, as specified in Executive Order 13132. None of the facilities subject to this action are owned or operated by state governments and, because no new requirements are being promulgated, nothing in this action will supersede state regulations. Thus, Executive Order 13132 does not apply to this action.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communication between the EPA and state and local governments, the EPA specifically solicits comment on this proposed action from state and local officials.

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

This action does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000) because it does not have substantial direct effects on any Indian tribe(s), 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. Thus, Executive Order 13175 does not apply to this action.

The EPA specifically solicits comment on this action from tribal officials.

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

This action is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because the agency does not believe the environmental health risks or safety risks addressed by this action present a disproportionate risk to children.

This rule is expected to reduce environmental impacts for everyone, including children. This action establishes emissions limits at the levels based on MACT, as required by the CAA. Based on our analysis, we believe that this rule does not have a disproportionate impact on children.

The public is invited to submit comments or identify peer-reviewed studies and data that assess effects of early life exposure to HAP emitted from the Primary Aluminum Production source category.

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

This action is not subject to Executive Order 13211 (66 FR 28355, May 22, 2001), because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, (15 U.S.C. 272 note) directs the EPA to use voluntary consensus standards (VCS) in its regulatory activities, unless to do so would be inconsistent with applicable law or otherwise impractical. VCS are technical standards (*e.g.,* materials specifications, test methods, sampling procedures and business practices) that are developed or adopted by VCS bodies. The NTTAA directs the EPA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable VCS.

This proposed rulemaking involves technical standards. The rule requires the use of either ASTM D3177–02 (2007), Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke, or ASTM D–6376–06, Test Method for Determination of Trace Metals in Petroleum Coke by Wavelength Dispersive X-ray Fluorescence Spectroscopy. These are voluntary consensus methods. These methods can be obtained from the American Society for Testing and Materials, 100 Bar Harbor Drive, West Conshohocken, Pennsylvania 19428 (telephone number (610) 832–9500). These methods were proposed in the rule because they are commonly used by primary aluminum production facilities to demonstrate compliance with sulfur dioxide emission limitations imposed in their current Title V permits.

Under 40 CFR 63.7(f) and 40 CFR 63.8(f) of subpart A of the General Provisions, a source may apply to the EPA for permission to use alternative test methods or alternative monitoring requirements in place of any required testing methods, performance specifications or procedures in the proposed rule.

The EPA welcomes comments on this aspect of the proposed rulemaking and specifically invites the public to identify potentially applicable VCS and to explain why such standards should be used in this regulation.

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

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations and low-income populations in the United States. For the Primary Aluminum Production source category, the EPA has determined that the current health risks posed to anyone by actual emissions from this source category are within the acceptable range, and that the proposed rulemaking will provide and ample margin of safety to protect public health of all demographic groups.

The EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority, low income or indigenous populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority, low income or indigenous populations.

These proposed standards will improve public health and welfare, now and in the future, by reducing HAP emissions contributing to environmental and human health impacts. These reductions in HAP associated with the rule are expected to benefit all populations.

To examine the potential for any environmental justice issues that might be associated with the Primary Aluminum Production source category, we evaluated the distributions of HAP-related cancer and non-cancer risks across different social, demographic and economic groups within the populations living near the facilities where this source category is located. The methods used to conduct demographic analyses for this proposed rule are described in the document, *Risk and Technology Review—Analysis of Socio-Economic Factors for Populations Living Near Primary Aluminum Facilities,* which may be found in the docket for this rulemaking (Docket ID No. EPA–HQ–OAR–2011–0797).

In the demographics analysis, we focused on populations within 50 km of the facilities in this source category with emissions sources subject to the MACT standard. More specifically, for these populations, we evaluated exposures to HAP that could result in cancer risks of 1-in-1 million or greater. We compared the percentages of particular demographic groups within the focused populations to the total percentages of those demographic groups nationwide. The results of this analysis are documented in the document, *Risk and Technology Review—Analysis of Socio-Economic Factors for Populations Living Near Primary Aluminum Facilities,* in the docket for this rulemaking.

List of Subjects in 40 CFR Part 63

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

Dated: November 13, 2014.

Gina McCarthy,

Administrator.

For the reasons stated in the preamble, Title 40, chapter I, of the Code of Federal Regulations (CFR) is proposed to be amended as follows:

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

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

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

Subpart LL—National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants

■ 2. Section 63.840 is amended by revising paragraph (a) to read as follows:

§ 63.840 Applicability.

(a) Except as provided in paragraph (b) of this section, the requirements of this subpart apply to the owner or operator of each new or existing pitch storage tank, potline, paste production plant and anode bake furnace associated with primary aluminum production and located at a major source as defined in § 63.2.

* * * * *

■ 3. Section 63.841 is amended by:

■ a. Revising paragraphs (a)(1) and (2); and

■ b. Adding paragraphs (a)(3) and (4).

The revisions and additions read as follows:

§ 63.841 Incorporation by reference.

(a) * * *

(1) Chapter 3, ‘‘Local Exhaust Hoods’’ and Chapter 5, ‘‘Exhaust System Design Procedure’’ of ‘‘Industrial Ventilation: A Manual of Recommended Practice,’’ American Conference of Governmental Industrial Hygienists, 22nd edition, 1995, IBR approved for §§ 63.843(b) and 63.844(b);

(2) ASTM D 2986–95A, Standard Practice for Evaluation of Air Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test, IBR approved for section 7.1.1 of Method 315 in appendix A to this part;

(3) ASTM D4239–13e1, Standard Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion; and

(4) ASTM D6376–10, Standard Test Method for Determination of Trace Metals in Petroleum Coke by Wavelength Dispersive X-Ray Fluorescence Spectroscopy.

* * * * *

■ 4. Section 63.842 is amended by:

■ a. Adding, in alphabetical order, definitions of ‘‘Particulate matter (PM),’’ and ‘‘Startup of an anode bake furnace’’;

■ b. Removing the definitions for ‘‘Horizontal stud Soderberg (HSS) process’’ and ‘‘Vertical stud Soderberg one (VSS1)’’; and

■ c. Revising the definition for ‘‘Paste production plant’’.

The revisions and additions read as follows:

§ 63.842 Definitions.

* * * * *

Particulate matter (PM) means, for the purposes of this subpart, emissions of particulate matter that serve as a measure of total particulate emissions and as a surrogate for metal hazardous air pollutants contained in the particulates, including but not limited to, antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel and selenium.

Paste production plant means the processes whereby calcined petroleum coke, coal tar pitch (hard or liquid) and/or other materials are mixed, transferred and formed into briquettes or paste for vertical stud Soderberg (VSS) processes or into green anodes for a prebake process. This definition includes all operations from initial mixing to final forming (*i.e.,* briquettes, paste, green anodes) within the paste production plant, including conveyors and units managing heated liquid pitch.

* * * * *

Startup of an anode bake furnace means the process of initiating heating to the anode baking furnace where all sections of the furnace have previously been at ambient temperature. The startup or re-start of the furnace begins when the heating begins. The startup concludes at the start of the second anode bake cycle if the furnace was at ambient temperature upon startup. The re-start concludes when the anode bake cycle resumes if the furnace was not at ambient temperature upon re-start.

