6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 63

[EPA-HQ-OAR-2004-0505; FRL-9920-49-OAR]

RIN 2060-AS42

Completion of Requirement to Promulgate Emissions Standards

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: In this action, the Environmental Protection Agency (EPA) proposes that it has completed its statutory obligation of the Clean Air Act to promulgate emissions standards for source categories accounting for not less than ninety percent of the aggregated emissions of each of the seven hazardous air pollutants enumerated in section 112(c)(6). This document explains the basis for the agency's conclusion that it completed this obligation in February of 2011, identifies the promulgated standards that collectively satisfy the obligation, and provides the public an opportunity to comment.

DATES: Comments must be received on or before **[insert date 60 days after date of publication in the *Federal Register*]**.

Public Hearing. If anyone contacts the EPA requesting to speak at a public hearing by **[insert date 5 days after the date of publication in the *Federal Register*],** a public hearing will

be held on **[insert date 15 days after the date of publication in the *Federal Register*]** 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. Under the Paperwork Reduction Act, comments on the information collection provisions are best assured of having full effect if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[insert date 30 days after publication in the *Federal Register*]**.

ADDRESSES: Submit your comments, identified by Docket ID Number EPA-HQ-OAR-2004-0505, by one of the following methods:

- Federal Rulemaking Portal: http://www.regulations.gov. Follow the online instructions for submitting comments.
- Agency Website: http://www.epa.gov/oar/docket.html. Follow the instructions for submitting comments on the EPA Air and Radiation Docket Website.
- Email: a-and-r-docket@epa.gov. Include EPA-HQ-OAR-2004-0505 in the subject line of the message.

- Fax: Fax your comments to: (202) 566-9744, Attention Docket ID Number EPA-HQ-OAR-2004-0505.
- Mail: Environmental Protection Agency, EPA Docket Center (EPA/DC), Mail Code 28221T, Attention Docket ID No. EPA-HQ-OAR-2004-0505, 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 the EPA, 725 17th Street, NW, Washington, DC 20503.
- Hand Delivery or Courier: EPA Docket Center, Room 3334, EPA WJC West Building, 1301 Constitution Avenue, NW, Washington, DC 20004, Attention Docket ID Number EPA-HQ-OAR-2004-0505. 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 Number EPA-HQ-OAR-2004-0505. The EPA 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 http://www.regulations.gov or email. The http://www.regulations.gov website 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 avoid the use of special characters, any form of encryption and be free of any defects or viruses. For additional information about the EPA public docket, visit the EPA Docket Center homepage at http://www.epa.gov/epahome/dockets.htm. Docket. The EPA has established a docket for this rulemaking under Docket ID Number EPA-HQ-OAR-2004-0505. All documents in the docket are listed in the http://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 http://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 EPA Docket Center is (202) 566-1742.

Public Hearing. If anyone contacts the EPA requesting a public hearing by [**insert date 5 days after the date of publication in the *Federal Register***], the public hearing will be held on [**insert date 15 days after the date of publication in the *Federal Register***] 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 **[insert date 12 days after the date of publication in the *Federal Register*]**. 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.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed rule, contact Mr. Nathan Topham, Office of Air Quality Planning and Standards; Sector Policies and Programs Division, Metals and Inorganic Chemicals Group (D243-02); Environmental Protection Agency; Research Triangle Park, NC 27111; telephone number: (919)541-0483; fax number: (919) 541-3207; email address: topham.nathan@epa.gov.

SUPPLEMENTARY INFORMATION:

The information presented in this preamble is organized as follows:

I. General Information

A. What should I consider as I prepare my comments to 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 comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. If you submit a CD ROM or disk that does not contain CBI, mark the outside of the disk or CD ROM clearly that it does not contain CBI. Information not marked as CBI will be included in the public docket and the EPA's electronic public docket without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. Send or deliver information identified as CBI only to the following address: OAQPS Document Control Officer (C404-02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention Docket ID Number EPA-HQ-OAR-2004-0505.

B. Where can I get a copy of this document?

In addition to being available in the docket, an electronic copy of this proposal will also be available on the Internet through the EPA's Technology Transfer Network (TTN). Following signature by the EPA Administrator, a copy of this proposed action will be posted on the TTN's policy and guidance page for

newly proposed or promulgated rules at the following address: http://www.epa.gov/ttn/atw/eparules.html. The TTN provides information and technology exchange in various areas of air pollution control.

II. Background Information

A. What is the statutory background for this action?

Section 112(c)(6) of the Clean Air Act requires EPA to take action[1] with respect to seven specific persistent, bioaccumulative hazardous air pollutants (HAP). The section states, "With respect to alkylated lead compounds, polycyclic organic matter, hexachlorobenzene[2], mercury, polychlorinated biphenyls[3], 2,3,7,8-tetrachlorodibenzofurans[4] and 2,3,7,8-tetrachlorodibenzo-p-dioxin[5], the Administrator shall, not later than 5 years after November 15, 1990, list categories and subcategories of sources assuring that sources accounting for not less than 90 per centum of the aggregate emissions of each such pollutant are subject to standards under subsection (d)(2) or (d)(4) of this section."

Section 112(c)(6) requires the EPA to ensure that sources responsible for 90 percent of the aggregate emissions of each of

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[1] Section 112(c)(6) also states that "This paragraph shall not be construed to require the Administrator to promulgate standards for such pollutants emitted by electric utility steam generating units."
[2] Referred to elsewhere in this document as "HCB."
[3] Referred to elsewhere in this document as "PCBs."
[4] Referred to elsewhere in this document as "furan."
[5] Referred to elsewhere in this document as "dioxin." Note that dioxin and furan emissions are grouped together for the purpose of the 1990 baseline inventory in Table 1 of this preamble.

the seven specified pollutants are subject to standards under sections (d)(2) or (d)(4) of this section. 42 U.S.C. 7412(c)(6). It requires the EPA to list, by November 15, 1995, source categories assuring that sources responsible for 90 percent of the aggregate emissions are subject to emission standards pursuant to section 112(d)(2) or (4), and to promulgate such standards by November 15, 2000. Under section 112(d)(2), the EPA imposes emission standards that require "the maximum degree of reduction in emissions of the [HAPs]" that the EPA concludes are achievable based on a consideration of factors identified in the statute. 42 U.S.C. 7412(d)(2). These are referred to as "maximum achievable control technology" or "MACT." Section 112(d)(4) authorizes the EPA to set a health-based standard for a limited set of hazardous air pollutants for which a health threshold has been established, and that standard must provide for "an ample margin of safety." 42 U.S.C. 7412(d)(4).

B. What is the litigation history regarding this action?

In 2001, Sierra Club filed suit in the U.S. District Court for the District of Columbia asserting, among other allegations, that the EPA had failed to promulgate emission standards sufficient to satisfy the 90 percent requirement in CAA section 112(c)(6). *See Sierra Club v. Jackson*, No. 01-1537 (D.D.C.). In an order issued March 31, 2006 ("2006 order"), the district court set a deadline (later extended) for the EPA to complete

that task. *Sierra Club v. Johnson*, 444 F. Supp. 2d 46, 59 (D.D.C. 2006). In the course of that suit, the EPA explained that "once [it] completes emission standards for the remaining source categories under section 112(c)(6), it intends to issue a notice that explains how it has satisfied the requirements of section 112(c)(6) in terms of issuing emission standards for the source categories that account for the statutory thresholds identified in section 112(c)(6).'" *Id.*

On March 21, 2011, having promulgated standards sufficient to meet the 90 percent requirement under section 112(c)(6), the EPA published a notice in the **Federal Register** (FR) announcing it had met its statutory obligation. Completion of Requirement to Promulgate Emission Standards, 76 FR 15308 (March 21, 2011)("90 Percent Notice" or "Notice"). The March 21, 2011, notice contained the EPA Administrator's conclusion that "EPA has completed sufficient standards to meet the 90-percent requirement under . . . section 112(c)(6)." 76 FR 15308. The Administrator based that determination on a technical memorandum "document[ing] the actions the Agency has taken to meet these requirements." *Id.* The technical memorandum titled Emission Standards for Meeting the Ninety Percent Requirement under Section 112(c)(6) of the Clean Air Act, which is available in the docket for this action (Docket ID: EPA-HQ-OAR-2004-0505), included an updated 1990 baseline inventory, an updated list of

the source categories necessary to meet the 90 percent requirement, and a list of emission standards the EPA has promulgated for these source categories.

In 2011, Sierra Club filed suit in U.S. Court of Appeals for the District of Columbia (D.C. Circuit) challenging the March 21, 2011, notice. The D.C. Circuit vacated the notice, holding that the notice was a legislative rulemaking that must be issued through a notice and comment rulemaking. *Sierra Club v. EPA*, 699 F.3d 530, 535 (D.C. Cir. 2012).

In 2013, Sierra Club filed a motion with the district court, seeking enforcement of the 2006 order. In an opinion dated July 25, 2014, the district court held that the EPA failed to comply with the 2006 order and directed the EPA to initiate a process of notice and comment rulemaking before the agency reissues, reconsiders or modifies its determination regarding section 112(c)(6). Therefore, the EPA is issuing this proposed rule as ordered by the district court and providing an opportunity for comment on the EPA's proposed determination that it has fulfilled the requirements of section 112(c)(6).

