



## **ENVIRONMENTAL PROTECTION AGENCY**

### **40 CFR Part 63**

**[EPA-HQ-OAR-2020-0408; FRL-7821-02-OAR]**

**RIN 2060-AU78**

### **Petition to Remove the Stationary Combustion Turbines Source Category from the List of Categories of Major Sources of Hazardous Air Pollutants**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Notification of denial of petition to delist.

**SUMMARY:** The U.S Environmental Protection Agency (EPA) is announcing the Agency’s decision to deny a petition requesting the removal of the Stationary Combustion Turbines source category from the list of categories of major sources of hazardous air pollutants (HAP) subject to regulation the Clean Air Act (CAA). The petition was submitted jointly by American Fuel & Petrochemical Manufacturers, the American Petroleum Institute, the American Public Power Association, the Gas Turbine Association, the Interstate Natural Gas Association of America, and the National Rural Electric Cooperative Association (“the petitioners”). The EPA is denying the petition based on the EPA’s determination that the petition is incomplete and because we have found that the submitted information is inadequate to determine that no source in the category emits HAP in quantities that may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source. We have reached this decision based on review of the risk analysis and other information submitted by petitioners and on consideration of turbine testing results received from a CAA information request. The EPA is denying the petition with prejudice and will deny any future petition to delist as a matter of law unless such future petition is accompanied by substantial new information or analysis.

**DATES:** Petitions for judicial review of this action must be filed **[INSERT DATE 60 DAYS**

**AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].** See

**SUPPLEMENTARY INFORMATION** for filing information.

**ADDRESSES:** In addition to being available in the docket, an electronic copy of this action is available on the Internet. Following signature, the EPA will post a copy of this action at <https://www.epa.gov/stationary-sources-air-pollution/stationary-combustion-turbines-national-emission-standards>. Following publication in the *Federal Register*, the EPA will post the *Federal Register* version of this action at this same website.

**FOR FURTHER INFORMATION CONTACT:** For questions about this action contact Ms. Angela M. Ortega, Sector Policies and Programs Division (D243-01), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, P.O. Box 12055, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-4197; and email address: [ortega.angela@epa.gov](mailto:ortega.angela@epa.gov).

**SUPPLEMENTARY INFORMATION:**

*Docket.* The EPA has established a docket for this rulemaking under Docket ID No. EPA-HQ-OAR-2020-0408.<sup>1</sup> All documents in the docket are listed in <https://www.regulations.gov>. Although listed, some information is not publicly available, e.g., Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy. With the exception of such material, publicly available docket materials are available electronically in <https://www.regulations.gov>.

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<sup>1</sup> As explained in a memorandum to the docket, the docket for this action includes the documents and information in Docket ID Nos. EPA-HQ-OAR-2017-0688 (Stationary Combustion Turbines NESHAP Risk and Technology Review), EPA-HQ-OAR-2003-0196 (Proposal to stay the enforcement of the combustion turbines National Emission Standards Hazardous Air Pollutants for new sources in the lean premix gas-fired turbines and diffusion flame gas-fired turbines subcategories), EPA-HQ-OAR-2003-0189 (Proposal to delist four subcategories from the Stationary Combustion Turbines source category), and EPA-HQ-OAR-2002-0060 (National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines).

*Judicial review.* Section 307(b)(1) of the CAA governs judicial review of final actions by the EPA. This section provides, in part, that petitions for review must be filed in the United States Court of Appeals for the District of Columbia Circuit: (i) when the Agency action consists of “nationally applicable regulations promulgated, or final actions taken, by the Administrator,” or (ii) when such action is locally or regionally applicable, but “such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination.” For locally or regionally applicable final actions, the CAA reserves to the EPA complete discretion to decide whether to invoke the exception in (ii).<sup>2</sup>

This final action is “nationally applicable” within the meaning of CAA section 307(b)(1). In this final action, the Administrator is denying a petition to delist the entire Stationary Combustion Turbines source category under CAA section 112(c)(9)(B). This action results in the continued applicability of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Combustion Turbines to all turbines meeting the rule’s applicability criteria located in any state in the nation. For these reasons, this final action is nationally applicable.

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the District of Columbia Circuit within 60 days from **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Filing a petition for reconsideration of this final action by the Administrator does not affect the finality of this action for the purposes of judicial review, nor does it extend the time within which a petition for judicial review must be filed and shall not postpone the effectiveness of such rule or action.

Under CAA section 307(b)(2) (42 U.S.C. 7607(b)(2)), the requirements established by this final action may not be challenged separately in any civil or criminal proceedings brought by

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<sup>2</sup> *Sierra Club v. EPA*, 47 F.4th 738, 745 (D.C. Cir. 2022) (“EPA’s decision whether to make and publish a finding of nationwide scope or effect is committed to the agency’s discretion and thus is unreviewable”); *Texas v. EPA*, 983 F.3d 826, 834-35 (5th Cir. 2020).

the EPA to enforce the requirements.

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

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**I. General Information**

The EPA has received, has reviewed, and is now denying a petition that requests the removal of a source category from the list of major source categories of HAP, under CAA section 112. In section I.A., we summarize the action we are taking today. In section I.B., we provide information about the NESHAP program set forth in CAA section 112 and the regulatory history and information for the source category at issue. In section II., we discuss the delisting criteria outlined in the CAA and the Agency's process for delisting a source category. Section III. discusses the EPA's residual risk review methodologies and findings in the 2020 Stationary Combustion Turbines NESHAP Risk and Technology Review (2020 RTR) as well as the CAA section 114 information request that the EPA issued subsequent to the 2020 RTR. Section IV. presents the details of the petition to delist and the Agency's technical evaluation of the petition. Finally, in section V., we discuss the EPA's response to the petition.

*A. What action is the EPA taking?*

This action presents the Agency's decision to deny a petition requesting the removal of the Stationary Combustion Turbines source category from the list of categories of major sources

of HAP subject to regulation under CAA section 112. The petition was submitted jointly by American Fuel & Petrochemical Manufacturers, the American Petroleum Institute, the American Public Power Association, the Gas Turbine Association, the Interstate Natural Gas Association of America, and the National Rural Electric Cooperative Association (“the petitioners”).

The EPA’s decision is governed by CAA section 112(c)(9), which provides the EPA’s discretionary authority to delist source categories and specifies the health risk criteria that must be met for a source category to be delisted. These criteria require the EPA to determine that no source in the category emits HAP in quantities which may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source and that HAP emissions from such source category would not result in adverse effects to human health or the environment before delisting a source category.