* * * * *

■ 5. Section 63.843 is amended by:

■ a. Revising paragraph (a)introductory text;

■ b. Revising paragraph (a)(1)(iv);

■ c. Removing and reserving paragraph (a)(1)(v);

■ d. Revising paragraph (a)(1)(vi);

■ e. Removing paragraph (a)(1)(vii);

■ f. Removing and reserving paragraphs (a)(2)(i) and (ii);

■ g. Revising paragraph (a)(2)(iii);

■ h. Adding paragraphs (a)(2)(iv) through (vii);

■ i. Redesignating paragraph (a)(3) as (a)(6);

■ j. Adding new paragraph (a)(3)and paragraphs (a)(4) and (5);

■ k. Revising paragraph (b) introductory text;

■ l. Adding paragraph (b)(4);

■ m. Revising paragraph (c) introductory text;

■ n. Revising paragraphs (c)(1) and (2);

■ o. Adding paragraph (c)(3); and

■ p. Adding paragraphs (d), (e) and (f).

The revisions and additions read as follows:

§ 63.843 Emission limits for existing sources.

(a) *Potlines.* The owner or operator shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, PM, nickel or arsenic in excess of the applicable limits in paragraphs (a)(1) through (a)(5) of this section.

(1) * * *

(iv) 0.8 kg/Mg (1.6 lb/ton) of aluminum produced for each SWPB potline; and

(v) [Reserved]

(vi) 1.35 kg/Mg (2.7 lb/ton) of aluminum produced for each VSS2 potline.

(2) * * *

(i) [Reserved]

(ii) [Reserved]

(iii) 1.9 kg/Mg (3.8 lb/ton) of aluminum produced for each VSS2 potline;

(iv) 0.55 kg/Mg (1.1 lb/ton) of aluminum produced for each CWPB1 prebake potline;

(v) 6.0 kg/Mg (12 lb/ton) of aluminum produced for each CWPB2 prebake potline;

(vi) 1.4 kg/Mg (2.7 lb/ton) of aluminum produced for each CWPB3 prebake potline; and

(vii) 9.5 kg/Mg (19 lb/ton) of aluminum produced for each SWPB prebake potline.

(3) *PM limits.* Emissions of PM shall not exceed:

(i) 3.6 kg/Mg (7.2 lb/ton) of aluminum produced for each CWPB1 potline;

(ii) 5.5 kg/Mg (11 lb/ton) of aluminum produced for each CWPB2 potline;

(iii) 10 kg/Mg (20 lb/ton) of aluminum produced for each CWPB3 potline;

(iv) 2.3 kg/Mg (4.6 lb/ton) of aluminum produced for each SWPB potline; and

(v) 13 kg/Mg (26 lb/ton) of aluminum produced for each VSS2 potline.

(4) *Nickel limits.* Emissions of nickel shall not exceed 0.07 lb/ton from all VSS2 potlines at a primary aluminum reduction plant.

(5) *Arsenic limits.* Emissions of arsenic shall not exceed 0.006 lb/ton from all VSS2 potlines at a primary aluminum reduction plant.

(6) *Change in subcategory.* Any potline, other than a reconstructed potline, that is changed such that its applicable subcategory also changes shall meet the applicable emission limit in this subpart for the original subcategory or the new subcategory, whichever is more stringent.

(b) *Paste production plants.* The owner or operator shall install, operate and maintain equipment to capture and control POM and PM emissions from each paste production plant.

* * * * *

(4) *PM limits.* Emissions of PM shall not exceed 0.041 kg/Mg (0.082 lb/ton) of green anode.

(c) *Anode bake furnaces.* The owner or operator shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM or PM in excess of the limits in paragraphs (c)(1) through (3) of this section.

(1) *TF limit.* Emissions of TF shall not exceed 0.10 kg/Mg (0.20 lb/ton) of green anode;

(2) *POM limit.* Emissions of POM shall not exceed 0.09 kg/Mg (0.18 lb/ton) of green anode; and

(3) *PM limit.* Emissions of PM shall not exceed 0.034 kg/Mg (0.068 lb/ton) of green anode.

(d) *Pitch storage tanks.* Each pitch storage tank shall be equipped with an emission control system designed and operated to reduce inlet emissions of POM by 95 percent or greater.

(e) *COS limit.* Emissions of COS must not exceed 1.95 kg/Mg (3.9 lb/ton) of aluminum produced for each potline.

(f) 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. Determination of whether such operation and maintenance procedures are being used 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.

■ 6. Section 63.844 is amended by:

■ a. Revising paragraph (a) introductory text;

■ b. Revising paragraph (a)(2);

■ c. Adding paragraphs (a)(3) through (5);

■ d. Revising paragraph (b) introductory text;

■ e. Adding paragraphs (b)(1) and (2);

■ f. Revising paragraph (c) introductory text;

■ g. Revising paragraphs (c)(1) and (2);

■ h. Adding paragraph (c)(3); and

■ i. Adding paragraphs (e) and (f).

The revisions and additions read as follows:

§ 63.844 Emission limits for new or reconstructed sources.

(a) *Potlines.* The owner or operator shall not discharge or cause to be discharged into the atmosphere any emissions of TF, POM, PM, nickel or arsenic in excess of the applicable limits in paragraphs (a)(1) through (a)(5) of this section.

* * * * *

(2) *POM limit.* Emissions of POM from potlines must not exceed 0.39 kg/Mg (0.77 lb/ton) of aluminum produced.

(3) *PM limit.* Emissions of PM from potlines must not exceed 2.3 kg/Mg (4.6 lb/ton) of aluminum produced.

(4) *Nickel limits.* Emissions of nickel shall not exceed 0.07 lb/ton from all Soderberg potlines at a primary aluminum reduction plant.

(5) *Arsenic limits.* Emissions of arsenic shall not exceed 0.006 lb/ton from all Soderberg potlines at a primary aluminum reduction plant.

(b) *Paste production plants.*

(1) The owner or operator shall meet the requirements in § 63.843(b)(1) through (3) for existing paste production plants and shall not discharge or cause to be discharged into the atmosphere any emissions of PM in excess of the limit in paragraph (b)(2) of this section.

(2) Emissions of PM shall not exceed 0.0028 kg/Mg (0.0056 lb/ton) of green anode.

(c) *Anode bake furnaces.* The owner or operator shall not discharge or cause to be discharged into the atmosphere any emissions of TF, PM or POM in excess of the limits in paragraphs (c)(1) through (3) of this section.

(1) *TF limit.* Emissions of TF shall not exceed 0.01 kg/Mg (0.02 lb/ton) of green anode;

(2) *POM limit.* Emissions of POM shall not exceed 0.025 kg/Mg (0.05 lb/ton) of green anode; and

(3) *PM limit.* Emissions of PM shall not exceed 0.018 kg/Mg (0.036 lb/ton) of green anode.

* * * * *

(e) *COS limit.* Emissions of COS must not exceed 3.1 lb/ton of aluminum produced for each potline.

(f) 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. Determination of whether such operation and maintenance procedures are being used 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.

■ 7. Section 63.846 is amended by:

■ a. Revising paragraph (b) introductory text;
■ b. Revising paragraphs (b)(1) through (3);
■ c. Revising paragraph (c) introductory text;
■ d. Revising paragraphs (c)(1) and (2);
■ e. Revising paragraphs (d)(2)(ii) through (iv);
■ f. Revising paragraphs (d)(4)(i) through (iii); and
■ g. Removing (d)(4)(iv).