III. How Has the EPA Satisfied its Obligation under Clean Air Act Section 112(c)(6)?

A. How did the EPA determine what regulations would collectively satisfy the 90 percent requirement under section 112(c)(6)?

In 1998, the EPA published an initial list of source categories and subcategories in the **Federal Register** that the agency at that time believed it needed to regulate under section 112(c)(6) to satisfy that provision's 90 percent requirement. 63 FR 17838, April 10, 1998. The EPA first developed a 1990 baseline inventory[6] which identified all known sources of the section 112(c)(6) HAPs at the time and included estimated national annual emissions for each source category as of 1990. 63 FR 17847, Table 1. The EPA then identified source categories considered subject to standards under 112(d)(2) and (d)(4), as well as those subject to section 129 standards.[7] 63 FR 17842. See also Table 2 of the 1998 Notice, 63 FR 17849. The EPA found that a majority of the source categories needed to achieve the 90 percent requirement were already subject to either section 112(d)(2) or (d)(4) standards or section 129 standards or listed for such regulation. 63 FR 17839. Based on the 1990 baseline emissions inventory, the EPA concluded that the 90 percent requirement had been met for five of seven 112(c)(6) HAP but that additional regulations were needed for polycyclic organic matter (POM) and alkylated lead to attain the 90 percent level

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[6] The EPA chose 1990 as the baseline year because that was when the section 112(c)(6) requirements came into force as part of the CAA Amendments of 1990. See 62 FR 33627.

[7] The EPA considers standards promulgated under section 129 as substantively equivalent to those promulgated under section 112(c)(6). 63 FR 17846.

for those two HAP. 63 FR 17846. Therefore, the EPA added two more categories to the initial section 112(c)(6) source category list. See Table 2, 63 FR 17850. However, the EPA also noted in that notice that "many uncertainties remain concerning the accuracy of its identification of source categories and estimates of emissions." 63 FR 17845. The EPA forewarned that "Given the uncertainties, the EPA recognizes that the list may be subject to change." 63 FR 17846. For example, in that notice, the EPA explained:

> "As the Agency proceeds to develop appropriate emission standards, it will necessarily develop improved source category-specific information, which may affect the estimates of total emissions, the percentage of emissions subject to standards, allocation of emissions within a source category to major and area sources, and source categories for which standards need to be developed. As it proceeds to develop these standards and associated information, EPA intends to further evaluate this information against its obligation to assure that sources accounting for not less than 90 percent of emissions are subject to standards."

63 FR 17845

In particular, the agency explained that, for regulations not yet developed, it would subject area source categories with significant emissions to the regulations required by section 7412(c)(6), but that "[s]ome area categories may be negligible contributors to the 90 percent goal, and as such pose unwarranted burdens for subjecting to [MACT] standards." *Id*.

Subsequent to the publication of the initial section 112(c)(6) list, as the EPA continued evaluating source categories and developing standards, the EPA has updated the listing several times. The EPA issued the updates either as a separate notice or in conjunction with development of specific standards. The updates are as follows:

- Section 112(c)(6) Source Category List: Tire Production, 65 FR 47725, August 3, 2000. This action removed tire production manufacturing from the list.
- National Emission Standards for Hazardous Air Pollutants; Revision of Source Category List for Standards Under Section 112(c)(6) and 112(k) of the Clean Air Act, 67 FR 68124, November 8, 2002. This action added gasoline distribution Stage I to the list and removed area sources in the following categories: asphalt hot mix production, fabricated metal products, paint and allied products, paper coated and laminated, packaging and transportation equipment manufacturing.

- Revision of Source Category Lists for Standards Under Sections 112(c) and 112(k) of the Clean Air Act; and National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace; Proposed Rule, 72 FR 53814, September 20, 2007. This action added the electric arc furnace (EAF) steelmaking facility area source category to the list.
- National Emission Standards for Hazardous Air Pollutants for Source Categories: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities; and Gasoline Dispensing Facilities; Final Rule, 73 FR 1916, January 10, 2008. This action finalized the decision not to regulate gasoline distribution area sources under section 112(c)(6).
- National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category; and Addition to Source Category List for Standards; Final Rule, 76 FR 9450, February 17, 2011. This action added the Gold Mine Ore Processing and Production source category to the list.
- National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers; Final Rule, 76 FR 15554, March 21, 2011. This

action explained that area source wood and oil-fired boilers were not needed to meet the 90 percent requirement for POM and mercury under section 112(c)(6).

- Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units; Final Rule, 76 FR 15372, March 21, 2011. This action explained that sewage sludge incineration units were needed to meet the 90 percent requirement for mercury under section 112(c)(6). See 76 FR 15375.
- Emission Standards for Meeting the Ninety Percent Requirement under Section 112(c)(6) of the Clean Air Act, Docket ID: EPA-HQ-OAR-2004-0505-0006 (February 18, 2011). This technical memorandum documented the actions the EPA had taken to meet the 90 percent requirement under section 112(c)(6) and included an updated 1990 baseline inventory, an updated list of the source categories necessary to meet the 90 percent requirement, and a list of emission standards the EPA promulgated for these source categories.[8]

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[8] As explained earlier in this document, this technical memorandum was the basis of the EPA's conclusion in a March 21, 2011, FR notice that it has completed its obligation under section 112(c)(6). See Completion of Requirement to Promulgate Emission Standards, 76 FR 15308, March 21, 2011. The 2011 notice was later vacated by the U.S. Court of Appeals for the District of Columbia, which held that the notice must be issued through a notice and comment rulemaking. *Sierra Club v. EPA*, 699 F.3d 530, 535 (D.C. Cir. 2012).

B. What is the total updated 1990 baseline inventory of source categories that emit 112(c)(6) HAP and which source categories are determined by the EPA to be necessary to meet the 90 percent requirement under section 112(c)(6)?

1. Updated 1990 Baseline Emissions Inventory for Section 112(c)(6) HAPs

Table 1 presents the updated 1990 baseline emission inventory for the section 112(c)(6) pollutants based on the history, actions, updates and documentation explained elsewhere in this document. Table 1 includes the updated estimated emissions (in tons per year or pounds per year) for year 1990 for each of the section 112(c)(6) pollutants for each source category and the percent of the total emissions for 1990. Table 1 also identifies the categories that the EPA is counting towards meeting the EPA's 90 percent requirement for each section 112(c)(6) HAP. Table 1 also identifies remaining source categories (which added together account for 10 percent or less of the total inventory) that emit section 112(c)(6) HAP. By February 21, 2011, the EPA had promulgated either MACT or equivalent standards under section 129 for each of the source categories identified in the top portion of Table 1 (i.e., the portion labeled "Categories Subject to Regulation").

Table 1. Updated 1990 Baseline Emission Inventory for the 112(c)(6) Pollutants

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Categories Subject to Regulation Counted Towards the 90 Percent Requirement												
Aerospace Industry (Surface Coating)	1640.0	20.6%			0.10	0.1%						
Agricultural Chemicals (major)	8.31	0.1%										
Alkylated Lead Production (major)											18.29	99.7%
Asphalt Roofing Production (major)	37.20	0.5%										
Blast Furnace and Steel Mills	499.00	6.3%										
Commercial/Institutional Coal Combustion (major sources)	34.50	0.4%										
Commercial/Institutional Coal Combustion (area sources)	138.00	1.7%										
Industrial Coal Combustion (major sources)	110.00	1.4%										
Industrial Coal Combustion (area sources)	47.10	0.6%										
Commercial/Institutional Oil Combustion (major sources)	10.70	0.1%										
Industrial Oil Combustion (major sources)	35.60	0.4%										
Commercial/Institutional Wood/Wood Residue Combustion (major sources)	7.16	0.1%										

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Industrial Wood/Wood Residue Combustion (major sources)	55.00	0.7%	0.08	0.8%								
Industrial/Commercial/Institutional Coal Boilers (major sources)					2.05	1.3%						
Industrial/Commercial/Institutional Coal Boilers (area sources)					1.06	0.6%						
Industrial/Commercial/Institutional Oil Boilers (major sources)					1.13	0.7%						
Industrial/Commercial/Institutional Wood/Wood Residue Boilers (major sources)					0.48	0.3%						
Chemical Manufacturing: Cyclic Crude and Intermediate Production (major)	101.00	1.3%										
Chlorinated Solvents Production									0.58	55.9 %		
Coke Ovens: By-product Recovery Plants	77.80	1.0%										
Coke Ovens: Charging, Topside & Door Leaks	539.00	6.8%										
Coke Ovens: Pushing, Quenching & Battery Stacks	517.00	6.5%										
Commercial Printing, Gravure (major)	28.70	0.4%										

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Electric Arc Furnaces (EAF) (area) - Secondary Steel					7.80	4.8%						
Fabricated Metal Products (major)	107.00	1.3%										
Gasoline Distribution - stage 1 (major)	0.19	0.0%										
Gold Mine Ore Processing and Production (area)					4.40	2.7%						
Hazardous Waste Incineration	0.18	0.0%	0.07	0.6%	3.20	2.0%	0.03	17.7 %				
Industrial Organic Chemicals Manufacturing (major)	223.00	2.8%										
Industrial Stationary IC Engines - Diesel (major)	3.51	0.0%										
Industrial Stationary IC Engines - Natural Gas (major)	28.60	0.4%										
Lightweight Aggregate Kilns			0.01	0.1%	0.31	0.2%						
Medical Waste Incineration	0.80	0.0%	1.32	12.3 %	50.0 0	30.6 %	0.04	25.7 %				
Mercury Cell Chlor-Alkali Plants (major and area)					9.80	6.0%						
Municipal Waste Combustion	0.10	0.0%	7.30	68.2 %	55.0 0	33.7 %	0.08	51.1 %				
Naphthalene Production (major)	45.20	0.6%										
Paints and Allied Products (major)	23.70	0.3%										
Paper Coated and Laminated,	54.30	0.7%										