The EPA is denying the petition based on the EPA’s determination that the petition is incomplete and because the petitioners did not present adequate information and analyses for each of the necessary subject areas, under CAA section 112(c)(9)(B). After receipt of the initial petition and the first supplement, the EPA requested that the petitioners provide information and data to support the stationary combustion turbine emission estimates provided by the petitioners; the requested information was not provided. As an additional and separate independent basis for the denial of the petition, the EPA has determined that the petitioners’ requested conclusions are not supported by the evidence. The EPA is denying the petition with prejudice and will deny any future petition to delist as a matter of law unless such future petition is accompanied by substantial new information or analysis.

### *B. Background Information*

In this section, the EPA provides a brief overview of HAP regulation under CAA section 112, the regulatory history of the Stationary Combustion Turbines source category, information about the source category and its HAP emissions, and information about delisting petitions concerning this source category.

## 1. HAP Regulation Under CAA Section 112

CAA section 112 establishes the framework for regulation of HAP. CAA section 112(c)(1) requires the EPA to publish a list of both categories and subcategories of major and area sources of HAP. A source category on the list is required to meet the specifically defined emission standards that depend on the HAP emitted and whether a source is a major source or an area source. Major sources of HAP are those stationary sources or group of stationary sources under common control (*e.g.*, facilities) that emit or that have the potential to emit 10 tons per year or more of any specific HAP or 25 tons per year or more of any combination of HAP. An area source is any source of HAP that is not a major source. CAA section 112(c)(2) further requires the EPA to promulgate standards under CAA section 112(d) for all listed source categories according to the schedule specified in CAA section 112(e). CAA section 112(d)(6) requires the EPA to review these standards and revise them as necessary, with consideration of developments in practices, processes, and control technologies, every 8 years (the “technology review”), and CAA section 112(f)(2) requires the EPA to assess the risk to public health remaining after application of the technology-based standards and revise the standards, if necessary, to provide an ample margin of safety to protect public health or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. When the two reviews are combined into a single rulemaking, it is commonly referred to as the “risk and technology review” (RTR).

## 2. Regulatory History of and Information About the Stationary Combustion Turbines Source Category

On July 16, 1992, the EPA published the initial list of source categories, which included the Stationary Turbines source category (57 FR 31576). This source category was subsequently renamed the Stationary Combustion Turbines source category (64 FR 63025; November 18, 1999). CAA section 112(c)(2) further requires the EPA to promulgate standards under CAA section 112(d) for all listed source categories according to the schedule specified in CAA section

112(e). The EPA promulgated the NESHAP for Stationary Combustion Turbines on March 5, 2004 (69 FR 10512). The standards are codified at 40 CFR part 63, subpart YYYYY and apply to stationary combustion turbines at major sources of HAP. There are no requirements under 40 CFR part 63, subpart YYYYY for stationary combustion turbines located at area sources. The RTR for the Stationary Combustion Turbines NESHAP was proposed on April 12, 2019 (84 FR 15046) and finalized on March 9, 2020 (85 FR 13524).<sup>3</sup>

The Stationary Combustion Turbines source category covered by the NESHAP includes approximately 1,015 turbines at 310 facilities.<sup>4</sup> Within the Stationary Combustion Turbines source category are the following eight subcategories: lean premix gas-fired turbines, lean premix oil-fired turbines, diffusion flame gas-fired turbines, diffusion flame oil-fired turbines, turbines which burn landfill or digester gas or gasified municipal solid waste, turbines of less than 1 megawatt (MW) rated peak power output, emergency turbines, and turbines operated on the North Slope of Alaska. Stationary combustion turbines are typically located at power plants, compressor stations, landfills, and industrial facilities such as chemical plants. These turbines are generally operated using natural gas, distillate oil, landfill gas, jet fuel, or process gas.

Emissions of HAP in the exhaust gases of turbines are the result of combustion of the gaseous and liquid fuels. The HAP present in these exhaust gases include formaldehyde, toluene, benzene, acetaldehyde, and metallic HAP (*e.g.*, cadmium, chromium, manganese, lead, and nickel). Of these HAP, benzene, nickel subsulfide, and hexavalent chromium are classified as known human carcinogens, and formaldehyde, acetaldehyde, lead, nickel carbonyl, and cadmium are classified as probable human carcinogens. Exposure to the various HAP emitted by stationary combustion turbines is associated with a variety of adverse health effects. These adverse health effects include chronic (long-term) health disorders (*e.g.*, effects on the central nervous system, damage to the kidneys, and irritation of the lung, skin, and mucus membranes); and acute health

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<sup>3</sup> The EPA readopted the existing standards under CAA section 112(f)(2) (85 FR 13530).

<sup>4</sup> Turbine NESHAP Unit List – Updated October 2023. Docket ID No. EPA-HQ-OAR-2020-0408.

disorders (*e.g.*, effects on the kidney and central nervous system, alimentary effects such as nausea and vomiting, and lung irritation and congestion).

Mercury has been measured in the exhaust gas from landfill gas-fired turbines. Gaseous mercury emitted into the air eventually can be deposited into soil and water bodies, where microorganisms can convert it into methylmercury, a highly toxic form of mercury that bioaccumulates in fish tissue and in other aquatic creatures. People are primarily exposed to mercury by consuming contaminated fish. Methylmercury exposure is a particular concern for people of childbearing age, developing fetuses, and young children, because studies have linked exposure to high levels of methylmercury to damage to the developing nervous system. Children exposed to methylmercury while they are in the womb can have negative impacts to their cognitive thinking, memory, attention, language, fine motor skills, and visual spatial skills. Animals can absorb mercury through water, air, and soil or from eating certain plants. Mercury can harm an animal's ability to reproduce and to care for their young.

### 3. Delisting Petitions Concerning the Stationary Combustion Turbines Source Category

During the 2004 Stationary Combustion Turbines NESHAP rulemaking, the EPA received a petition from the Gas Turbine Association to delist two subcategories of stationary combustion turbines under CAA section 112(c)(9).<sup>5</sup> The petitioners requested the EPA to create and delist two subcategories – lean premix turbines firing natural gas with limited oil backup and a low-risk subcategory where facilities would make site-specific demonstrations regarding risk levels. On April 7, 2004, the EPA proposed to delist the following four subcategories: lean premix gas-fired turbines, diffusion flame gas-fired turbines, emergency turbines, and turbines located on the North Slope of Alaska (69 FR 18327). At the same time, the EPA proposed to stay the effectiveness of the NESHAP for new lean premix gas-fired and diffusion flame gas-fired turbines (69 FR 18338). On August 18, 2004, the EPA finalized the administrative stay of the

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<sup>5</sup> Petition to Delist Two Subcategories of Combustion Turbines. Docket ID No. EPA-HQ-OAR-2003-0189-0014.



effectiveness of the NESHAP for new lean premix gas-fired and diffusion flame gas-fired turbines, pending the outcome of the proposed subcategory delisting (69 FR 51184). The proposal to delist the four subcategories was never finalized in light of the 2007 decision in *Natural Resources Defense Council v. EPA*, 489 F.3d 1364 (D.C. Cir. 2007), which addressed limits on the EPA's ability to delist subcategories. This court decision is discussed in more detail in section II.A.