The revisions read as follows:

§ 63.846 Emission averaging.

* * * * *

(b) *Potlines.* The owner or operator may average emissions from potlines and demonstrate compliance with the limits in Tables 1 through 3 of this subpart using the procedures in paragraphs (b)(1) through (3) of this section.

(1) Annual average emissions of TF shall not exceed the applicable emission limit in Table 1 of this subpart. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in Table 1 of this subpart for TF emissions, the owner or operator shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for TF secondary emissions and at least three runs per potline primary control system each year using the procedures and methods in §§ 63.847 and 63.849. The owner or operator shall combine the results of secondary TF average emissions with the TF results for the primary control system and divide total emissions by total aluminum production.

(2) Annual average emissions of POM shall not exceed the applicable emission limit in Table 2 of this subpart. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in Table 2 of this subpart for POM emissions, the owner or operator shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for POM secondary emissions and at least three runs per potline primary control system each year for POM primary emissions using the procedures and methods in §§ 63.847 and 63.849. The owner or operator shall combine the results of secondary POM average emissions with the POM results for the primary control system and divide total emissions by total aluminum production.

(3) Annual average emissions of PM shall not exceed the applicable emission limit in Table 3 of this subpart. The emission rate shall be calculated based on the total primary and secondary emissions from all potlines over the period divided by the quantity of aluminum produced during the period, from all potlines comprising the averaging group. To determine compliance with the applicable emission limit in Table 3 of this subpart for PM emissions, the owner or operator shall determine the average emissions (in lb/ton) from each potline from at least three runs per potline semiannually for PM secondary emissions and at least three runs per potline primary control system each year for PM primary emissions using the procedures and methods in §§ 63.847 and 63.849. The owner or operator shall combine the results of secondary PM average emissions with the PM results for the primary control system and divide total emissions by total aluminum production.

(c) *Anode bake furnaces.* The owner or operator may average TF emissions from anode bake furnaces and demonstrate compliance with the limits in Table 4 of this subpart using the procedures in paragraphs (c)(1) and (2) of this section. The owner or operator also may average POM emissions from anode bake furnaces and demonstrate compliance with the limits in Table 4 of this subpart using the procedures in paragraphs (c)(1) and (2) of this section. The owner or operator also may average PM emissions from anode bake furnaces and demonstrate compliance with the limits in Table 4 of this subpart using the procedures in paragraphs (c)(1) and (2) of this section.

(1) Annual emissions of TF, POM and/or PM from a given number of anode bake furnaces making up each averaging group shall not exceed the applicable emission limit in Table 4 of this subpart in any one year; and

(2) To determine compliance with the applicable emission limit in Table 4 of this subpart for anode bake furnaces, the owner or operator shall determine TF, POM and/or PM emissions from the control device for each furnace at least once each year using the procedures and methods in §§ 63.847 and 63.849.

(d) * * *

(2) * * *

(ii) The assigned TF, POM or PM emission limit for each averaging group of potlines or anode bake furnaces;

(iii) The specific control technologies or pollution prevention measures to be used for each emission source in the averaging group and the date of its installation or application. If the pollution prevention measures reduce or eliminate emissions from multiple sources, the owner or operator must identify each source;

(iv) The test plan for the measurement of TF, POM or PM emissions in accordance with the requirements in § 63.847(b) and (k);

* * * * *

(4) * * *

(i) Any averaging between emissions of differing pollutants or between differing sources. Emission averaging shall not be allowed between TF, POM and PM, and emission averaging shall not be allowed between potlines and anode bake furnaces;

(ii) The inclusion of any emission source other than an existing potline or existing anode bake furnace or the inclusion of any potline or anode bake furnace not subject to the same operating permit; or

(iii) The inclusion of any potline or anode bake furnace while it is shut down, in the emission calculations.

* * * * *

■ 8. Section 63.847 is amended by:
■ a. Revising paragraph (a) introductory text;
■ b. Revising paragraphs (a)(1) and (2);
■ c. Removing and reserving paragraph (a)(3);
■ d. Removing and reserving paragraph (b)(6);
■ e. Revising paragraphs (c)(1) through (3);
■ f. Revising paragraph (d) introductory text;
■ g. Revising paragraph (d)(1);
■ h. Removing and reserving paragraph (d)(2);
■ i. Revising paragraph (d)(4);
■ j. Adding paragraphs (d)(5) and (6);
■ k. Revising paragraphs (e)(1) and (4);
■ l. Adding paragraphs (e)(8) and (e)(9);
■ m. Revising paragraph (f);
■ n. Revising paragraph (g) introductory text;
■ o. Revising paragraphs (g)(2)(ii) and (iv);
■ p. Adding and reserving paragraph (i); and
■ q. Adding paragraphs (j), (k), (l) and (m).

The revisions and additions read as follows:

§ 63.847 Compliance provisions.

(a) *Compliance dates.* The owner operator of a primary aluminum reduction plant must comply with the requirements of this subpart by the applicable compliance date in paragraph (a)(1), (a)(2), (a)(3) or (a)(4) of this section:

(1) Except as noted in paragraph (2) of this section, the compliance date for an owner or operator of an existing plant or source subject to the provisions of this subpart is October 7, 1999.

(2) The compliance dates for existing plants and sources are:

(i) [DATE OF PUBLICATION OF FINAL RULE] for the malfunction provisions of §§ 63.850(d)(2) and (e)(4)(xvi) and (xvii) and the electronic reporting provisions of §§ 63.850(c) and (f) which became effective [DATE OF PUBLICATION OF FINAL RULE].

(ii) [DATE 1 YEAR AFTER DATE OF PUBLICATION OF FINAL RULE] for prebake potlines subject to emission limits in §§ 63.843(a)(2)(iv) through (vii); for potlines subject to the work practice standards in § 63.854(a), the COS emission limit provisions of § 63.843(e) and the PM emissions limit provisions of §§ 63.843(a)(3)(i) through (v); for anode bake furnaces subject to the startup practices in § 63.847(l) and PM emission limits in § 63.843(c)(3); for compliance with the pitch storage tank POM limit provisions of § 63.843(d); for paste production plants subject to the startup practices in § 63.847(m) and PM emission limits in § 63.843(b)(4) which became effective [DATE OF PUBLICATION OF FINAL RULE].

(iii) [DATE 2 YEARS AFTER DATE OF PUBLICATION OF FINAL RULE] for Soderberg potlines subject to emission limits in § 63.843(a)(2)(iii), (a)(4) and (a)(5) which became effective [DATE OF PUBLICATION OF FINAL RULE].

(3) [Reserved]

* * * * *

(b) * * *

(6) [Reserved]

* * * * *

(c) * * *

(1) During the first month following the compliance date for an existing potline (or potroom group), anode bake furnace or pitch storage tank.

(2) By the 180th day following startup for a potline or potroom group for which the owner or operator elects to conduct an initial performance test. The 180-day period starts when the first pot in a potline or potroom group is energized.

(3) By the 180th day following startup for a potline or potroom group that was shut down at the time compliance would have otherwise been required and is subsequently restarted. The 180-day period starts when the first pot in a potline or potroom group is energized.

(d) *Performance test requirements.* The initial performance test and all subsequent performance tests must be conducted in accordance with the requirements of the general provisions in subpart A of this part, the approved test plan and the procedures in this section. Performance tests must 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. Upon request, the owner or operator must make available to the Administrator such records as may be necessary to determine the conditions of performance tests.