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Packaging (major)												
Pesticides Manufacture									0.46	44.1 %		
Petroleum Refining: All Processes (major)	1,070.00	13.5%										
Phthalic Anhydride Production (major)	18.30	0.2%										
Plastics Material and Resins Manufacturing (major)	8.29	0.1%										
Portland Cement Manufacture: Hazardous Waste Kilns	12.60	0.2%	0.95	8.9%	2.75	1.7%						
Portland Cement Manufacture: Non-Hazardous Waste Kilns	47.90	0.6%	0.09	0.8%	5.64	3.5%						
Primary Aluminum Production	662.00	8.3%										
Pulp and Paper - Kraft Recovery Furnaces	649.00	8.2%	0.00	0.0%	1.90	1.2%						
Pulp and Paper - Lime Kilns	183.00	2.3%										
Secondary Aluminum Smelting			0.38	3.5%								
Secondary Lead Smelting	70.00	0.9%	0.01	0.1%								
Sewage Sludge Incineration (area)					1.80	1.1%						
Ship Building and Repair (Surface Coating)	13.60	0.2%										
Transportation Equipment Manufacturing (SICs Combined)	38.70	0.5%										
Wood Household		0.1%										

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Furniture Manufacturing (major)	11.10											
Total Emissions and Percentage Contributions From Above	7,157.13	90.0%	10.20	95.3%	147.42	90.3%	0.15	94.5%	1.04	100.0%	18.29	99.7%
Categories Not Needed to Reach 90 Percent Requirement												
Abrasive Grain (Media) Manufacturing	24.80	0.3%										
Adhesives and Sealants (SICs Combined)	4.18	0.1%										
Agricultural Chemicals (area)	0.72	0.0%										
Asphalt Hot-mix Production (area)												
Asphalt Roofing Production (area)	6.37	0.1%										
Battery Production					0.02	0.0%						
Blast Furnace and Steel Mills					3.10	1.9%						
Industrial/Commercial/Institutional Oil Boilers (area sources)					0.49	0.3%						
Industrial/Commercial/Institutional Wood/Wood Residue Boilers (area sources)					0.12	0.1%						
Industrial Waste Oil Combustion (major and area sources)	7.82	0.1%										
Commercial/Institutional Oil Combustion (area sources)	42.60	0.5%										
Industrial Oil Combustion (area sources)	15.30	0.2%										

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Commercial/Institutional Wood/Wood Residue Combustion (area sources)	28.60	0.4%										
Industrial Wood/Wood Residue Combustion (area sources)	13.80	0.2%	0.02	0.2%								
Commercial/Institutional Natural Gas Combustion (major sources)	0.01	0.0%										
Industrial Natural Gas Combustion (major sources)	0.01	0.0%										
Commercial/Institutional Natural Gas Combustion	0.02	0.0%										
Industrial Natural Gas Combustion (area sources)	0.01	0.0%										
Carbamate Insecticides Production	4.08	0.1%										
Carbon Black Production	4.33	0.1%			0.25	0.2%						
Carbon Reactivation Furnaces			0.00	0.0%								
Chemical Manufacturing: Cyclic Crude and Intermediate Production (area)	3.20	0.0%										
Chemical Preparations (SICs Combined)	6.79	0.1%										
Mercury Cell Chlor-Alkali Plants (major and area)	4.52	0.1%										
Chromium Plating:						0.0%						

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Chromic Anodizing					0.00							
Clay Refractories (area)	0.50	0.0%										
Cleaning Products (SICs Combined)	1.38	0.0%										
Commercial Printing, Gravure (area)	0.19	0.0%										
Commercial Printing, Letterpress and Screen	10.40	0.1%										
Crematories (area)	0.00	0.0%	0.00	0.0%	0.60	0.4%						
Custom Compound Purchased Resins Manufacture					0.13	0.1%						
Dental Preparation and Use					0.80	0.5%						
Drum and Barrel Reclamation	0.00	0.0%	0.00	0.0%								
Electronic and Other Electric Equipment Manufacturing (SICs Combined)	30.50	0.4%			0.88	0.5%						
Fabricated Rubber Products	148.00	1.9%										
Ferroalloy Manufacture (area)	0.56	0.0%										
Fiber Cans, Drums, and Similar Products	5.06	0.1%										
Fluorescent Lamp Recycling					0.01	0.0%						
Food Products (SICs Combined)	3.54	0.0%										
Gasoline Distribution (Aviation)											0.02	0.1%
Gasoline Distribution -	1.73	0.0%									0.0	0.1%

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Stage 1 (area)											3	
Gasoline Distribution - Stage 1 (major)											0.00	0.0%
General Laboratory Activities					0.80	0.5%						
Geothermal Power					1.30	0.8%						
Gum and Wood Chemical	0.50	0.0%										
Industrial Gases Manufacturing	9.43	0.1%										
Industrial Inorganic Chemicals Manufacturing	15.70	0.2%			1.00	0.6%						
Industrial Machinery and Electrical Equipment (SICs Combined)	2.77	0.0%										
Industrial Organic Chemicals Manufacturing (area)	4.03	0.1%										
Industrial Organic Chemicals Manufacturing (major)					0.02	0.0%						
Industrial Stationary IC Engines - Diesel (area)	1.51	0.0%										
Industrial Stationary IC Engines - Natural Gas (area)	19.00	0.2%			0.00	0.0%						
Industrial Stationary IC Engines – Natural Gas (major)					0.00	0.0%						
Industrial Turbines - Diesel fired	0.02	0.0%			0.09	0.1%						

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Industrial Turbines : Natural Gas fired	13.80	0.2%			0.00	0.0%						
Inorganic Pigments Manufacturing					0.01	0.0%						
Instrument Manufacturing					0.50	0.3%						
Iron and Steel Foundries	0.19	0.0%	0.02	0.2%								
Lamp Breakage					1.50	0.9%						
Landfill (Gas) Flares	0.45	0.0%										
Lime Manufacturing					0.70	0.4%						
Lubricating Oils and Grease	0.06	0.0%										
Metal Household Furniture	0.00	0.0%										
Miscellaneous Manufacturing	6.58	0.1%										
Miscellaneous Plastics Products	5.76	0.1%										
Naphthalene - Miscellaneous Uses	1.25	0.0%										
Naphthalene Production (area)	19.40	0.2%										
Naphthalene Sulfonates Production	6.53	0.1%										
Nonmetallic Mineral Products	0.00	0.0%			0.01	0.0%						
Office Furniture, Except Wood Manufacturing	6.45	0.1%										
Other Biological Incineration			0.32	3.0%			0.00	1.6%				
Other Miscellaneous (SICs Combined)	1.45	0.0%			0.25	0.2%						
Other Secondary Nonferrous Metals Recovery					0.25	0.2%						

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
Other Structural Clay Products	0.56	0.0%			0.11	0.1%						
Paints and Allied Products (major)					0.01	0.0%						
Partitions and Fixtures	4.35	0.1%										
Petroleum Refining: All Processes (area)	26.87	0.3%										
Petroleum Refining: All Processes (major)					0.04	0.0%						
Pharmaceutical Preparations and Manufacturing (SICs Combined)	0.77	0.0%										
Phthalic Anhydride Production (area)	7.86	0.1%										
Plastic Foam Products Manufacturing	109.56	1.4%										
Plastics Material and Resins Manufacturing (area)	0.26	0.0%			0.00	0.0%						
Porcelain Electrical Supplies	2.08	0.0%										
Primary Copper Production					0.74	0.5%						
Primary Lead Smelting					1.30	0.8%						
Primary Metal Products Manufacturing (SICs Combined)	26.90	0.3%										
Public Building and Related Furniture	11.60	0.1%										
Pulp and Paper - Sulfite Recovery Furnaces	6.17	0.1%										
Scrap or Waste Tire Incineration	0.01	0.0%	0.00	0.0%			0.01	3.3%				

Source Category	16-PAH Emissions (tpy)	16-PAH (% of Emissions)	Dioxin and Furan Emissions (lbs per year)	Dioxin (% of Emissions)	Mercury (tpy)	Mercury (% of Emissions)	PCB Emissions (tpy)	PCB (% of Emissions)	HCB Emissions (tpy)	HCB (% of Emissions)	Alkylated Lead (tpy)	Alkylated Lead (% of Emissions)
(major)												
Secondary Copper Smelting			0.01	0.1%								
Secondary Lead Smelting					0.01	0.0%						
Secondary Mercury Production					0.75	0.5%						
Sewage Sludge Incineration (area)	1.64	0.0%	0.05	0.5%			0.00	0.7%				
Ship Building and Repair - subject to regulation (area)	0.81	0.0%										
Surface Active Agents Manufacturing	7.41	0.1%										
Textiles (SICs Combined)	9.68	0.1%										
Upstream Gasoline Distribution (Aviation) (major and area)											0.01	0.0%
Wood Household Furniture Manufacturing (area)	0.24	0.0%										
Wood Treatment/Wood Preserving	90.40	1.1%	0.08	0.7%								
Total Emissions and Percentage Contributions From Above	7948.2	100%	10.71	100%	163.2	100%	0.16	100%	1.04	100%	18.34	100%

C. What changes have been made to the 1990 baseline inventory since the 1998 Notice?

The EPA made a number of updates to the section 112(c)(6) 1990 baseline inventory and source category list as a result of new information and further evaluation of the source categories during standard development. The EPA had explained some of those actions in prior notices, which the EPA has identified in section III.A above. With respect to updates that were not provided in prior notices, they are presented below.