On August 28, 2019, the EPA received the petition being acted on here, which seeks to remove the Stationary Combustion Turbines source category from the list of categories of major sources under CAA section 112. The petitioners submitted a supplement to the source category delisting petition on November 21, 2019; a second supplement to the source category delisting petition on December 2, 2020; and a revised version of the second supplement to the delisting petition on March 15, 2021. The EPA has fully considered all the petitioners' submissions in this final decision to deny the petition. Delisting of the Stationary Combustion Turbines source category from the list of major sources would result in removal of the regulatory requirements specified in the NESHAP for Stationary Combustion Turbines in 40 CFR 63.6080-6175 of 40 CFR part 63, subpart YYYY.

## **II. Treatment of Petitions to Delist a Source Category from Regulation Under CAA Section 112**

In this section, the EPA sets out the specific criteria under the CAA that apply for removing a source category from the list of source categories. CAA section 112(c)(9)(B) specifies certain criteria that must be satisfied in order for the EPA to grant a petition to remove a source category from the list of source categories regulated for HAP emissions. The EPA's consideration of petitions to delist is bound by these criteria and informed by prior court decisions interpreting this provision of the CAA.

*A. What is a source category delisting petition and what are the criteria for delisting a source category?*

A source category delisting petition is a formal request to the EPA from an individual or group to remove a specific source category from the CAA section 112 list of categories of major sources and area sources under CAA section 112(c)(9)(B). The Administrator must grant or deny such a petition to delete a source category within 1 year after a petition is filed and is determined to be complete.<sup>6</sup> See CAA section 112(c)(9)(B). Delisting of a source category would result in the removal of applicable regulatory requirements under CAA section 112 for such source category. CAA section 112(c)(9)(B) contains the discretionary authority to delist a source category and provides in relevant part: “The Administrator may delete any source category from the list under this subsection, on petition of any person or on the Administrator's own motion, whenever the Administrator makes the following determination or determinations, as applicable: [...]”

CAA section 112(c)(9)(B) further specifies three criteria for deletion of a source category from the list. The first criterion is specific to carcinogenic HAP and is specified in CAA section 112(c)(9)(B)(i). The criterion states that, in the case of HAP emitted by sources in the category that may result in cancer in humans, a determination must be made that “no source in the category (or group of sources in the case of area sources) emits such hazardous air pollutants in quantities which may cause a lifetime risk of cancer greater than one in one million to the individual in the population who is most exposed to emissions of such pollutants from the source (or group of sources in the case of area sources).”

The second criterion is specific to non-carcinogenic HAP and the third criterion is specific to environmental effects. These criteria are specified in CAA section 112(c)(9)(B)(ii). In the case of HAP that may result in adverse health effects in humans other than cancer or adverse environmental effects, the second criterion states that a determination must be made that “emissions from no source in the category or subcategory concerned (or group of sources in the case of area sources) exceed a level which is adequate to protect public health with an ample

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<sup>6</sup> As stated previously, the EPA has determined that the current petition to delist the Stationary Combustion Turbines source category is not complete.

margin of safety” and the third criterion states that a determination must be made that “no adverse environmental effect will result from emissions from any source (or from a group of sources in the case of area sources).”

Further, to assist the EPA in making judgments about whether a pollutant causes adverse environmental effects, CAA section 112(a)(7) defines an “adverse environmental effect” as “[A]ny significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.”

For source categories that emit carcinogenic HAP, CAA section 112(c)(9)(B)(i) sets a lifetime cancer risk threshold for delisting of 1-in-1 million. This level differs from the acceptable risk determination used in other rulemakings under CAA section 112. For instance, for standards promulgated under CAA section 112(f)(2), an excess lifetime cancer risk to the most exposed individual of 100-in-1 million is ordinarily the upper bound of acceptability. This level was established in the Benzene NESHAP (54 FR 38044; September 14, 1989) and was incorporated into the 1990 CAA Amendments in CAA section 112(f)(2)(B).<sup>7</sup>

When considering delisting decisions under CAA section 112(c)(9)(B), the EPA construes this provision as calling for a high level of confidence before a determination can be made that the criteria for delisting are satisfied. For example, for purposes of deleting the non-mercury cell chlorine production subcategory under CAA section 112(c)(9)(B)(ii), the EPA “obtained chlorine and HCl emission estimates from every known major source facility in the non-mercury cell chlorine production subcategory using our authority under section 114 of the

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<sup>7</sup> The maximum individual lifetime cancer risk is the “estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years.” National Emissions Standards for Hazardous Air Pollutants: Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants (Benzene NESHAP) (54 FR 38044, 38045; September 14, 1989).

CAA and conducted risk assessments for each facility.”<sup>8</sup>

For source categories that emit HAP that may result in adverse health effects (non-cancer risks), CAA section 112(c)(9)(B)(ii) requires HAP emissions to be below a level providing an ample margin of safety. In the context of a source category delisting and CAA section 112(c)(9)(B)(ii), the EPA interprets an “ample margin of safety” as such that the chronic and acute concentrations that a person may be exposed to should be less than the concentrations that may elicit an adverse non-cancer health effect (*i.e.*, each of the ratios should be less than one). This interpretation has been applied in a prior subcategory delisting action under CAA section 112(c)(9)(B)(ii) for the non-mercury cell chlorine production subcategory (68 FR 70947).

For the purposes of determining whether the delisting criteria under CAA section 112(c)(9)(B) are satisfied, risk evaluations must be based on emission estimates that assume the controls required under CAA section 112 are not in place unless they are also known to be required under a different regulatory authority. This is because a final notice granting a delisting petition of, for example, the Stationary Combustion Turbines source category from the list of major sources would result in removal of the regulatory requirements specified in the NESHAP for stationary combustion turbines.