(1) *TF, POM and PM emissions from potlines.* For each potline, the owner or operator shall measure and record the emission rates of TF, POM and PM exiting the outlet of the primary control system for each potline and the rate of secondary emissions exiting through each roof monitor, or for a plant with roof scrubbers, exiting through the scrubbers. Using the equation in paragraph (e)(1) of this section, the owner or operator shall compute and record the average of at least three runs semiannually for secondary emissions and at least three runs each year for the primary control system to determine compliance with the applicable emission limit. Compliance is demonstrated when the emission rate of TF is equal to or less than the applicable emission limit in § 63.843, § 63.844, or § 63.846.

(2) [Reserved]

* * * * *

(4) *TF, POM and PM emissions from anode bake furnaces.* For each anode bake furnace, the owner or operator shall measure and record the emission rate of TF, POM and PM exiting the exhaust stacks(s) of the primary emission control system for each anode bake furnace. In accordance with paragraphs (e)(3), (4) and (8) of this section, the owner or operator shall compute and record the average of at least three runs each year to determine compliance with the applicable emission limits for TF, POM and PM. Compliance is demonstrated when the emission rates of TF, POM and PM are equal to or less than the applicable TF, POM and PM emission limits in § 63.843, § 63.844, or § 63.846.

(5) *Nickel Emissions from VSS2 Potlines and new Soderberg potlines.* (i) For each VSS2 potline, and for each new Soderberg potline, the owner or operator must measure and record the emission rate of nickel exiting the primary emission control system and the rate of secondary emissions of nickel exiting through each roof monitor, or for a plant with roof scrubbers, exiting through the scrubbers. Using the procedure in paragraph (e)(10) of this section, the owner or operator must compute and record the average of at least three runs each year for secondary emissions and at least three runs each year for primary emissions.

(ii) Compliance is demonstrated when the emissions of nickel are equal to or less than the applicable emission limit in § 63.843(a)(4) or § 63.844(a)(4).

(6) *Arsenic Emissions from VSS2 Potlines and from new Soderberg potlines.* (i) For each VSS2 potline, and for each new Soderberg potline, the owner or operator must measure and record the emission rate of arsenic exiting the primary emission control system and the rate of secondary emissions of arsenic exiting through each roof monitor, or for a plant with roof scrubbers, exiting through the scrubbers. Using the procedure in paragraph (e)(11) of this section, the owner or operator must compute and record the average of at least three runs each year for secondary emissions and at least three runs each year for primary emissions.

(ii) Compliance is demonstrated when the emissions of arsenic are equal to or less than the applicable emission limit in § 63.843(a)(5) or § 63.844(a)(5).

(e) * * *

(1) Compute the emission rate (E_p) of TF, POM or PM from each potline using Equation 1:

$$E_p = \frac{\left[\left(C_{s1} \times Q_{sd}\right)_1 + \left(C_{s2} \times Q_{sd}\right)_2\right]}{\left(P \times K\right)} \qquad (Equation\ 1)$$

Where:

E_p = emission rate of TF, POM or PM from a potline, kg/Mg (lb/ton);
C_{s1} = concentration of TF, POM or PM from the primary control system, mg/dscm (mg/dscf);
Q_{sd} = volumetric flow rate of effluent gas corresponding to the appropriate subscript location, dscm/hr (dscf/hr);
C_{s2} = concentration of TF, POM or PM as measured for roof monitor emissions, mg/dscm (mg/dscf);
P = aluminum production rate, Mg/hr (ton/hr);
K = conversion factor, 10^6 mg/kg (453,600 mg/lb);
$_1$ = subscript for primary control system effluent gas; and
$_2$ = subscript for secondary control system or roof monitor effluent gas.

* * * * *

(4) Compute the emission rate of POM from each anode bake furnace using Equation 2,

Where:

E_b = emission rate of POM, kg/mg (lb/ton) of green anodes produced; and
C_s = concentration of POM, mg/dscm (mg/dscf).

* * * * *

(8) Compute the emission rate of PM from each anode bake furnace using Equation 2,

Where:

E_b = emission rate of PM, kg/mg (lb/ton) of green anodes produced; and
C_s = concentration of PM, mg/dscm (mg/dscf).

(9) Compute the emission rate (E_{PMpp}) of PM from each paste production plant using Equation 3,

$$E_{PMpp} = \frac{(C_s \times Q_{sd})}{(P_b \times K)} \qquad \textit{Equation}\ 3$$

Where:

E_{PMpp} = emission rate of PM, kg/mg (lb/ton) of green anodes produced;
C_s = concentration of PM, mg/dscm (mg/dscf);
Q_{sd} = volumetric flow rate of effluent gas, dscm/hr (dscf/hr);
P_b = quantity of green anode material placed in the anode bake furnace, mg/hr (ton/hr); and
K = conversion factor, 10^6 mg/kg (453,600 mg/lb).

(f) *Paste production plants.* (1) Initial compliance with the POM standards for existing and new paste production plants in §§ 63.843(b) and 63.844(b) will be demonstrated through site inspection(s) and review of site records by the applicable regulatory authority.

(2) For each paste production plant, the owner or operator shall measure and record the emission rate of PM exiting the exhaust stacks(s) of the primary emission control system. Using the equations in paragraph (e)(9) of this section, the owner or operator shall compute and record the average of at least three runs each year to determine compliance with the applicable emission limits for PM. Compliance with the PM standards for existing and new paste production plants is demonstrated when the PM emission rates are less than or equal to the applicable PM emission limits in §§ 63.843(b)(4) and 63.844(b)(2).

(g) *Pitch storage tanks.* The owner or operator must demonstrate initial compliance with the standard for pitch storage tanks in §§ 63.843(d) and 63.844(d) by preparing a design evaluation or by conducting a performance test. The owner or operator must submit for approval by the regulatory authority the information specified in paragraph (g)(1) of this section, along with the information specified in paragraph (g)(2) of this section where a design evaluation is performed or the information specified in paragraph (g)(3) of this section where a performance test is conducted.

* * * * *

(2) * * *

(ii) If an enclosed combustion device with a minimum residence time of 0.5 seconds and a minimum temperature of 760 degrees C (1,400 degrees F) is used to meet the emission reduction requirement specified in § 83.843(d) and § 83.844(d), documentation that those conditions exist is sufficient to meet the requirements of § 83.843(d) and § 83.844(d);

* * * * *

(iv) If the pitch storage tank is vented to the emission control system installed for control of emissions from the paste production plant pursuant to § 63.843(b) or § 63.844(b)(1), documentation of compliance with the requirements of § 63.843(b) is sufficient to meet the requirements of § 63.843(b) or § 63.844(d);

* * * * *

(i) [Reserved]

(j) *COS emissions.* The owner operator of each plant must calculate, for each potline, the emission rate of COS for each calendar month of operation using Equation 5:

$$E_{COS} = [K] \times \left[\frac{Y}{Z}\right] \times [S] \quad \cdots (\textit{Equation}\ 5)$$

Where:

E_{COS} = the emission rate of COS during the calendar month in pounds per ton of aluminum produced;
K = factor accounting for molecular weights and conversion of sulfur to carbonyl sulfide = 234;
Y = the tons of anode consumed in the potline during the calendar month;
Z = the tons of aluminum produced by the potline during the calendar month; and
S = the weighted average fraction of sulfur in the anode coke consumed in the production of aluminum during the calendar month (*e.g.*, if the weighted average sulfur content of the anode coke consumed during the calendar month was 2.5 percent, then S = 0.025). The weight of anode coke used during the month of each different concentration of sulfur is used to calculate the overall weighted average fraction of sulfur.