1. Gasoline Distribution (Aviation)

In the 1998 Notice, the EPA identified the Gasoline Distribution (Aviation) source category as necessary for achieving the 90 percent requirement for alkylated lead. Aircraft use two general types of fuel: aviation gasoline (avgas) and jet fuel. Avgas, which is used for powering piston engine aircraft, is the source of alkylated lead emissions in the Gasoline Distribution (Aviation) source category. Alkylated lead is added to avgas to reduce engine knock and help lubricate internal engine components. Research is underway to find alternatives to lead for use in avgas.

While characterizing evaporative emissions of alkylated lead compounds from aviation gasoline, we became aware of another stationary source of other alkylated lead compounds emissions in 1990. Specifically, we identified a U.S. facility that was manufacturing alkylated lead compounds in 1990. Through discussions with industry representatives and technical

evaluation of the information supplied, we were able to quantify an estimate of the alkylated lead emissions for the Alkylated Lead Production source category for the year 1990 and are adding this estimate to the section 112(c)(6) baseline inventory. Based on information provided in the Toxics Release Inventory (TRI), we identified reported annual emissions of total lead compounds from this single alkylated lead production facility of 22 tons in 1990. The TRI did not provide the amount of alkylated lead in the total. Further analysis of the emission inventory submitted to the state resulted in an estimate of actual alkylated lead emissions from this facility of approximately 18 tons in 1990. As shown in Table 1, the Alkylated Lead Production source category (which as explained above consists solely of this one facility) contributed 99.7 percent of the alkylated lead compounds emissions in the updated 1990 baseline inventory.[9] Alkylated lead compounds production is regulated by the Hazardous Organic NESHAP[10] (HON).[11] The EPA has therefore, through

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[9] In addition to adding the baseline emissions for the Alkylated Lead Production source category, the other updates to the section 112(c)(6) baseline inventory for alkylated lead include addition of the Upstream Gasoline Distribution (Aviation) (see section III.C.3) and revised baseline emission estimates for Gasoline Distribution (Stage I) (see sections III.A and III.C.2) and Gasoline Distribution (Aviation) discussed in this section.

[10] Also known as National Emission Standards for Hazardous Air Pollutants for Source Categories: Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Industry and Other Processes Subject to the Negotiated Regulation for Equipment Leaks. 59 FR 19402.

[11] We further note that U.S. production of alkylated lead compounds ended in 1993.

the HON, met the 90 percent requirement under section 112(c)(6) for alkylated lead. In light of the above, we conclude that we do not need Gasoline Distribution (Aviation) to meet the 90 percent requirement for alkylated lead under section 112(c)(6).

The 1990 baseline alkylated lead emissions from gasoline distribution source categories have also been updated since the 1998 Notice. A review of the 1990 alkylated lead emissions from the distribution of leaded gasoline revealed that the inventory data were based on inaccurate estimates of equipment component counts and leak emission factors.[12] Analysis showed that when the corrected equipment leak data are used, the total estimated 1990 alkylated lead emissions from leaded gasoline distribution would be less than one half of the estimate in the 1990 inventory published in the 1998 Notice. See 71 FR 66067. We have therefore revised the alkylated lead baseline emission estimates for all gasoline distribution source categories, including Gasoline Distribution (Aviation), accordingly.

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[12] In the section 112(c)(6) inventory published in 1998, the baseline alkylated lead emissions estimate for the Gasoline Distribution (Aviation) source category was based on emission factors from a 1994 proposed major source standard for Gasoline Distribution (Stage I) (Background Information Document (BID) Volume I, Proposed National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution (Stage I), EPA-453/R-94-002a). Based on analysis of public comments on that proposed rule, EPA applied updated equipment leak emission factors for the promulgated major source standard for Gasoline Distribution (Stage I) (BID Volume II, Promulgated National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution (Stage I), EPA-453/R-94-002b). The updated emission factors were also applied in the promulgation of area source standards for Gasoline Distribution (Stage I) (Area Source).

2. Gasoline Distribution Stage I (area sources)

Alkylated lead emissions from this source category have been updated since the 1998 Notice in a manner consistent with Gasoline Distribution (Aviation), discussed in the previous section. A review of the 1990 alkylated lead emissions from the distribution of leaded gasoline revealed that the inventory data were based on inaccurate estimates of equipment component counts and leak emission factors.[13] Analysis showed that when the corrected equipment leak data are used, the total estimated 1990 alkylated lead emissions from leaded gasoline distribution would be less than one half of the estimate in the 1990 inventory published in the 1998 Notice. We have revised the alkylated lead baseline emission estimates for all gasoline distribution source categories, including Gasoline Distribution Stage I (Area Source), accordingly.

3. Upstream Gasoline Distribution (Aviation)

Upstream Gasoline Distribution (Aviation) is being added to the section 112(c)(6) inventory for emissions of alkylated lead. At the time we issued the 1998 Notice, we believed that avgas was transported directly from refineries to the airport terminals. Thus, we did not estimate alkylated lead emissions from the distribution of avgas "upstream" of the airport

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[13] See footnote 4.

facilities in the section 112(c)(6) emission inventory published in 1998. However, we have since learned that avgas is distributed through bulk terminals located at refineries, as well as through some stand-alone bulk terminals, prior to being delivered to airport facilities. We have therefore updated the 112(c)(6) baseline inventory for alkylated lead to include estimated 1990-base year alkylated lead emissions from the distribution of avgas "upstream" of the airport facilities. The alkylated lead emissions for this category are presented in Table 1.

4. Use of 16-PAH Inventory for Polycyclic Organic Matter

In the Clean Air Act, POM is defined as "organic compounds with more than one benzene ring and which have a boiling point greater than or equal to 100°C". As shown in the 1998 Notice, we created three inventories (7-PAH[14], 16-PAH[15], and extractable organic matter (EOM)[16]) to represent baseline POM emissions. Of the three POM baseline inventories, the 16-PAH inventory is the most robust, with data on 16-PAH emissions for 94 categories. In contrast, we have very limited data on EOM

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[14] Composed of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

[15] Composed of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, acenaphthene, acenaphthylene, anthracene, benzo(ghi)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

[16] Any methylene chloride extractable organic matter, measured gravimetrically.

emissions for only 18 source categories.[17] The lack of available data on EOM emissions creates a distorted picture of the relative contributions of source categories for which there are available EOM data. The lack of source categories making up the total EOM inventory makes the relative contribution of the few categories that do have data unrealistically inflated. We therefore cannot say with confidence that, by using the baseline inventory for EOM, we are capturing 90 percent of the baseline POM emissions, as required by section 112(c)(6). Similarly, we have data on 7-PAH for 32 categories, considerably fewer than the 94 categories for which we have 16-PAH data. Therefore, the 16-PAH inventory allows for the most accurate representation of the universe of categories that emit POM. Because the use of all three baseline inventories is neither required nor necessary, and in light of the concern described above with the EOM and 7-PAH inventories, we decided to use only the 16-PAH baseline inventory for determining the 90 percent threshold for POM under section 112(c)(6).

5. Updates to the 1990 Baseline Emission Inventory for Mercury

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[17] When justifying its use in the 1998 inventory background document, we said that the EPA would undertake an effort to develop a robust inventory for EOM sources to feed into the CAA section 112(c)(6) inventory. Had more data been gathered, perhaps EOM would have proved to be a more useful indicator of POM. However, the anticipated inventory was not developed.

As mentioned above, the EPA added 1990 mercury emission estimates for EAF and Gold Mine Ore Production and Processing area source categories into the section 112(c)(6) total baseline inventory for mercury. In addition, the EPA discovered that the 112(c)(6) inventory for mercury published in the 1998 **Federal Register** notice included inaccurate estimates for a number of source categories and updated these estimates. These updates are discussed below.

a. Industrial/Commercial Boilers. The estimate of mercury emissions from Industrial/Commercial Boilers that was presented in the 1998 **Federal Register** notice for section 112(c)(6) was 28.9 tons of mercury for year 1990. There were a number of technical problems with this estimate, especially for coal-fired boilers. One significant issue is that the activity level (2,820 trillion British thermal units (BTUs)) used in the calculations in the section 112(c)(6) inventory background document was incorrect. This activity level represented all coal use in industry, including boilers and other uses (e.g., coke ovens). The activity level used should have been for boilers only. A more accurate activity level for 1990 would be about 1,633 trillion BTUs.[18]

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[18] Estimate based on 1990 historical statistics from the Department of Energy's Energy Information Administration website of coal use in industrial/commercial sectors (not including coke plants).