The EPA views CAA section 112(c)(9)(B) as providing discretionary authority for delisting source categories that satisfy the criteria contained therein. “The Administrator *may* delete any source category from the list under this subsection, on petition of any person . . . , whenever the Administrator makes the following determination or determinations, as applicable,” (CAA section 112(c)(9)(B) (Emphasis added)). The Agency reads this provision as allowing for delisting of a source category upon the Administrator determining that the statutory

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<sup>8</sup> National Emission Standards for Hazardous Air Pollutants: Chlorine and Hydrochloric Acid Emissions from Chlorine Production: Final decision to delete subcategory (68 FR 70948, 70951; December 19, 2003). See also 66 FR 21933, where the EPA explained and agreed with the use of certain health effect studies in delisting petition for Methanol. (“As the [Health Effects Institute] Health Review Committee noted in its commentary, the experiments in this study were ‘well designed and executed with appropriate quality control and quality assurance procedures. Thus, one can have confidence in the data.’”).

criteria are satisfied. However, it does not foreclose the exercise of the Administrator's discretion in forming a final decision on whether to delist. ("The Administrator *may* delete ..." and not "The Administrator [*must*] delete ...") (Emphasis supplied). The EPA interprets "may" in CAA section 112(c)(9)(B)(i) as being directional towards a determination that is based on reasonably health protective assumptions to account for uncertainties in any supporting analysis. The final decision involves the consideration and balancing of factors that are uniquely within the Administrator's expertise, including policy choices, and predictions on "the frontiers of scientific knowledge." *Nat'l Lime Ass'n v. EPA*, 627 F.2d 416, 454 (D.C. Cir. 1980).<sup>9</sup>

Questions as to whether pollutant emissions from a source category present adverse health and environmental effects and questions regarding the kinds of effects that can come from exposure to those emissions may, in certain instances, border on the frontiers of scientific knowledge and are given to be quite uncertain due to either insufficient or inconsistent data.<sup>10</sup> For example, there could be limited scientific knowledge of the effects of pollutant exposure on human health and the environment. There could also be limited emissions data from the source category. Further, some pollutants have no known safe level of exposure.<sup>11</sup> The Administrator is not required to base his determination solely on a single parameter or measure and has the discretion to weigh various factors or data differently. The Administrator's decision to delist (or to deny a petition to delist) a source category is made on a case-by-case basis and involve a

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<sup>9</sup> "[A]n agency [has] latitude to exercise its discretion in accordance with the remedial purposes of the controlling statute where relevant facts cannot be ascertained or are on the frontiers of scientific inquiry." 627 F.2d 454.

<sup>10</sup> "Where a statute is precautionary in nature, the evidence difficult to come by, uncertain, or conflicting because it is on the frontiers of scientific knowledge, the regulations designed to protect the public health, and the decision that of an expert administrator, we will not demand rigorous step-by-step proof of cause and effect. Such proof may be impossible to obtain if the precautionary purpose of the statute is to be served." *Id.*, at 454 n.143 citing *Ethyl Corp. v. EPA*, 541 F.2d 1, 28-29 (D.C. Cir. 1976).

<sup>11</sup> "The Administrator may apply his expertise to draw conclusions from suspected, but not completely substantiated, relationships between facts, from trends among facts, from theoretical projections from imperfect data, from probative preliminary data not yet certifiable as 'fact,' and the like." *Id.*

thorough and comprehensive review of factual issues, scientific evidence, and data provided in support of a delisting petition.

The EPA also views CAA section 112(c)(9)(B) as allowing the Administrator to balance the likelihood of adverse health effects against limited scientific data and to err on the side of caution in making decisions considering uncertainties in scientific data. Any projections, assessments, and estimations must be reasonable and not based on conjecture. While use of the term “adequate” further indicates that the Administrator must weigh the potential uncertainties and their likely significance, uncertainties concerning the risks of adverse health or environmental effects may be mitigated if the Administrator can determine that projected exposures are sufficiently low to provide reasonable assurance that adverse health effects will not occur. Similarly, uncertainties concerning the magnitude of projected exposures may be mitigated if the Administrator can determine that the levels which might cause adverse health or environmental effects are sufficiently high to provide reasonable assurance that exposures will not reach harmful levels. But as a part of the requisite demonstration called for by CAA section 112(c)(9)(B), a petitioner must present data that are adequate to support a delisting decision, and thus, resolve any uncertainties associated with missing information.

The Administrator will not remove a source category from the list of source categories covered under CAA section 112 merely because of the inability to conclude that HAP emissions from sources within that source category will cause adverse effects on human health or the environment. Thus, the EPA will not grant a petition to remove a source category if there are uncertainties relating to health effects or if the Administrator does not have sufficient information to make the requisite determination under CAA section 112(c)(9)(B).<sup>12</sup> We note that

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<sup>12</sup> See *American Forest and Paper Ass'n v. EPA* 294 F.3d 113, 119 (D.C. Cir. 2002) (upholding the EPA’s denial of the petition to delist methanol as a HAP) “EPA’s interpretation easily passes muster under *Chevron*. The statutory language unambiguously places on a delisting petitioner the burden to make a showing that there is adequate data about a substance to determine exposure to it *may* not reasonably be anticipated to cause adverse effects. This is precisely what EPA has construed it to require.” (Emphasis in original; cleaned up) (66 FR 21930; May 2, 2001) (Where

the Administrator's discretion is neither unbounded nor limitless, but rather constrained by the EPA's duty to protect human health and welfare.<sup>13</sup> This is because the CAA is a protective or preventive statute<sup>14</sup> considering that one of its stated purposes under CAA section 101(b)(1) is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare." Such statutes do not call for certitude of harm but rather accord a decision maker discretion and flexibility in taking regulatory action that is protective of both public health and the environment.

Further, when considering delisting petitions under CAA section 112(c)(9)(B), the EPA is guided by relevant decisions of the United States Court of Appeals for the District of Columbia (D.C. Circuit or court). Specifically, in 2007, the court held in *Natural Resources Defense Council v. EPA*, 489 F.3d 1364, 1373 (D.C. Cir. 2007) (vacating portions of the Plywood Maximum Achievable Control Technology (MACT) standards), that the EPA had no authority to create and delist a "low-risk subcategory" under CAA section 112(c)(9)(B)(i).<sup>15</sup> According to the court, only subcategories with no carcinogenic HAP emissions and satisfying CAA section 112(c)(9)(B)(ii) could be removed from the CAA section 112(c)(1) list of categories and subcategories (*e.g.*, deletion of the non-mercury cell chlorine production subcategory (68 FR 70947; December 19, 2003)). Otherwise, subcategories with any carcinogenic HAP emissions could only be removed as part of a complete removal of the entire

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the Administrator is acting on a delisting petition, "the burden remains on a petitioner to demonstrate that the available data support an affirmative determination that emissions of a substance may not be reasonably anticipated to result in adverse effects on human health or the environment.").