Compliance is demonstrated if the calculated value of E_{COS} is less than the applicable standard for COS emissions in §§ 63.843(e) and 63.844(e).

(k) *Startup of potlines.* The owner or operator must develop a written startup plan as described in § 63.854 that contains specific procedures to be followed during startup periods of potline(s). Compliance with the applicable standards in § 63.854 will be demonstrated through site inspection(s) and review of site records by the regulatory authority.

(l) *Startup of anode bake furnaces.* If you own or operate a new or existing anode bake furnace, you must develop a written startup plan as described in paragraphs (l)(1) through (4) of this section. Compliance with the startup plan will be demonstrated through site inspection(s) and review of site records by the regulatory authority. The written startup plan must contain specific procedures to be followed during startup periods of anode bake furnaces, including the following:

(1) A requirement to develop an anode bake furnace startup schedule.

(2) Records of time, date, duration of anode bake furnace startup and any nonroutine actions taken during startup of the furnaces.

(3) A requirement that the associated emission control system should be operating within normal parametric limits prior to startup of the anode bake furnace.

(4) A requirement to shut down the anode bake furnaces immediately if the associated emission control system is off line at any time during startup. The anode bake furnace restart may resume once the associated emission control system is back on line and operating within normal parametric limits.

(m) *Startup of paste production plants.* If you own or operate a new or existing paste production plant, you must develop a written startup plan as described in paragraphs (m)(1) through (3) of this section. Compliance with the startup plan will be demonstrated through site inspection(s) and review of site records by the regulatory authority. The written startup plan must contain specific procedures to be followed during startup periods of paste production plants, including the following:

(1) Records of time, date, duration of paste production plant startup and any nonroutine actions taken during startup of the paste production plants.

(2) A requirement that the associated emission control system should be operating within normal parametric limits prior to startup of the paste production plant.

(3) A requirement to shut down the paste production plant immediately if the associated emission control system is off line at any time during startup. The paste production plant restart may resume once the associated emission control system is back on line and operating within normal parametric limits.

■ 9. Section 63.848 is amended by:

■ a. Revising paragraphs (a) and (b);

■ b. Removing and reserving paragraph (e);

■ c. Adding paragraphs (f)(6) and (7); and

■ d. Adding paragraphs (n), (o) and (p).

The revisions and additions read as follows:

§ 63.848 Emission monitoring requirements.

(a) *TF and PM emissions from potlines.* Using the procedures in § 63.847 and in the approved test plan, the owner or operator shall monitor emissions of TF and PM from each potline by conducting annual performance tests on the primary control system and semiannual performance tests on the secondary emissions. The owner or operator shall compute and record the average from at least three runs for secondary emissions and the average from at least three runs for the primary control system to determine compliance with the applicable emission limit. The owner or operator must include all valid runs in the semiannual average. The duration of each run for secondary emissions must represent a complete operating cycle. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system and the average of at least three runs from the roof monitor or secondary control device.

(b) *POM emissions from potlines.* Using the procedures in § 63.847 and in the approved test plan, the owner or operator must monitor emissions of POM from each potline stack annually and secondary potline POM emissions semiannually. The owner or operator must compute and record the semiannual average from at least three runs per year for secondary emissions and at least three runs per year for the primary control systems to determine compliance with the applicable emission limit. The owner or operator must include all valid runs in the semiannual average. The duration of each run for secondary emissions must represent a complete operating cycle. The primary control system must be sampled over an 8-hour period, unless site-specific factors dictate an alternative sampling time subject to the approval of the regulatory authority. Potline emissions shall be recorded as the sum of the average of at least three runs from the primary control system and the average of at least three runs from the roof monitor or secondary control device.

* * * * *

(e) [Reserved]

(f) * * *

(6) For emission sources with fabric filters that choose to demonstrate continuous compliance through bag leak detection systems you must install a bag leak detection system according to the requirements in paragraph (o) of this section, and you must set your operating limit such that the sum of the durations of bag leak detection system alarms does not exceed 5 percent of the process operating time during a 6-month period.

(7) If you choose to demonstrate continuous compliance through a particulate matter CEMS, you must determine continuous compliance averaged on a rolling 30 operating day basis. All valid hours of data from 30 successive operating days shall be included in the average.

* * * * *

(n) *PM emissions from anode bake furnaces and paste production plants.* Using the procedures in § 63.847 and in the approved test plan, the owner or operator shall monitor PM emissions from each anode bake furnace and paste production plant on an annual basis. The owner or operator shall compute and record the annual average of PM emissions from at least three runs to determine compliance with the applicable emission limits. The owner or operator must include all valid runs in the annual average.

(o) *Bag leak detection system.* For each baghouse used to control PM emissions, you must install, operate and maintain a bag leak detection system according to paragraphs (o)(1) through (3) of this section, unless a system meeting the requirements of paragraph (p) of this section, for a CEMS and continuous emissions rate monitoring system, is installed for monitoring the concentration of particulate matter.

(1) You must develop and implement written procedures for baghouse maintenance that include, at a minimum, a preventative maintenance schedule that is consistent with the baghouse manufacturer's instructions for routine and long-term maintenance.

(2) Each bag leak detection system must meet the specifications and requirements in paragraphs (o)(2)(i) through (viii) of this section.

(i) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 1.0 milligram per dry standard cubic meter (0.00044 grains per actual cubic foot) or less.

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

(iii) The bag leak detection system must be equipped with an alarm system that will alarm when an increase in relative particulate loadings is detected over a preset level.

(iv) You must install, calibrate, operate and maintain the bag leak detection system according to the manufacturer's written specifications and recommendations.

(v) The initial adjustment of the system must, at a minimum, consist of establishing the baseline output by adjusting the sensitivity (range) and the averaging period of the device and establishing the alarm set points and the alarm delay time.

(vi) Following initial adjustment, you must not adjust the sensitivity or range, averaging period, alarm set points, or alarm delay time, except in accordance with the procedures developed under paragraph (o)(1) of this section. You cannot increase the sensitivity by more than 100 percent or decrease the sensitivity by more than 50 percent over a 365-day period unless such adjustment follows a complete baghouse inspection that demonstrates that the baghouse is in good operating condition.

(vii) You must install the bag leak detector downstream of the baghouse.

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

(3) You must include in the written procedures required by paragraph (o)(1) of this section a corrective action plan that specifies the procedures to be followed in the case of a bag leak detection system alarm. The corrective action plan must include, at a minimum, the procedures that you will use to determine and record the time and cause of the alarm as well as the corrective actions taken to minimize emissions as specified in paragraphs (o)(3)(i) and (ii) of this section.

(i) The procedures used to determine the cause of the alarm must be initiated within 30 minutes of the alarm.

(ii) The cause of the alarm must be alleviated by taking the necessary corrective action(s) that may include, but not be limited to, those listed in paragraphs (o)(3)(ii)(A) through (F) of this section.

(A) Inspecting the baghouse for air leaks, torn or broken filter elements, or any other malfunction that may cause an increase in emissions.