Additionally, we also believe that the emissions factors used to calculate the original estimate from coal-fired boilers were inaccurate. The emission factors were based on an assumption of zero control and did not account for coal washing. At that time, the EPA stated "because mercury reductions from coal washing and any other reductions that may occur across existing control devices are not accounted for, the emissions may be overestimated."[19] Applying emission factors used in the development of the major and area source Boiler NESHAP[20] to the revised activity level for coal-fired boilers yields estimates of roughly 2 tons and 1 ton of mercury emissions for major and area sources, respectively. Emissions factors for oil-fired boilers (6.8 lb/trillion BTUs and 7.2 lb/trillion BTUs) were also too high. Converting these emission factors into mercury concentrations in oil results in an estimate of about 100 parts per billion (ppb) mercury concentrations in oil. However, based on data gathered and analyzed for the 1998 EPA Utility Air Toxics Report to Congress, the average mercury concentration in oil is about 10 ppb. Moreover, the emissions factor for residual

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[19] Mercury Study Report to Congress. December 1997. Available at http://www.epa.gov/hg/report.htm.

[20] The revised emission factor for major source boilers for this inventory was generated using a weighted average of the six emission factors for various types of control used in the February 21, 2011, Boiler NESHAP. The revised emission factor for area sources was the uncontrolled group in the Boiler NESHAP because these sources were largely uncontrolled with respect to mercury emissions in 1990.

oil-fired boilers (of 0.4 lbs per trillion BTUs) provided in the 1997 EPA Locating and Estimating document[21] is about 10 times lower than the emission factors used for the original section 112(c)(6) estimates for oil-fired boilers. The information discussed above suggests that the emissions estimates for mercury provided in the 1998 Notice for oil-fired boilers were overestimated by an order of magnitude. A more accurate estimate of total mercury emissions from oil-fired boilers (major and area sources) is about 0.6 tons for 1990, as reflected in Table 1.

b. Aerospace Industries (Surface Coating). Aerospace Industries (Surface Coating) had an estimate of 4 tons of mercury emissions in the 112(c)(6) inventory published in the 1998 Notice. Another inventory developed for year 1990 for other regulatory purposes (the 112(k) 1990 inventory) had a much lower estimate for this category (0.0026 tpy). Because of the large discrepancy, we reviewed the 112(c)(6) inventory data for this category, including reviewing the original emissions factor and calculations. We also consulted with an industry representative. The estimate in the 1998 Notice was based on an extremely

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[21] US EPA (1997): Locating and Estimating Air Emissions From Sources of Mercury and Mercury Compounds. Report EPA-454/R-97-012, (NTIS PB98- 117054), Office of Air Quality Planning and Standards, Research Triangle Park, NC. Available at: http://www.epa.gov/ttn/chief/le/index.html.

conservative assumption. According to a 1997 docket memo,[22] the emissions estimate was derived from reviewing Material Safety Data Sheets (MSDS) from five of the major coating suppliers. One of these MSDS showed trace amounts of mercury in only two products (0.00002 percent by weight), which was rounded up five orders of magnitude to 1 percent in the inventory analysis.

In light of the above, we concluded that this original estimate of mercury emissions (or 4 tons) from Aerospace Industries was substantially overestimated. Therefore, we searched and gathered information to calculate a more reasonable estimate. We obtained information on sales of aerospace coatings and mercuric mildewcides in 1990. Using these data, potential mercury emissions for 1990 were calculated, as described in the following paragraphs.

In 1990, aerospace coatings accounted for 0.1 percent of the volume of coatings produced. In 1990, approximately 400,000 pounds of mercuric mildewcide/fungicide (as mercury) were sold into the entire coatings market (this amount substantially decreased after 1990 to nearly zero). Assuming these products were used throughout the industry, we calculate that 400 lbs (i.e., 0.1% * 400,000 pounds = 400 lbs) of mercuric

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[22] Memo from Dave Reeves, Midwest Research Institute to Barbara Driscoll, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards regarding HAP emission estimates for aerospace surface coating. November 17, 1997.

mildewcides/fungicides were used in aerospace coatings in 1990. Thus, the maximum emissions would have been 400 lbs of mercury assuming 100 percent of mercury in coatings were released. However, mildewcides/fungicides are intended to retard the growth of fungi on applied surfaces over time. They are intended to remain to a large extent in the coating substrate. We believe that at least 50 percent of the mildewcide/fungicide remains in the substrate. Therefore, mercury releases from aerospace coatings are estimated to be up to 200 lbs in 1990. Given this information and calculations, we estimate that this source category emitted about 0.1 tons of mercury in 1990.

c. Industrial Turbines and Internal Combustion Engines. In the 1998 Notice, the mercury emissions from industrial turbines and internal combustion engines fired by natural gas were 1.6 tons and 4.7 tons, respectively. The emissions factors used in those original estimates for these two source categories were 6.63×10^{-6} lb/MMBTU and 1.14×10^{-5} lb/MMBTU, respectively. However, available data[23] indicate that the level of mercury in natural gas is very low and, therefore, mercury emissions from this category are very low. Based on this information, we updated the 1990 mercury emissions for this category. As shown

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[23] Mercury Study Report to Congress. December 1997. Available at http://www.epa.gov/hg/report.htm. Locating and Estimating Air Emissions from Sources of Mercury and Mercury Compounds. December 1997. Available at http://www.epa.gov/ttnchie1/le/.

in Table 1, the revised mercury emissions estimates from these two source categories are 0.001 and 0.009 tons, respectively.

d. Human Crematories. The mercury emissions from human crematories in the 1998 baseline 112(c)(6) inventory (0.000377 tons per year) were revised based on data used to calculate mercury emissions in the 112(k) area source inventory, which was developed subsequent to the 1998 Notice. This emission factor led to a revised estimate of 0.6 tons of mercury in 1990 emitted from human crematories.

e. Blast Furnaces and Steel Mills. Mercury emissions from blast furnaces and steel mills were reported as 0.25 tons in the 1998 baseline 112(c)(6) inventory. Further review of this estimate led to revision of the mercury estimate from blast furnaces and steel mills as well as electric arc furnace steelmaking (as discussed in section III.C above). Based on a revised emission factor[24] from scrap steel, the revised estimated mercury emissions are 3.1 tons for blast furnaces and steel mills.

f. Portland Cement. We believe the estimate for mercury emissions from Portland Cement Manufacturing non-hazardous waste kilns (4.13 tons) in the 1998 Notice was slightly

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[24] Analysis of Mercury Data for Electric Arc Furnace Steelmaking. Prepared for U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Sector Policies and Program Division, Metals and Minerals Group. July 18, 2007. Docket Item 0070 in EPA Docket Number OAR-2004-0083.

underestimated. We used the mercury emissions and installed clinker capacity from 2006[25] to generate a ratio of mercury emissions per ton of clinker and applied this ratio to the 1990 clinker capacity. The mercury emissions in 1990 were revised upward to 5.64 tons for this category.

D. What are the emissions standards that the EPA has promulgated to meet the 90 percent requirement under section 112(c)(6)?

The EPA has promulgated emissions standards sufficient to satisfy the 112(c)(6) requirement that sources accounting for not less than 90 percent of the aggregate emissions of seven specific HAP are subject to standards under 112(d)(2) or 112(d)(4). Table 2 provides a list of the emissions standards, including the name of each of the source categories, name of the emissions standards that apply, and the rule citation for each (i.e., CFR Part and Subpart). Table 2 provides cross-references for the 112(c)(6) category names with the associated emission standards (which may reference a source category by a name different from that used in the section 112(c)(6) baseline inventory and source category listing). Table 3 provides a list of the specific regulations (including CFR citations, Part and

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[25] Estimate of 2006 installed clinker capacity: 94,690,000 metric tons clinker per year. Estimate of 2006 mercury emissions from major and area sources: 7.27 tons. Estimate of 1990 installed clinker capacity: 73,518,000 metric tons clinker per year.

Subpart) that address 90 percent or more of each of the 112(c)(6) HAPs.

Table 2 – Categories of sources whose emissions of 112(c)(6) HAPs are subject to 112(d)(2), 112(d)(4), or 129 standards.[26]

Section 112(c)(6) Category Name	Emission Standard Name(s)	CFR Part and Subpart
Aerospace Industry (Surface Coating)	National Emission Standards for Hazardous Air Pollutants for the Aerospace Industries	40 CFR part 63 subpart GG
Alkylated Lead Production	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I

[26] Because many of these standards were developed to meet the EPA's obligation under CAA section 112(d)(1), the EPA had not focused on what was needed to meet its section 112(c)(6) obligation at the time of these rulemakings. Therefore, the EPA did not reference section 112(c)(6) in the preambles to some rules.