<sup>13</sup> See *Massachusetts v. EPA*, 127 S. Ct. 1438, 1462. (The goal of the CAA is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." CAA section 101(b)(1)).

<sup>14</sup> *Ethyl Corp.*, 541 F.2d at 29 n.56 ("Under the Clean Air Act the Administrator's flexibility is derived not from a command to act, but from a precautionary statute that necessarily includes risk assessment if its preventive purpose is to be achieved."). The CAA is "to assure that regulatory action can effectively prevent harm before it occurs; to emphasize the predominant value of protection of public health." H.R. Rep. No. 95-294, 95th Cong., 1st Sess. 49 (1977).

<sup>15</sup> To accord with this decision, the EPA is denying the petition to delist two subcategories of stationary combustion turbines that the EPA received during the 2004 Stationary Combustion Turbines NESHAP rulemaking.

source category under CAA section 112(c)(9)(B)(i), noting that the criteria in CAA section 112(c)(9)(B)(ii) would also need to be satisfied if applicable.

Further, in another key case, *New Jersey v. EPA*, 517 F.3d 574, 582 (D.C. Cir. 2008), the court vacated the EPA's action that delisted coal- and oil-fired electric utility steam generating units (EGUs) holding that "because section 112(c)(9) governs the removal of 'any source category' from the section 112(c)(1) list, and nothing in the CAA exempts EGUs from section 112(c)(9), the only way the EPA could remove EGUs from the section 112(c)(1) list was by satisfying section 112(c)(9)'s requirements." (Emphasis in original). Since then, the court has upheld our reading of CAA section 112(c)(9) as calling for application of criteria contained therein.<sup>16</sup> For instance, in *White Stallion Energy Ctr., LLC v. EPA*, 748 F.3d 1222 (D.C. Cir. 2013) the court upheld the EPA's denial of a petition to delist coal-fired EGUs finding that the EPA was correct in rejecting a delisting petition because it "did not demonstrate that EPA could make either of the two predicate findings required for delisting under section 112(c)(9)(B)." *Id.*, at 1248. Additionally, in *American Forest and Paper Ass'n v. EPA*, 294 F.3d at 119 (construing section 112(b) and upholding the EPA's denial of the petition to delist methanol as a HAP), the court held that "[t]he statutory language unambiguously places on a delisting petitioner the burden to make a showing that there is adequate data about a substance to determine exposure to it *may* not reasonably be anticipated to cause adverse effects."

Finally, an additional relevant decision addresses setting MACT standards for listed source categories under CAA section 112. In *Louisiana Environmental Action Network v. EPA*, 955 F.3d 1088 (D.C. Cir. 2020) (*LEAN*), the court held that when the "EPA reviews an existing standard that fails to address many of the listed air toxics the source category emits, adding limits for those overlooked toxics is a 'necessary' revision under section 112(d)(6)." *Id.*, at 1091. The EPA must now set MACT standards in the context of a CAA section 112(d)(6) review where

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<sup>16</sup> See *U.S. Sugar Corp. v. EPA*, 830 F.3d 579 (D.C. Cir. 2016) (upholding the EPA's decision to remove source categories from CAA section 112(c)(6) without applying CAA section 112(c)(9)).



there are gaps in existing MACT standards.

*B. What is the process for delisting a source category?*

In this section, the EPA describes the Agency's process for consideration of petitions to delist source categories under CAA section 112(c)(9)(B).

Although the delisting action for a listed source category is not subject to the formal rulemaking procedures under CAA section 307(d), it is the EPA's practice to publish and solicit public comments on relevant aspects of the Agency's consideration of such a complete petition in the *Federal Register*. See *American Forest and Paper Ass'n v. EPA*, 294 F.3d 113, 117 n.3 (D.C. Cir. 2002) ("Section 112(b) does not contemplate a formal rulemaking and is not among the sections enumerated in section 307(d)(1) (although other subsections of section 112 are included there).").

The EPA's petition review process proceeds in two phases: a completeness determination and a technical review.<sup>17</sup> During the completeness determination, we conduct a broad review of the petition to determine whether all the necessary subject areas are addressed and whether reasonable information and analyses are presented for each of these subject areas.<sup>18</sup> Once the petition is determined to be complete, we place a notice of receipt of a complete petition in the

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<sup>17</sup> See, e.g., 70 FR 30407; May 26, 2005 (Notice of receipt of a complete petition to delist 4,4'-methylene diphenyl diisocyanate as a HAP); 64 FR 42125; August 3, 1999 (Notice of receipt of a complete petition to delist ethylene glycol monobutyl ether as a HAP); 64 FR 38668, 38669; July 19, 1999 (Notice of receipt of a complete petition to delist methanol as a HAP); 64 FR 33453; June 23, 1999 (Notice of receipt of a complete petition to delist Methyl Ethyl Ketone as a HAP).

<sup>18</sup> As an additional and separate independent basis for denial, the EPA may deny a petition that is not complete if the petitioners did not address all the necessary subject areas under CAA section 112(c)(9)(B) and did not present reasonable information and analyses for each of the subject areas. See, e.g., Notice of denial of petition to delist five glycol ethers as a HAP (58 FR 4164, 4165; January 13, 1993) (The EPA explained that: "Although public information indicated that over 140 million pounds of these substances are used annually in the U.S. and that there is a general trend towards greater usage, the petitioner did not provide measurements or estimates regarding the emissions associated with such use. In the absence of such information, EPA cannot make the substantive determination contemplated by CAA Section 112(b)(3)").

*Federal Register*.<sup>19</sup> That *Federal Register* document announces a public comment period on the petition and starts the technical review phase of our decision-making process. The technical review involves a thorough scientific review of the petition to determine whether the data, analyses, interpretations, and conclusions in the petition are appropriately supported and technically sound. The technical review will also determine whether the petition satisfies the necessary requirements of CAA section 112(c)(9)(B) and adequately supports a decision to delist the source category. All comments and data submitted during the public comment period are considered during the technical review. The decision to either grant or deny a petition is made after a comprehensive technical review of both the petition and the information received from the public to determine whether the petition satisfies the requirements of CAA section 112(c)(9)(B). Here, the review process is not proceeding to the second phase due to the EPA's determination that the petition is incomplete because the petitioners did not address all the necessary subject areas under CAA section 112(c)(9)(B) and did not present reasonable information and analyses for each these subject areas.