(B) Sealing off defective bags or filter media.

(C) Replacing defective bags or filter media, or otherwise repairing the control device.

(D) Sealing off a defective baghouse compartment.

(E) Cleaning the bag leak detection system probe, or otherwise repairing the bag leak detection system.

(F) Shutting down the process producing the particulate emissions.

(p) *Particulate Matter CEMS.* If you are using a CEMS to measure particulate matter emissions to meet requirements of this subpart, you must install, certify, operate and maintain the particulate matter CEMS as specified in paragraphs (p)(1) through (4) of this section.

(1) You must conduct a performance evaluation of the PM CEMS according to the applicable requirements of § 60.13, and Performance Specification 11 at 40 CFR part 60, Appendix B of this chapter.

(2) During each PM correlation testing run of the CEMS required by Performance Specification 11 at 40 CFR part 60, Appendix B of this chapter, collect data concurrently (or within a 30- to 60-minute period) by both the CEMS and by conducting performance tests using Method 5, 5D or 5I at 40 CFR part 60, Appendix A–3 or Method 17 at 40 CFR part 60, Appendix A–6 of this chapter.

(3) Perform quarterly accuracy determinations and daily calibration drift tests in accordance with Procedure 2 at 40 CFR part 60, Appendix F of this chapter. Relative Response Audits must be performed annually and Response Correlation Audits must be performed every three years.

(4) Within 60 days after the date of completing each CEMS response audit or performance test conducted to demonstrate compliance with this subpart, you must submit the response audit data as specified in § 63.850(c) and the results of the performance test as specified in § 63.850(b).

■ 10. Section 63.849 is amended by:
■ a. Revising paragraphs (a)(6) and (7);
■ b. Adding paragraphs (a)(8) through (11); and
■ c. Adding paragraph (f).

The revisions and additions read as follows:

§ 63.849 Test methods and procedures.

(a) * * *

(6) Method 315 in appendix A to this part or an approved alternative method for the concentration of POM where stack or duct emissions are sampled;

(7) Method 315 in appendix A to this part and Method 14A in appendix A to part 60 of this chapter or an approved alternative method for the concentration of POM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 315 need not be set up as required in the method. Instead, replace the Method 14A monitor cassette filter with the filter specified by Method 315. Recover and analyze the filter according to Method 315;

(8) Method 5 in appendix A to part 60 of this chapter or an approved alternative method for the concentration of PM where stack or duct emissions are sampled;

(9) Method 17 and Method 14A in appendix A to part 60 of this chapter or an approved alternative method for the concentration of PM where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 17 need not be set up as required in the method. Instead, replace the Method 14A monitor cassette filter with the filter specified by Method 17. Recover and analyze the filter according to Method 17;

(10) Method 29 in appendix A to part 60 of this chapter or an approved alternative method for the concentration of nickel and arsenic where stack or duct emissions are sampled; and

(11) Method 29 and Method 14A in appendix A to part 60 of this chapter or an approved alternative method for the concentration of nickel and arsenic where emissions are sampled from roof monitors not employing wet roof scrubbers. Method 29 need not be set up as required in the method. Instead, replace the Method 14A monitor cassette filter with the filter specified by Method 29. Recover and analyze the filter according to Method 29.

* * * * *

(f) The owner or operator must use either ASTM D4239–13e1 or ASTM D6376–10 for determination of the sulfur content in anode coke shipments to determine compliance with the applicable emission limit for COS emissions.

■ 11. Section 63.850 is amended by:
■ a. Revising paragraphs (b), (c) and (d);
■ b. Removing and reserving paragraph (e)(4)(iii);
■ c. Revising paragraphs (e)(4)(xiv) and (xv);
■ d. Adding paragraphs (e)(4)(xvi) and (xvii); and
■ e. Adding paragraph (f).

The revisions and additions read as follows:

§ 63.850 Notification, reporting and recordkeeping requirements.

* * * * *

(b) *Performance test reports.* Within 60 days after the date of completing each performance test required by this subpart, the owner or operator shall submit the results of the performance test following the procedure specified in either paragraph (b)(1) or (b)(2) of this section.

(1) For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT Web site (*http://www.epa.gov/ttn/chief/ert/index.html*) at the time of the test, the owner or operator shall 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) (*http://cdx.epa.gov/epa_home.asp*).)

Performance test data shall be submitted in a file format generated through the use of the EPA's ERT. Instead of submitting performance test data in a file format generated through the use of the EPA's ERT, you may submit an alternate electronic file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT Web site, once the XML schema is available. Owners or operators who claim that some of the performance test information being submitted is confidential business information (CBI) shall 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 once the XML schema is available), 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 shall be clearly marked as CBI and mailed to U.S. EPA/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404–02, 4930 Old Page Road, Durham, NC 27703. The same ERT or alternate file with the CBI omitted shall be submitted to the EPA via the EPA's CDX as described earlier in this paragraph.

(2) 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 shall submit the results of the performance test to the Administrator at the appropriate address listed in § 63.13.

(c) *Performance evaluation reports.* Within 60 days after the date of completing each CEMS performance evaluation, submit the results of the performance evaluation following the procedure specified in either paragraph (c)(1) or (2) of this section.

(1) For performance evaluations of continuous monitoring systems measuring pollutants that are supported by the EPA's ERT as listed on the EPA's ERT Web site, you must submit the results of the performance evaluation to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX.) Performance evaluation data must be submitted in a file format generated through the use of the EPA's ERT. Instead of submitting performance test data in a file format generated through the use of the EPA's ERT, you may submit an alternate electronic file format consistent with the XML schema listed on the EPA's ERT Web site, once the XML schema is available. If you claim that some of the performance evaluation information being submitted is CBI, you 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 once the XML schema is available), 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/OAQPS/CORE CBI Office, Attention: Group Leader, Measurement Policy Group, MD C404–02, 4930 Old Page Road, 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.

(2) For any performance evaluations of continuous monitoring systems measuring pollutants that are not supported by the EPA's ERT as listed on the EPA's ERT Web site, submit the results of the performance evaluation to the Administrator at the appropriate address listed in § 63.13.

(d) *Reporting.* In addition to the information required under § 63.10 of the General Provisions, the owner or operator must provide semiannual reports containing the information specified in paragraphs (d)(1) and (2) of this section to the Administrator or designated authority.

(1) Excess emissions report. As required by § 63.10(e)(3), the owner or operator must submit a report (or a summary report) if measured emissions are in excess of the applicable standard. The report must contain the information specified in § 63.10(e)(3)(v) and be submitted semiannually unless quarterly reports are required as a result of excess emissions.

(2) If there was a malfunction during the reporting period, the owner or operator must submit a report that includes the number, duration and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with §§ 63.843(f) and 63.844(f), including actions taken to correct a malfunction.

(e) * * *

(4) * * *

(iii) [Reserved]

* * * * *

(xiv) Records documenting any POM data that are invalidated due to the installation and startup of a cathode;

(xv) Records documenting the portion of TF that is measured as particulate matter and the portion that is measured as gaseous when the particulate and gaseous fractions are quantified separately using an approved test method;

(xvi) Records of the occurrence and duration of each malfunction of operation (*i.e.,* process equipment) or the air pollution control equipment and monitoring equipment; and

(xvii) Records of actions taken during periods of malfunction to minimize emissions in accordance with §§ 63.843 and 63.844, including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

(f) All reports required by this subpart not subject to the requirements in paragraph (b) of this section must be sent to the Administrator at the appropriate address listed in § 63.13. If acceptable to both the Administrator and the owner or operator of a source, these reports may be submitted on electronic media. The Administrator retains the right to require submittal of reports subject to paragraph (b) of this section in paper format.