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
Asphalt Roofing Production	National Emission Standards for Hazardous Air Pollutants for the Asphalt Roofing Manufacturing	40 CFR part 63 subpart LLLLL
Blast Furnace and Steel Mills	National Emission Standards for Hazardous Air Pollutants for the Integrated Iron and Steel Manufacture	40 CFR part 63 subpart FFFFF
Chemical Manufacturing: Cyclic Crude and Intermediate Production	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I
Chlorinated Solvents Production	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I
Coke Ovens: By-Product Recovery Plants	National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants	40 CFR part 61 subpart L
Coke Ovens: Charging, Topside & Door Leaks	National Emission Standards for Hazardous Air Pollutants for Source Categories and for Coke Oven Batteries	40 CFR part 63 subpart L
	National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks	40 CFR part 63 subpart CCCCC
Coke Ovens: Pushing, Quenching & Battery Stacks	National Emission Standards for Hazardous Air Pollutants for Source Categories and for Coke Oven Batteries	40 CFR part 63 subpart L

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks	40 CFR part 63 subpart CCCCC
Commercial Printing: Gravure	National Emission Standards for Hazardous Air Pollutants: Printing and Publishing Industry	40 CFR part 63 subpart KK
Electric Arc Furnaces (EAF) - Secondary Steel	National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities	40 CFR part 63 subpart YYYYY
Fabricated Metal Products	National Emission Standards for Hazardous Air Pollutants: Surface Coating of Miscellaneous Metal Parts and Products	40 CFR part 63 subpart MMMM
Gasoline Distribution (Stage 1)	National Emission Standards for Hazardous Air Pollutants for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)	40 CFR part 63 subpart R
Gold Mines	National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category	40 CFR part 63 subpart EEEEEEE
Hazardous Waste Incineration	National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors	40 CFR part 63 subpart EEE

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
Industrial Organic Chemicals Manufacturing	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I
Industrial Stationary IC Engines - Diesel	National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines	40 CFR part 63 subpart ZZZZ
Industrial Stationary IC Engines - Natural Gas	National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines	40 CFR part 63 subpart ZZZZ
Industrial/Commercial /Institutional Boilers	National Emission Standards for Hazardous Air Pollutants for Industrial/ Commercial/Institutional Boilers and Process Heaters	40 CFR part 63 subpart DDDDD

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers	40 CFR part 63 subpart JJJJJJ
Lightweight Aggregate Kilns	National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors	40 CFR part 63 subpart EEE
Medical Waste Incineration	Standards of Performance and Emissions Guidelines for Hospitals / Medical / Infectious Waste Incinerators	40 CFR part 60 subpart Ce, Ec; & 40 CFR part 62 subpart HHH
Mercury Cell Chlor Alkali Production	National Emission Standards for Hazardous Air Pollutants: Mercury Emissions from Mercury Cell Chlor Alkali Plants	40 CFR part 63 subpart IIIII
Municipal Waste Combustion	Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustion Units	40 CFR part 60 subpart Cb, Ea, Eb; & 40 CFR part 62 subpart FFF
	Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Stationary Sources: Small Municipal Waste Combustion Units	40 CFR part 60 subpart AAAA, BBBB & 40 CFR part 62 subpart JJJ
Naphthalene Production	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I
Paints and Allied Products (Major)	National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing	40 CFR part 63 subpart FFFF
Paper Coated and Laminated, Packaging	National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating	40 CFR part 63 subpart JJJJ
Pesticides Manufacture & Agricultural Chemicals	National Emission Standards for Hazardous Air Pollutants: Pesticide Active Ingredient Production	40 CFR part 63 subpart HHH
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H
Petroleum Refining: All Processes	National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries	40 CFR part 63 subpart CC
	National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units	40 CFR part 63 subpart UUU
Phthalic Anhydride Production	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry	40 CFR part 63 subpart F
	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	40 CFR part 63 subpart G
	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks	40 CFR part 63 subpart H

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks	40 CFR part 63 subpart I
Plastics Material and Resins Manufacturing	National Emission Standards for Hazardous Air Pollutants for Group IV Polymers and Resins	40 CFR part 63 subpart JJJ
Portland Cement Manufacture: Hazardous Waste Kilns	National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors	40 CFR part 63 subpart EEE
Portland Cement Manufacture: Non-Hazardous Waste Kilns	National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry	40 CFR part 63 subpart LLL
Primary Aluminum Production	National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants	40 CFR part 63 subpart LL
Pulp and Paper – Kraft Recovery Furnaces	National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills	40 CFR part 63 subpart MM
Pulp and Paper – Lime Kilns	National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills	40 CFR part 63 subpart MM

Section 112(c)(6) Category Name	**Emission Standard Name(s)**	**CFR Part and Subpart**
Secondary Aluminum Smelting	National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production	40 CFR part 63 subpart RRR
Secondary Lead Smelting	National Emission Standards for Hazardous Air Pollutants for Secondary Lead Smelting	40 CFR part 63 subpart X
Sewage Sludge Incineration	Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units	40 CFR part 60 subparts LLLL, MMMM
Ship Building and Repair (Surface Coating)	National Emission Standards for Hazardous Air Pollutants for Shipbuilding and Ship Repair (Surface Coating)	40 CFR part 63 subpart II
Transportation Equipment Manufacturing (SICs Combined)	National Emission Standards for Hazardous Air Pollutants: Surface Coating of Automobiles and Light Duty Trucks (Surface Coating of Plastic Parts and Products)	40 CFR part 63 subpart PPPP
Wood Household Furniture Manufacturing	National Emission Standards for Hazardous Air Pollutants from Wood Furniture Manufacturing Operations	40 CFR part 63 subpart JJ

Table 3 – Federal Regulations[27] ensuring that sources accounting for at least 90 percent of the aggregate emissions of each 112(c)(6) pollutant are subject to 112(d)(2) or 112(d)(4) standards.

[27] An expanded version of this table, including *Federal Register* citations, is available in the docket for this action.

112(c)(6) Pollutant	Percent of Aggregate Emissions Subject to Regulation	Code of Federal Regulations Part and Subparts that include 112(d)(2), 112(d)(4), or 129 standards
Alkylated Lead Compounds	99.7%	40 CFR part 63 subparts F, G, H, I
Polycyclic Organic Matter (Using 16-PAH Inventory)	90.0%	40 CFR part 63 subparts F, G, H, I, L, R, X, CC, GG, II, JJ, KK, LL, MM, EEE, JJJ, LLL, MMM, UUU, FFFF, JJJJ, MMMM, PPPP, ZZZZ, CCCCC, DDDDD, FFFFF, LLLLL, JJJJJJ; 40 CFR part 60 subpart Cb, Ce, Ea, Eb, AAAA, BBBB; 40 CFR part 62 subpart FFF, HHH, JJJ
Hexachlorobenzene	100%	40 CFR part 63 subparts F, G, H, I, HHH
Mercury Compounds	90.3%	40 CFR part 63 subparts GG, LL, MM, EEE, LLL, DDDDD, IIIII, YYYYY, JJJJJJ, EEEEEEE; 40 CFR part 60 subpart Cb, Ce, Ea, Eb, AAAA, BBBB, LLLL, MMMM; 40 CFR part 62 subpart FFF, HHH, JJJ
Polychlorinated Biphenyls	94.5%	40 CFR part 63 subparts EEE; 40 CFR part 60 subpart Cb, Ce, Ea, Eb, AAAA, BBBB; 40 CFR part 62 subpart FFF, HHH, JJJ
2,3,7,8-Tetrachlorodibenzofurans (furan) and 2,3,7,8-Tetrachlorodibenzo-p-dioxin (dioxin)	95.3%	40 CFR part 63 subparts X, LL, EEE, LLL, MMM, DDDDD, JJJJJJ; 40 CFR part 60 subpart Cb, Ce, Ea, Eb, AAAA, BBBB;

112(c)(6) Pollutant	Percent of Aggregate Emissions Subject to Regulation	Code of Federal Regulations Part and Subparts that include 112(d)(2), 112(d)(4), or 129 standards
		40 CFR part 62 subpart FFF, HHH, JJJ

IV. Surrogate Pollutants Used by the EPA to Ensure That the Section 112(c)(6) Requirements are Fulfilled

The EPA has promulgated regulations, "assuring that sources accounting for not less than 90 per centum of the aggregate emissions of each such pollutant are subject to standards under subsection (d)(2) or (d)(4)." 42 U.S.C. 7412(c)(6). The EPA set the required standards under two approaches. In the course of promulgating MACT standards, the EPA has often established emission standards that directly regulated section 112(c)(6) HAP and explained that these standards contribute to fulfilling the agency's obligations under section 112(c)(6). For example, the NESHAPs for Gold Mine Ore Processing and Production (76 FR 9450), Portland Cement Manufacturing Industry (75 FR 54970), Municipal Waste Combustion Units (70 FR 75348), Hospitals/Medical/Infectious Waste Incinerators (74 FR 51368), Hazardous Waste Combustors (70 FR 59402), Sewage Sludge Incineration Units (76 FR 15372), and several other source categories, include emissions limits that specifically address

mercury emissions. Likewise, the EPA has promulgated many regulations that specifically address dioxins and furans to achieve the 90 percent requirement (such as NESHAPs for Municipal Waste Combustion Units (70 FR 75348), Hospitals/Medical/Infectious Waste Incinerators (74 FR 51368), Hazardous Waste Combustors (70 FR 59402), and Secondary Aluminum Production (64 FR 6946)). The public was provided an opportunity to comment on the above mentioned agency statements regarding its section 112(c)(6) obligations, and comments on those statements were addressed in those rulemakings.

In some regulations, the EPA subjected section 112(c)(6) HAP to MACT level of control by setting emission limits for another HAP or compound[28], which serves as a surrogate for the targeted section 112(c)(6) HAP. It is well established that "EPA may use a surrogate [substance] to regulate hazardous pollutants if it is 'reasonable' to do so" *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 637 (D.C. Cir. 2000) (upholding EPA decision to regulate particulate matter ("PM") emissions as a surrogate for regulation of HAP metal emissions from cement kilns, based on evidence that "HAP metals are invariably present in cement kiln PM," *id.* at 639); see also, e.g., Sierra Club v. EPA, 353 F.3d

[28] Some standards used non-HAP compounds (or groups of compounds) as surrogates for HAP.