If the Administrator decides to grant a petition, the Agency publishes a written explanation of the Administrator's decision, along with a proposed rule to delete the source category. The proposed rule is open to public comment and public hearing and all additional substantive information received is considered prior to the issuance of a final rule.<sup>20</sup> If the Administrator decides to deny the petition, the Agency publishes a notice of its denial, along with a written explanation of the basis for denial.<sup>21</sup> A decision to deny a petition is a final Agency action subject to review in the Circuit Court of Appeals for the District of Columbia under CAA section 307(b).

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<sup>19</sup> The EPA did not make a completeness determination for the petition because the petitioners did not address all the necessary subject areas under CAA section 112(c)(9)(B) and did not present reasonable information and analyses for each these subject areas.

<sup>20</sup> See, e.g., 68 FR 65648; November 21, 2003 (Proposal to Delist Ethylene Glycol Monobutyl Ether: Request for Comment); 68 FR 32605; May 30, 2003 (Proposed Rule to Delist Methyl Ethyl Ketone (MEK): Request for Comment).

<sup>21</sup> See, e.g., 66 FR 21929; May 2, 2001 (Denial of the petition to delist methanol as a HAP).

A denial of a petition may take one of two forms. The EPA may deny the petition with prejudice, in which case any future petition will be denied as a matter of law unless it is accompanied by substantial new evidence; or the EPA may deny the petition without prejudice, in which case the EPA will consider future petitions without the presentation of substantial new evidence. The EPA will issue a denial with prejudice when there are adequate data available that lead the EPA to conclude that emissions from a source category may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of pollutants from a source category; or where there are adequate data available that lead the EPA to conclude that emissions from a pollutant can be anticipated to result in adverse effects to human health or the environment. Additionally, the EPA will issue a denial with prejudice when the EPA concludes that the available evidence cannot support a determination that emissions from a source category may not cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants; or when the EPA concludes that the available evidence cannot support a determination that emissions from the source category may not reasonably be anticipated to result in adverse effects to human health or the environment and, therefore, that substantial new information or analyses would be necessary to allow the Agency to make the requisite determination under CAA section 112(c)(9)(B).<sup>22</sup>

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<sup>22</sup> A denial with prejudice serves a vital administrative purpose. It prevents the endless resubmission of essentially identical petitions (with only peripheral or trivial changes) in the wake of an EPA decision on the merits of a petition. Thereby, once the EPA has denied a petition to delist based on a full consideration of the merits, any future petition to remove the same source category will not trigger another full evaluation of the merits unless it includes substantial data or analyses that were not present in the earlier petition. Conversely, the EPA may issue a denial without prejudice, for example, where there has not been a complete examination of the merits of a petition, and where, therefore, the EPA has not reached a decision on the petition that is based on a robust evaluation of the underlying technical data and analyses. For example, where a petition obviously lacks some element necessary for the EPA to properly evaluate the petition, the EPA may deny such petition without prejudice and allow the petitioner to re-submit the petition with the necessary additional information without a determination that the additional information constitutes substantial new data or analysis. See, *e.g.*, Notice of Denial (58 FR 4164; January 13, 1993) (denying without prejudice a petition to remove five glycol ethers from the list of HAP).

### III. Risk Review Methodology and Findings

In this section, the Agency presents the risk assessment and risk assessment methodology that are the underpinnings of the findings for the 2020 RTR for the Stationary Combustion Turbines source category under CAA section 112(f)(2). It bears note that under CAA section 112(f)(2) the excess lifetime cancer risk to the most exposed individual of 100-in-1 million is ordinarily the upper bound of acceptability, in contrast to CAA section 112(c)(9)(B)(i) which sets out a risk threshold of 1-in-1 million for delisting source categories that emit carcinogenic HAP. On April 12, 2019, the EPA proposed the RTR for the Stationary Combustion Turbines NESHAP (84 FR 15046). The EPA finalized the RTR on March 9, 2020, and based on the risk assessment performed for this source category readopted the existing standards under CAA section 112(f)(2) (85 FR 13524).<sup>23</sup> Additional emissions data collection efforts by the EPA after the 2020 RTR are also discussed in this section.

#### *A. The EPA's Risk Assessment Methodology*

The EPA's risk assessment methodology for the 2020 RTR is described in detail in the *Residual Risk Assessment for the Stationary Combustion Turbines Source Category in Support of the 2020 Risk and Technology Review Final Rule*, Docket ID No. EPA-HQ-OAR-2017-0688-0131 ("Risk Report"). The risk assessment estimated the maximum individual lifetime cancer risk, population at increased cancer risk, total estimated cancer incidence, maximum chronic non-cancer hazard index, and maximum acute non-cancer risk hazard quotient. The EPA performed a three-tier screening assessment of the potential multipathway health risks, as well as a three-tier screening assessment of the potential adverse environmental risks. The risk modeling dataset includes emissions data for three emissions scenarios: actual emissions, allowable emissions, and acute emissions.

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<sup>23</sup> 85 FR at 13530. (*See NRDC v. EPA*, 529 F.3d at 1083. "If EPA determines that the existing technology-based standards provide an 'ample margin of safety,' then the Agency is free to readopt those standards during the residual risk rulemaking.").

### *B. The EPA's 2020 Risk Review Findings*

Pursuant to CAA section 112(f)(2), the EPA conducted a residual risk review for the Stationary Combustion Turbines source category. Risk modeling was conducted for all the facilities known by the EPA at the time to be subject to the Stationary Combustion Turbines NESHAP, which totaled 253 stationary combustion turbine facilities. Additional information obtained after risk modeling refined our estimate of facilities in the source category to 244. The total emissions of HAP from modeled facilities were approximately 5,300 tons per year. The HAP emitted in the largest quantities were formaldehyde, n-hexane, acetaldehyde, toluene, xylenes (mixed), hydrochloric acid, propylene oxide, ethyl benzene, benzene, and acrolein. Emissions of these pollutants made up over 99 percent of the total HAP emissions by mass. Emissions of persistent and bioaccumulative HAP (PB-HAP) included lead compounds, arsenic compounds, cadmium compounds and mercury compounds. Emissions of environmental HAP included the above PB-HAP plus hydrochloric acid.

The results of the chronic inhalation cancer risk assessment based on actual emissions indicated that the estimated maximum individual lifetime cancer risk was 3-in-1 million, with formaldehyde, acetaldehyde, propylene oxide and arsenic compounds from combustion turbines as the major contributors to the risk. The total estimated cancer incidence was 0.04 excess cancer cases per year, or one excess case in every 25 years. Approximately 153,000,000 people live within 50 kilometers of the 253 modeled facilities, and 42,000 people were estimated to have cancer risks at or above 1-in-1 million. The 2020 RTR, where the Agency was acting under CAA section 112(f)(2), showed that the Stationary Combustion Turbines source category did not meet the statutory criteria for delisting described in section II.A. of this preamble. More information concerning the risk analysis can be found in the Risk Report.