■ 12. Section 63.854 is added to read as follows:

§ 63.854 Work Practice Standards for Potlines.

(a) *Periods of operation other than startup.* If you own or operate a new or existing primary aluminum reduction affected source, you must comply with the requirements of paragraphs (a)(1) through (4) of this section during periods of operation other than startup.

(1) Ensure the potline scrubbers and exhaust fans are operational at all times.

(2) Ensure that the primary capture and control system is operating at all times.

(3) Keep pots covered as much as practicable to include but not limited to minimizing the removal of covers or panels of the pots on which work is being performed.

(4) Inspect potlines daily and perform the work practices specified in paragraphs (a)(4)(i) through (iii) of this section.

(i) Identify unstable pots as soon as practicable but in no case more than 12 hours from the time the pot became unstable;

(ii) Reduce cell temperatures to as low as practicable, and follow the written operating plan described in paragraph (b)(4) of this section if the cell temperature exceeds the specified high temperature limit; and

(iii) Reseal pot crusts that have been broken as often and as soon as practicable.

(b) *Periods of startup.* If you own or operate a new or existing primary aluminum reduction affected source, you must comply with the requirements of paragraphs (a)(1) through (4) and (b)(1) through (4) of this section during periods of startup for each affected potline.

(1) Develop a potline startup schedule before starting up the potline.

(2) Keep records of the number of pots started each day.

(3) Inspect potlines daily and adjust pot parameters to their optimum levels, as specified in the operating plan described in paragraph (b)(4) of this section, including, but not limited to: Alumina addition rate, exhaust air flow rate, cell voltage, feeding level, anode current and liquid and solid bath levels.

(4) Prepare a written operating plan to minimize emissions during startup to include, but not limited to, the requirements in (b)(1) through (3) of this section. The operating plan must include a specified high temperature limit for pots that will trigger corrective action.

■ 13. Section 63.855 is added to read as follows:

§ 63.855 Alternative Emissions Limits for Co-controlled New and Existing Anode Bake Furnaces.

(a) *Applicability.* The owner or operator of a new anode bake furnace meeting the criteria of paragraphs (a)(1) and (2) of this section may demonstrate compliance with alternative TF and POM emission limits according to the procedures of this section.

(1) The new anode bake furnace must have been permitted to operate prior to May 1, 1998; and

(2) The new anode bake furnace must share a common control device with one or more existing anode bake furnaces.

(b) *TF emission limit.* (1) Prior to the date on which each TF emission test is required to be conducted, the owner or operator must determine the applicable TF emission limit using Equation 6–A,

$$L_{TFC} = [(L_{TFE} \times P_E) + (0.018 \times P_N)]/(P_E + P_N) \qquad \text{Eq. 6-A}$$

Where:

L_{TFC} = Combined emission limit for TF, lb/ton green anode material placed in the bake furnace;

L_{TFE} = TF limit for emission averaging for the total number of new and existing anode bake furnaces from Table 4 to this subpart;

P_E = Mass of green anode placed in existing anode bake furnaces in the twelve months preceding the compliance test, ton/year; and

P_N = Mass of green anode placed in new anode bake furnaces in the twelve months preceding the compliance test, ton/year.

(2) The owner or operator of a new anode bake furnace that is controlled by a control device that also controls emissions of TF from one or more existing anode bake furnaces must not discharge, or cause to be discharged into the atmosphere, any emissions of TF in excess of the emission limits established in paragraph (b)(1) of this section.

(c) *POM emission limits.* (1) Prior to the date on which each POM emission test is required to be conducted, the owner or operator must determine the applicable POM emission limit using Equation 6–B,

$$L_{POMC} = [(0.17 \times P_E) + (0.045 \times P_N)]/(P_E + P_N) \qquad \text{Eq. 6-B}$$

Where:

L_{POMC} = Combined emission limit for POM, lb/ton green anode material placed in the bake furnace.

(2) The owner or operator of a new anode bake furnace that is controlled by a control device that also controls emissions of POM from one or more existing anode bake furnaces must not discharge, or cause to be discharged into the atmosphere, any emissions of TF in excess of the emission limits established in paragraph (c)(1) of this section.

■ 14. Table 1 to Subpart LL of Part 63—Potline TF Limits for Emission Averaging is revised to read as follows:

TABLE 1 TO SUBPART LL OF PART 63—POTLINE TF LIMITS FOR EMISSION AVERAGING

Type	Monthly TF limit (lb/ton) [for given number of potlines]						
	2 lines	3 lines	4 lines	5 lines	6 lines	7 lines	8 lines
CWPB1	1.7	1.6	1.5	1.5	1.4	1.4	1.4
CWPB2	2.9	2.8	2.7	2.7	2.6	2.6	2.6
CWPB3	2.3	2.2	2.2	2.1	2.1	2.1	2.1
SWPB	1.4	1.3	1.3	1.2	1.2	1.2	1.2
VSS2	2.6	2.5	2.5	2.4	2.4	2.4	2.4

■ 15. Table 2 to Subpart LL of Part 63—Potline POM Limits for Emission Averaging is revised to read as follows:

TABLE 2 TO SUBPART LL OF PART 63—POTLINE POM LIMITS FOR EMISSION AVERAGING

Type	Quarterly POM limit (lb/ton) [for given number of potlines]						
	2 lines	3 lines	4 lines	5 lines	6 lines	7 lines	8 lines
CWPB1	1	0.9	0.9	0.9	0.8	0.8	0.8
CWPB2	11.6	11.2	10.8	10.8	10.4	10.4	10.4
CWPB3	2.5	2.4	2.4	2.3	2.3	2.3	2.3

Table 2 to Subpart LL of Part 63—Potline POM Limits for Emission Averaging—Continued

Type	Quarterly POM limit (lb/ton) [for given number of potlines]						
	2 lines	3 lines	4 lines	5 lines	6 lines	7 lines	8 lines
SWPB	16.6	15.4	15.4	14.3	14.3	14.3	14.3
VSS2	3.3	3.1	3.0	2.9	2.9	2.8	2.7

■ 16. Table 3 to subpart LL is redesignated as Table 4 to Subpart LL of Part 63—Anode Bake Furnace Limits for Emission Averaging and revised to read as follows:

Table 4 to Subpart LL of Part 63—Anode Bake Furnace Limits for Emission Averaging

Number of furnaces	Emission limit (lb/ton of anode)		
	TF	POM	PM
2	0.11	0.17	0.037
3	0.09	0.17	0.031
4	0.077	0.17	0.026
5	0.07	0.17	0.024

■ 17. New Table 3 to Subpart LL of Part 63—Potline PM Limits for Emission Averaging is added to read as follows:

Table 3 to Subpart LL of Part 63—Potline PM Limits for Emission Averaging

Type	Monthly PM limit (lb/ton) [for given number of potlines]						
	2 lines	3 lines	4 lines	5 lines	6 lines	7 lines	8 lines
CWPB1	5.9	5.6	5.2	5.2	4.9	4.9	4.9
CWPB2	10.6	10.3	9.9	9.9	9.5	9.5	9.5
CWPB3	18.4	17.6	17.6	16.8	16.8	16.8	16.8
SWPB	4	3.7	3.7	3.5	3.5	3.5	3.5
VSS2	25	24.1	24.1	23.1	23.1	23.1	23.1

■ 18. Appendix A to Subpart LL of Part 63—Applicability of General Provisions is revised to read as follows:

Appendix A to Subpart LL of Part 63—Applicability of General Provisions

[40 CFR Part 63, Subpart A]

Reference section(s) . . .	Requirement	Applies to subpart LL	Comment
63.1(a)(1) through (4)	General Applicability	Yes.	
63.5(a)(5)		Yes.	
63.1(a)(6)		Yes.	
63.1(a)(7) through (9)		No	[Reserved].
63.1(a)(10) through (12).		Yes.	
63.1(b)(1) through (3)	Initial Applicability Determination	Yes	(b)(2) Reserved.
63.1(c)(1)	Applicability after standard Established	Yes.	
63.1(c)(2)		Yes.	
63.1(c)(3) and (4)		No	[Reserved].
63.1(c)(5)		Yes.	
63.1(d)		Yes	[Reserved].
63.1(e)	Applicability of Permit Program	Yes.	
63.2	Definitions	Yes.	
63.3	Units and Abbreviations	Yes	
63.4(a)(1) and (2)	Prohibited activities	Yes.	
63.4(a)(3) through (5)		No	[Reserved].
63.4(b) and (c)	Circumvention/Severability	Yes.	
63.5(a)(5)	Construction/Reconstruction Applicability	Yes.	

APPENDIX A TO SUBPART LL OF PART 63—APPLICABILITY OF GENERAL PROVISIONS—Continued

[40 CFR Part 63, Subpart A]

Reference section(s) . . .	Requirement	Applies to subpart LL	Comment
63.5(b)(1)	Existing, New, Reconstructed Sources Requirements.	Yes.	
63.5(b)(2)		No	[Reserved].
63.5(b)(3) and (4)		Yes.	
63.5(b)(5)		No	[Reserved].
63.5(b)(6)		Yes.	
63.5(c)		No	[Reserved].
63.5(d)	Application for Approval of Construction/Reconstruction.	Yes.	
63.5(e)	Approval of Construction/Reconstruction	Yes.	
63.5(f)	Approval of Construction/Reconstruction Based on State Review.	Yes	
63.6(a)	Compliance with Standards and Maintenance Applicability.	Yes	
63.6(b)(1) through (5)	New and Reconstructed Source Dates	Yes.	
63.6(b)(6) and (7)		No	[Reserved].
63.6(c)(1)	Existing Source Dates	Yes.	
63.6(c)(2)		Yes.	
63.6(c)(3) and (4)		No	[Reserved].
63.6(c)(5)		Yes.	
63.6(d)		No	[Reserved].
63.6(e)(1)(i)		No	See §§ 63.843(f) and 63.844(f) for general duty requirement.
63.6(e)(1)(ii)		No	
63.6(e)(1)(iii)		Yes.	
63.6(e)(2)		No	[Reserved].
63.6(e)(3)	Startup, Shutdown and Malfunction Plan	No.	
63.6(f)(1)	Compliance with Emissions Standards	No.	
63.6(f)(1) and (2)	Methods/Finding of Compliance	Yes.	
63.6(g)	Alternative Standard	Yes.	
63.6(h)	Compliance with Opacity/VE Standards	Only in § 63.845	Opacity standards applicable only when incorporating the NSPS requirements under § 63.845
63.6(i)(1) through (14)	Extension of Compliance	Yes.	
63.6(i)(15)		No.	[Reserved].
63.6(i)(16)		Yes.	
63.6(j)	Exemption from Compliance	Yes.	
63.7(a)	Performance Test Requirements Applicability	Yes.	
63.7(b)	Notification	Yes.	
63.7(c)	Quality Assurance/Test Plan	Yes.	
63.7(d)	Testing facilities	Yes.	
63.7(e)(1)	Conduct of Tests	No	See § 63.847(d)
63.7(e)(2) through (4)		Yes.	
63.7(f),(g), (h)	Alternative Test Method	Yes.	
63.8(a)	Monitoring Requirements Applicability	Yes.	
63.8(b)	Conduct of Monitoring	Yes.	
63.8(c)(1)(i)		No	See §§ 63.843(f) and 63.844(f) for general duty requirement.
63.8(c)(1)(ii)		Yes.	
63.8(c)(1)(iii)		No.	
63.8(c)(2) through (d)(2).		Yes.	
63.8(d)(3)		Yes, except for last sentence.	
63.8(e) through (g)		Yes.	
63.9(a),(b),(c),(e),(g),(h) (1) through (3), (h)(5) and (6), (i) and (j).		Yes.	
63.9(a)	Notification Requirements Applicability	Yes.	
63.9(b)	Initial Notifications	Yes.	
63.9(c)	Request for Compliance Extension	Yes.	
63.9(d)	New Source Notification for Special Compliance Requirements.	Yes.	
63.9(e)	Notification of Performance Test	Yes.	
63.9(f)	Notification of VE/Opacity Test	Yes.	
63.9(g)	Additional CMS Notifications	Yes.	
63.9(h)(1) through (3)	Notification of Compliance Status	Yes.	
63.9(h)(4)		No	[Reserved].
63.9(h)(5) and (6)		Yes.	
63.9(i)	Adjustment of Deadlines	Yes.	

APPENDIX A TO SUBPART LL OF PART 63—APPLICABILITY OF GENERAL PROVISIONS—Continued
[40 CFR Part 63, Subpart A]

Reference section(s) . . .	Requirement	Applies to subpart LL	Comment
63.9(j)	Change in Previous Information	Yes.	
63.10(a)	Recordkeeping/Reporting Applicability	Yes.	
63.10(b)(1)	General Recordkeeping Requirements	Yes.	
63.10(b)(2)(i)		No.	
63.10(b)(2)(ii)		No	See §§ 63.850(e)(4)(xvi) and (xvii) for recordkeeping of occurrence and duration of malfunctions and recordkeeping of actions taken during malfunction.
63.10(b)(2)(iii)		Yes.	
63.10(b)(2)(iv) and (v)		No.	
63.10(b)(2)(vi) through (xiv).		Yes.	
63.(10)(b)(3)		Yes.	
63.10(c)(1) through (9)		Yes.	
63.10(c)(10) and (11)		No	See §§ 63.850(e)(4)(xvi) and (xvii)for recordkeeping of malfunctions.
63.10(c)(12) through (14).		Yes.	
63.10(c)(15)		No.	
63.10(d)(1) through (4)	General Reporting Requirements	Yes.	
63.10(d)(5)	Startup-Shutdown and Malfunction Reports	No	See § 63.850(d)(2) for reporting of malfunctions.
63.10(e) and (f)	Additional CMS Reports and Recordkeeping/Reporting Waiver.	Yes.	
63.11	Control Device/work practices requirements Applicability.	No.	
63.12	State Authority and Delegations	Yes.	
63.13	Addresses	Yes.	
63.14	Incorporation by Reference	Yes.	
63.15	Information Availability/Confidentiality	Yes.	
63.16	Performance Track Provisions	No.	

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