976, 982-85 (D.C. Cir. 2004) (upholding the EPA's use of particulate matter as a surrogate for HAP emissions in setting MACT standards for primary copper smelters); Bluewater Network v. EPA, 370 F.3d 1, 18 (D.C. Cir. 2004)(upholding the EPA's regulation of HC emissions as a surrogate for regulation of fine PM emissions). See also Kennecott Greens Creek Min. Co. v. Mine Safety and Health Admin., 476 F.3d 946, 954-55 (D.C. Cir. 2007) ("there is nothing inherently problematic with an regulating one substance as a surrogate for another substance."). Some examples of the EPA's regulation of section 112(c)(6) HAP through surrogates include:

- National Emission Standards for Hazardous Air Pollutants for Hazardous Waste Combustors (64 FR 52828 and 70 FR 59402). POM and PCBs were regulated through surrogate substances (total hydrocarbons and carbon monoxide (CO)). See 64 FR 52847 and 70 FR 59432 for discussions of these surrogates.
- Standards of Performance for New Stationary Sources and Emissions Guidelines for Existing Sources: Hospital/Medical/Infectious Waste Incinerators (74 FR 51368). POM and PCBs were regulated through surrogate substances (CO and dioxins/furans). See 74 FR 51390, 51399 for discussion of these surrogates.

- Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Large Municipal Waste Combustors (70 FR 75348). POM and PCBs were regulated through surrogate substances (CO and dioxins/furans). See 70 FR 75356 for discussion of these surrogates.
- National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (76 FR 15608). POM was regulated using CO as a surrogate. See 76 FR 15653 for discussion of CO as a surrogate for POM.

In all of the above mentioned standards, which were promulgated through notice and comment rulemaking, the EPA had explained its section 112(c)(6) obligations and, to the extent surrogates were used, the surrogacy relationship to the relevant section 112(c)(6) HAP. We are not requesting comments on these prior rulemakings.

However, in some standards promulgated prior to the EPA's development of the baseline emissions inventory for section 112(c)(6) and publication of the initial listing of categories in the 1998 Notice, the EPA did not always explain the surrogacy relationship. As explained below, the surrogates chosen for section 112(c)(6) HAP in such rulemakings are reasonable and ensure that the section 112(c)(6) HAP are "subject to standards" for the purposes of section 112(c)(6).

A. Surrogates for POM

1. Coke Oven Emissions as a Surrogate for POM

The EPA promulgated emissions standards under section 112(d)(2) for coke oven emissions, which include emissions of POM and other HAP from coke oven batteries. See 40 CFR part 63, Subpart L and Subpart CCCCC. POM is a constituent of coke oven emissions. See 57 FR 57535 and 69 FR 48341. The EPA considered POM together with other HAP that compose coke oven emissions because of the difficulty of measuring specific pollutants, including POM, and because of the fugitive and variable nature of the emissions. See 66 FR 33533 (discussing the impracticality of measuring specific HAP compounds emitted from coke ovens). Coke oven batteries are not enclosed sources. Consequently, coke oven emissions are released from many different pieces of coke oven equipment through leaks that can change in size and location over time. The MACT standards for Coke Oven Batteries were designed to minimize coke oven emissions which include POM as well as other HAP (see 69 FR 48341). Because of the technological difficulty of collecting and measuring coke oven emission from coke oven batteries, the EPA concluded that a mass emission limitation for coke ovens was not technologically or economically practicable. See 66 FR 33533. Instead, the EPA found limits based on visible emissions to be the only feasible means of regulating coke oven emissions (including POM) from

coke oven batteries at the time the MACT standards were developed. *Id.* Such limits are expressed in terms of the maximum allowable seconds of visible emissions per charge for the charging system and the maximum allowable percent of doors, lids, and offtake systems from which visible emissions may occur at any one time. For existing by-product batteries, the final rule limits visible emissions from coke oven doors, topside port lids, and offtake systems. Accordingly, the MACT standard requires a visible emission method to measure coke oven emissions and comply with the standard.

Under the standard, POM is controlled at the same time as other HAP. Observation and engineering theory indicate that a reduction in visible coke oven emissions results in a reduction in mass emissions. For the reasons stated above, the EPA has assured that coke oven emissions (which include POM) from coke oven batteries are subject to MACT level of control, as required under section 112(c)(6).

2. Total HAP, Total Organic Carbon, Total Hydrocarbons, and Total Organic HAP

Many of the source categories counted towards our 90 percent requirement for POM are surface coating operations. In

the NESHAP for Aerospace Industries[29] (60 FR 45956), the EPA set MACT standards for total HAP in surface coatings, which serves as a surrogate for POM in coatings. Polycyclic organic matter is a constituent of total HAP. The Aerospace Industries NESHAP regulates POM through limitation of total HAP content in coatings applied (i.e., grams of HAP per kilogram of coating used). HAP are effectively controlled by reducing those HAP in surface coatings, which prevents them from being subsequently emitted.

A number of other categories subject to MACT standards for the purposes of section 112(c)(6) are also surface coating processes (fabricated metal products manufacturing at major sources (NESHAP for Surface Coating of Miscellaneous Metal Parts and Products, 69 FR 130), coated and laminated paper and packages at major sources (NESHAP for Paper and Other Web Coating, 67 FR 72330), paint and allied products (NESHAP for Miscellaneous Organic Chemical Manufacturing, 68 FR 63852), wood household furniture manufacturing at major sources (NESHAP for Wood Furniture Manufacturing Operations, 60 FR 62930), transportation equipment manufacturing (NESHAP for Surface Coating of Automobiles and Light-Duty Trucks, 69 FR 22602), ship

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[29] Note that the NESHAP for this source category also includes standards for volatile organic compounds. The POM emitted from this source category is naphthalene, which is considered a volatile organic compound.

building and repair (NESHAP for Shipbuilding and Ship Repair (Surface Coating) Operations, 60 FR 64330), and commercial printing: gravure at major sources (NESHAP for Printing and Publishing Industry, 67 FR 27132)). These source categories address POM (and other organic HAP emissions) by regulating total organic HAP in coatings and limiting emissions of those HAP from coatings to levels equivalent to those of the best performing coatings (i.e., coatings with the lowest levels of total organic HAP) through MACT analyses, as required under section 112(d)(2). Total organic HAP serves as a surrogate for POM and other organic HAP compounds present in coatings in these NESHAPS. These NESHAPs employed identical rationales when limiting HAP in coatings and there was no technical basis in any of the above mentioned surface coating NESHAPs to differentiate between POM and other organic HAP present in coatings.

Some source categories that are subject to MACT standards for the purposes of section 112(c)(6) employ combustion processes that control organic HAP. In numerous rulemakings, the EPA has set standards for combustion processes based on the long term performance of a combustion device under conditions typically encountered in industrial applications.[30] In these

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[30] See memorandum titled "Thermal Incinerators and Flares," available in the docket to this action.

NESHAPs, the EPA determined that limiting outlet concentrations of organic compounds to 20 parts per million by volume (ppmv) or reducing total organic compound emissions by 98 percent was MACT for combustion processes. Some standards counted towards meeting our 90 percent requirement for the purposes of section 112(c)(6) set such MACT standards.

Two section 112(c)(6) categories (pulp and paper – kraft recovery furnaces and pulp and paper – lime kilns) are combustion processes that are subject to the NESHAPs for Pulp and Paper Production (63 FR 18504 and 66 FR 3180). Kraft recovery furnaces and lime kilns at pulp and paper mills are combustion processes that are used to recover chemicals in the paper production process as well as to control HAP emissions from other sources at pulp and paper mills. The EPA determined that a properly operated kraft recovery furnace or lime kiln would reduce total HAP exiting the combustion process by at least 98 percent (or to a level below 20 parts per million) and established this standard as a surrogate for organic HAP, including POM. See 63 FR 18508. This level of control was determined to be MACT for these sources and the two equivalent forms of the standard (98 percent reduction of total HAP or a numerical emission limit of 20 ppmv of total HAP) ensure that organic HAP are effectively controlled. *Id*. Effective operation of the kraft recovery furnace or lime kiln will indiscriminately

destroy POM along with other HAP present in the exhaust gases and is considered MACT.[31] There was no technical basis for differentiating between POM and other organic HAP emitted from these chemical recovery processes since they are present together and controlled using the same combustion process.

Other section 112(c)(6) source categories subject to standards for total organic HAP as a surrogate for POM include industrial organic chemicals manufacturing and naphthalene production. Total organic HAP is used as a surrogate for regulating POM emissions from industrial organic chemicals manufacturing and naphthalene production, both of which are subject to the HON NESHAP.[32] POM is indiscriminately and effectively controlled through the same combustion processes as other organic HAP regulated by the HON. In the HON, the EPA grouped all of the organic HAP (including POM) together and looked at the total organic HAP for purposes of applying controls and projecting emissions reductions (except for wastewater where HAP-specific standards were promulgated). For the industrial organic chemicals manufacturing and naphthalene

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[31] Use of a properly operated thermal oxidizer (operated at a minimum temperature of 1,600 °F and a minimum residence time of 0.75 seconds) was also an equivalent control option.