### *C. CAA Section 114 Information Request*

In May 2020, the EPA received a petition for reconsideration of the 2020 RTR. One of the issues listed in the petition for reconsideration was the EPA's failure to set limits for

unregulated HAP in the Stationary Combustion Turbines NESHAP, citing *LEAN*. The EPA granted the petition for reconsideration on August 13, 2020. In April 2022, the EPA, acting under authority of CAA section 114, requested operating information and emissions data from six companies that own and operate turbines subject to the Stationary Combustion Turbines NESHAP. A request was sent to a seventh company in September 2022. The requests were sent for the purpose of obtaining emissions data to be used in an upcoming separate rulemaking to establish emission standards for turbines subject to the Stationary Combustion Turbines NESHAP that do not currently have standards in the rule. Requests for operating information included annual hours of turbine operation and annual turbine heat input for 2016-2020. Responses were required within 3 months of receipt of the request. The request mandated testing of selected turbines for emissions of formaldehyde, acid gases (hydrogen fluoride and hydrogen chloride), metallic HAP, particulate matter (PM), and carbon monoxide. The 22 turbines that were tested ranged in size from 1 to 269 MW and included both simple cycle and combined cycle units. The turbines were operated on natural gas, distillate oil, or landfill gas. Some turbines were equipped with an oxidation catalyst. Submittal of the required data from emissions testing was required within 9 months of receipt of the request. The responses to the requests are included in the docket for this action, Docket ID No. EPA-HQ-OAR-2020-0408.

#### **IV. Evaluation of the Petition**

In this section, the EPA presents the details of the petition to delist and of the Agency's technical evaluation of the petition. In section IV.A., the EPA presents the details of the petition to delist; and, in section IV.B., the EPA presents the petitioners' risk assessment methodology. In section IV.C., the EPA discusses deficiencies in the petitioners' estimates of HAP emissions for the Stationary Combustion Turbines source category; and, in section IV.D., the EPA presents the gaps in the petitioners' data that include missing emissions data from a large number of affected sources and uncertainty in the HAP emission estimates for the Stationary Combustion Turbines source category.

In general, the EPA found that the petitioners did not present reasonable and complete information and analyses for each of the affected sources, such as HAP emission measurements from stack testing or fuel content analyses for all sources subject to the Stationary Combustion Turbines source category. In the absence of such requisite information, the EPA did not make a completeness determination for the petition. And, in conducting the technical review of the information provided, the EPA cannot make the substantive determination contemplated under CAA section 112(c)(9)(B).

#### *A. Description of the Petition*

As stated previously, on August 28, 2019, the EPA received a joint petition from the American Fuel & Petrochemical Manufacturers, the American Petroleum Institute, the American Public Power Association, the Gas Turbine Association, the Interstate Natural Gas Association of America, and the National Rural Electric Cooperative Association to remove the Stationary Combustion Turbines source category from the list of categories of major sources regulated under CAA section 112. That petition claimed that the HAP emissions from affected sources in the Stationary Combustion Turbines source category that were identified in the proposed RTR meet the criteria for delisting. The petitioners submitted the first supplement to the petition on November 21, 2019. That supplement included risk analyses for additional units that were identified in a comment to the proposed RTR for the Stationary Combustion Turbines NESHAP. The petitioners claimed that all three statutory criteria for delisting were satisfied based on the results of this risk assessment.

After receipt of the first supplement to the petition, a second set of additional turbines that were not evaluated in either the petition or first supplement to the petition were identified by the EPA as being subject to the rule. The EPA therefore requested that the petitioners provide analyses for the second set of additional units. The EPA also asked for further explanation on the following issues: 1) whether the petitioners' analyses were based on emission factors without corroboration by emissions data and whether it accounted for operation of units at partial loads;

2) whether arsenic emission factors used in the petition analyses would be adequately justified for oil-fired turbines; and 3) whether the acute multiplier used in estimating acute risk at two facilities was adequately justified. The petitioners submitted a second supplement to the petition on December 2, 2020, in response to the EPA's concerns regarding the completeness of the petition. Finally, the petitioners submitted a revised version of the second supplement on March 15, 2021, correcting an error in the estimated hexavalent chromium emissions at one source. The petition and all the supplements to the petition are available for review in the docket, Docket ID No. EPA-HQ-OAR-2020-0408. The EPA has fully considered all the petitioners' submissions in this decision to deny the petition.

In general, the petitioners' initial petition and subsequent supplements to the petition provided both revised HAP emission estimates and a revised evaluation of the 2020 RTR risk analysis.<sup>24</sup> The petitioners revised HAP emission estimates and revised risk evaluation, however, were primarily based on emission factors and historical fuel usage data for a subset of the turbines that are subject to CAA section 112.

The initial petition and supplements provided by the petitioners contained the following information:

- Revised emission estimates for formaldehyde, which is one of the organic HAP that is a contributor to risk for stationary combustion turbines firing natural gas or distillate fuel oil;
- Revised emission estimates for arsenic, which is one of the metallic HAP that is a contributor to risk for stationary combustion turbines;
- Revised emission estimates for other HAP (organic and metallic) based on fuel use, emission factors, and permit limits for volatile organic compounds (VOCs);
- Measurements of the arsenic content in distillate fuel oil at certain facilities;

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<sup>24</sup> As described in section III.B. of this preamble, the 2020 RTR showed that the Stationary Combustion Turbines source category did not meet the statutory criteria for delisting.



- Revised acute emission estimates for certain facilities;
- Other revisions including adjustments to stack parameters and locations, and removal of sources that were no longer operating;
- Analyses of the inhalation acute and chronic (cancer and non-cancer) risks for each source in the category, based on the revised HAP emission estimates;
- Analyses of the multipathway chronic (cancer and non-cancer) risks for each source in the category, based on the revised HAP emission estimates;
- Analyses of the environmental effects, based on the revised and updated emission estimates; and
- New emission estimates and analyses for the facilities not previously reviewed in the 2020 RTR risk analysis.

The petitioners argued that delisting of the source category was warranted based on the following results from their analyses:

- A maximum lifetime inhalation cancer risk for the most exposed individual of 0.76-in-1 million;
- A maximum acute inhalation hazard quotient (*i.e.*, the ratio of acute exposure concentration to the concentration at which no acute adverse health effect is observed) of 0.52;
- A maximum chronic (non-cancer) inhalation hazard index (*i.e.*, the ratio of chronic exposure concentration to the concentration at which no chronic adverse health effect is observed) of 0.03;
- A maximum multipathway cancer risk for the most exposed individual of 0.007-in-1 million; and
- A maximum multipathway chronic hazard index of 0.12.
- All facilities were below environmental screening thresholds.