[32] Plastics material and resins manufacturing at major sources are subject to the NESHAP for Group IV Polymers and Resins, 61 FR 48208. The requirements in this NESHAP mirror those found in the HON. POM is regulated through the same surrogate as the HON, as described in this section. This category references the HON in its regulatory requirements and the rationale for surrogates chosen is identical to the HON.

production source categories, this was appropriate because emissions of POM come from the same types of activities and operations as emissions of the other HAP and the MACT combustion controls used to limit POM have essentially the same performance regardless of the individual compound. In other words, the EPA had no technical reason to make distinctions among various organic HAP except in the case of wastewater, for which the EPA promulgated organic HAP-specific standards. As a result, the control measures required by the HON reduce emissions of POM and other organic HAP from process vents, storage vessels, transfer racks, and equipment leaks. Emissions of POM generated from these source categories are not controlled differently than emissions of other organic HAP. By contrast, the EPA did not group all of the organic HAP together for wastewater because different HAP compounds have different physical properties when mixed with water. The analyses for wastewater streams were conducted on an organic HAP-specific basis, and the EPA promulgated organic HAP-specific standards for wastewater streams, including a specific standard for naphthalene, based upon physical property information for each HAP. See 40 CFR part 63, subpart G, app. (table 9) listing the control requirements for each, including a 99 percent control requirement for naphthalene. The control requirement for naphthalene is designed to reduce emissions of POM from wastewater streams generated

during industrial inorganic chemicals manufacturing and naphthalene production.

The section 112(c)(6) category "petroleum refining – all processes" is subject to two NESHAPs for petroleum refineries (NESHAP for Petroleum Refineries, 60 FR 43244, and NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units, 67 FR 17762). In the NESHAPs for petroleum refineries, the EPA set MACT standards for total organic carbon,[33] which serves as a surrogate for POM emitted from combustion processes. POM is a constituent of total organic carbon and is controlled through the same combustion process as other organic carbon-containing compounds emitted by this source category. Sources subject to standards for total organic carbon in the NESHAP for petroleum refineries subject organic compounds, including POM, to MACT levels of control through combustion. POM, as well as other organic compounds, are indiscriminately and effectively destroyed through combustion and there is no technical reason to distinguish between POM and other organic compounds controlled through this process. The MACT standard for total organic carbon in the NESHAP is 98

[33] This NESHAP also allows sources to measure total organic HAP for compliance purposes.

percent destruction of organic compounds including POM or an outlet concentration of 20 ppmv. See 63 FR 48896.

The NESHAP for Asphalt Roofing Manufacturing (68 FR 24561) regulates POM and other organic HAP through total hydrocarbons (THC) as a surrogate. As explained in the final rule, the combustion controls required in the NESHAP effectively control hydrocarbons, including POM and other organic HAP. Emissions of POM and other organic HAP are controlled equally with other hydrocarbons and there was no technical reasons to differentiate between POM and other hydrocarbons when establishing the MACT standard. See 68 FR 24566.

3. Carbon Monoxide

In the NESHAP for Reciprocating Internal Combustion Engines (RICE) (69 FR 33474), the EPA established emission standards for carbon monoxide as a surrogate for emissions of organic hazardous air pollutants (including POM). POM and carbon monoxide are both emitted due to incomplete combustion. Low levels of carbon monoxide are an indicator of good combustion practices. POM is a by-product of combustion and good combustion practices minimize emissions of POM. While the relationship between CO and POM was not discussed in the context of section 112(c)(6) in the RICE rulemaking, it was discussed in a number of other rules such as the Major Source Boilers NESHAP (76 FR 15608) and the section 129 standard for

Hospital/Medical/Infectious Waste Incinerators (74 FR 51368). This approach is based on the demonstrated relationship between the combustion process and these pollutants. Combustion, such as occurs in the units subject to the RICE NESHAP and other rules, is the process of breaking apart the organic (i.e., carbon-containing) molecules in the fuel and converting them to carbon dioxide. Perfectly complete combustion would convert all of the carbon in the fuel to carbon dioxide. Completeness of the combustion process is dependent on several variables, including temperature, amount of oxygen, and mixing of the fuel and oxygen. Incomplete combustion results in production of partly broken down and partially oxidized organic compounds, including CO and POM. Because the conversion of CO to carbon dioxide is a difficult step, and the last one in the destruction of hydrocarbons, including organic HAPs, it is a good indicator of the completeness of combustion. Thus, decreasing levels of CO are correlated with increasing destruction of organic compounds until a threshold is reached where, because combustion of CO is the last step in combustion, the combustion of organic materials is essentially complete. CO concentration is thus an indicator of the level of destruction of organic compounds, and accordingly can be used as a surrogate to control the emissions of organic HAPs.

B. Surrogates for Hexachlorobenzene (HCB)

As shown in the updated 1990 baseline inventory (Table 1), two source categories (pesticides manufacturing and chlorinated solvents production) composed 100 percent of the 1990 baseline HCB emissions.

Chlorinated solvents production is subject to the HON. 59 FR 19402. In the HON NESHAP, EPA subject HCB emissions from chlorinated solvent production to MACT level of control by regulating total organic HAP, which serves as a surrogate for HCB. Consistent with section 112(c)(6), the EPA considered HCB emissions in developing the HON. HCB was identified as an organic HAP that would be subject to the HON. See 59 FR 19463 (Table 1 to subpart F). The EPA assumed that production of HCB would result in air emissions from gaseous discharges from reactors and other equipment as well as losses of process fluids from equipment seal failures, emissions from product storage and transfer, and emissions from wastewater containing HCB. The estimates of emissions from these processes were derived from information on the processes, physical property information for HCB, and well-established engineering calculations for different types of releases.

In most of the analyses, the EPA grouped all of the organic HAP (including HCB) together and looked at the total organic HAP for purposes of applying controls and projecting emissions reductions. For the chlorinated solvents production source

category, this was appropriate because emissions of HCB come from the same types of activities and operations as emissions of the other HAP and because most of the control technologies required under section 112(d) were expected to have essentially the same performance regardless of the individual compound. In other words, the EPA had no technical reason to make distinctions among various organic HAP except in the case of wastewater, for which the EPA promulgated organic HAP-specific standards (discussed below). As a result, the control measures required by the HON reduce emissions of HCB and other organic HAP from process vents, storage vessels, transfer racks, and equipment leaks. Emissions of HCB during its production are not controlled differently than emissions of other organic HAP.

By contrast, the EPA did not group all of the organic HAP together for wastewater because different HAP compounds have different physical properties when mixed with water. The analyses for wastewater streams were conducted on an organic HAP-specific basis, and the EPA promulgated organic HAP-specific standards for wastewater streams, including a specific standard for HCB, based upon physical property information for each HAP. See 40 CFR part 63, subpart G, Appendix (Table 9, listing the removal requirements for each, including a 99 percent removal requirement for HCB). The removal requirement for HCB is

designed to reduce emissions of HCB from wastewater streams generated during HCB production.

The section 112(c)(6) source categories, "pesticide manufacture and agricultural chemicals" are subject to the NESHAP for Pesticide Active Ingredient Production (64 FR 33550). In this NESHAP, the EPA set MACT standards for total organic carbon and total organic HAP, which serve as surrogates for hexachlorobenzene. 64 FR 33549 (June 23, 1999). HCB is a constituent of each surrogate and the same logic for the choice of surrogate discussed for the HON above applies here (i.e., the combustion processes that serve as the basis for MACT indiscriminately and effectively control HCB along with other organic HAP compounds). Other sources, such as wastewater, were required to comply with organic HAP-specific standards found in the HON, which specifically lists HCB as one of the HAP emitted from the source category and provided HCB-specific control requirements. See 59 FR 19463, table listing HCB as one of the section 112 organic HAP subject to the rule.

V. Conclusion

In light of the information presented in this document, the EPA proposes that we have fulfilled the 90 percent requirements for all section 112(c)(6) HAP. The EPA proposes that sources accounting for at least 90 percent of the aggregate emissions of

each section 112(c)(6) HAP are "subject to standards" for the purposes of section 112(c)(6).

VI. 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 and was therefore not submitted to the OMB for review.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA because it does not contain any information collection activities.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. This action does not alter any of the standards discussed in this document.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531-1538 and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

E. Executive Order 13132: Federalism

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

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

This action does not have tribal implications, as specified in Executive Order 13175. This proposed action does not materially alter the stringency of any standards discussed in this document. Thus, Executive Order 13175 does not apply to this action.

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

This action is not subject to Executive Order 13045 because the EPA does not believe the environmental health risks or safety risks addressed in this action present a disproportionate risk to children. A health and risk assessment was not performed for this action because it does not alter any of the regulations discussed in this action.

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

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

I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

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

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low income or indigenous populations because it does not affect the level of protection provided to human health or the environment. An environmental justice evaluation was not performed for this action because it does not alter any of the regulations discussed in this action.

List of Subjects

40 CFR Part 60

Administrative practice and procedure, Air pollution control, Intergovernmental relations, Reporting and recordkeeping requirements.

40 CFR Part 63

Administrative practice and procedure, Air pollution control, Hazardous materials, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: December 10, 2014.

Gina McCarthy, Administrator.

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