#### *B. Petitioners' Risk Assessment Methodology*

As previously referenced, the petitioners' initial petition and subsequent supplements to the petition provided both revised HAP emission estimates and a revised evaluation of the 2020 RTR risk analysis. The petitioners also included risk analyses that covered additional units that were identified by the EPA as subject to the Stationary Combustion Turbines NESHAP after submittal of the initial petition. The petitioners' risk assessments, however, did not address whether the emission controls that reduce HAP emissions, such as oxidation catalysts, that are installed on some turbines were installed due to the requirements of the Stationary Combustion Turbines NESHAP or for other regulatory requirements.<sup>25</sup> The petitioners' risk assessments also did not address the effect of delisting the Stationary Combustion Turbines source category on the emission estimates used for their analysis. This is requisite information because deleting a source category from the list of major sources would result in removal of the regulatory requirements specified in the applicable NESHAP.

In some instances, the petitioners performed additional analyses that they claimed made their results more conservative. For inhalation risks, the petitioners conducted an additional analysis that accounted for the effects of building downwash,<sup>26</sup> which they indicated has the potential to increase risk. The petitioners also evaluated the non-cancer risks by summing the hazard quotients among all HAP regardless of the target organ. For multipathway health risks, the petitioners further performed a site-specific multipathway risk assessment for one facility with five stationary combustion turbines. According to the petitioners' multipathway risk assessment, four of those units exclusively fire natural gas while one fires refinery fuel gas. This facility was evaluated in the initial petition risk analysis and was re-evaluated in the first supplement to the petition. All other facilities showed low multipathway risks in a more general

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<sup>25</sup> As mentioned previously, the EPA proposed to remove the stay of effectiveness of the standards for new lean premix gas-fired and diffusion flame gas-fired turbines on April 12, 2019 (84 FR 15046), prior to the submittal of the petition to delist in August 2019. The EPA finalized the removal of the stay on March 9, 2022 (87 FR 13183).

<sup>26</sup> Downwash means the downward movement of pollutant plumes immediately after stack release due to obstacles such as buildings or smokestacks.

analysis by the petitioners and so they did not perform site-specific multipathway risk assessments.

In general, the risk assessment methodology used in the petitioners' analyses estimated the same risk parameters as those used by the EPA in the risk assessment for the 2020 RTR, including maximum individual lifetime cancer risk, population at increased cancer risk, total estimated cancer incidence, maximum chronic non-cancer hazard index, maximum acute non-cancer risk hazard quotient, multipathway health risks, and adverse environmental risks.

However, while the petitioners' risk modeling methodology was similar to the EPA's, there are deficiencies in the petitioners' estimates of the emissions from the source category which were used to determine the values of the petitioners' risk modeling results, as discussed further in sections IV.C. and IV.D.

### *C. Basis for Emission Estimates*

The following section discusses deficiencies in the petitioners' analyses that support the EPA's conclusions that the petition is incomplete and that there are inadequate data to determine that no source in the category emits HAP in quantities which may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source.

The EPA identified several deficiencies in the submitted petition. First, the petitioners relied on emission factors and fuel sampling which are not adequate for determining site-specific emissions with the necessary certainty; and the petitioners failed to provide any site-specific emissions testing data. Notably, the Agency afforded petitioners the opportunity to provide additional information and data, which petitioners declined. Second, the petitioners significantly underestimated the formaldehyde emissions from some turbines, as demonstrated by site-specific turbine formaldehyde emissions testing data collected by the EPA. Third, to assess the potential health impacts from short-term exposures, the petitioners used a multiplier for acute risks that is far lower than the standard multiplier the EPA applied in the 2020 RTR, which was supported by

measured emissions data, and the petitioners did not explain why their multiplier is more appropriate than the EPA's own multipliers. And fourth, the petitioners failed to explain whether the emission estimates they used would continue to be applicable if the source category were delisted.

### 1. Reliance on Emission Factors

As stated previously, a source category may be delisted only if the EPA has a high level of confidence that emissions from no source in the category or subcategory exceed a level which is adequate to protect public health with an ample margin of safety. The emission estimates used by the petitioners to assess the risks from the source category relied almost entirely on emission factors. The EPA has long viewed emission factors as not supplying sufficient certainty regarding *site-specific emissions* that would provide confidence that no source in the category exceeds the criteria for delisting. While emission factors are a widely used tool for estimating emissions, the EPA as well as state and local air pollution control agencies usually prefer data from source-specific emission tests or continuous emission monitoring systems (CEMS) for estimating a source's emissions because those data provide the best representation of the source's emissions. The EPA notes that the introduction to *AP-42: Compilation of Air Emission Factors from Stationary Sources* states that “[b]ecause emission factors essentially represent an average of a *range* of emission rates, approximately half of the subject sources will have emission rates greater than the emission factor and the other half will have emission rates less than the emission factor.”<sup>27</sup> In the same document, the EPA also noted that “[a]verage emissions differ significantly from source to source and, therefore, emission factors frequently may not provide adequate estimates of the average emissions for a specific source.” Further, for example, the North Carolina Department of Environmental Quality states the following regarding estimating emissions: “Usually, results from continuous emission monitoring data are the

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<sup>27</sup> <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors-stationary-sources>. Fifth Edition. January 1995.

preferred way to establish emissions. However, this is not often possible or practical, except for larger facilities such as electric utilities. Use of site-specific stack tests under a single or a range of representative conditions is usually the next preferable method.”<sup>28</sup> After receipt of the initial petition and first supplement, the EPA requested that the petitioners provide HAP emission measurements from stack testing to corroborate the HAP emissions estimated by the petitioners based on emission factors and fuel content analyses, where possible. In response to the EPA’s request, however, the petitioners indicated via email that a “detailed measurement campaign is out of the scope for this study.”<sup>29</sup>

In multiple instances, the petitioners’ emission estimates were based on permit limits or emission factors of other pollutants (VOC and PM) that were then used to approximate the emissions of organic HAP (*e.g.*, formaldehyde) and metallic HAP (*e.g.*, arsenic). This introduces further uncertainty in the emission estimates for this source category. Moreover, the petitioners stated in the petition that “combustion turbines’ PM emissions are not a strong predictor of metallic HAP emissions.” Regarding arsenic, in the 2020 RTR, arsenic emissions were one of the primary drivers for risk at sources firing distillate oil. The petitioners stated that metallic HAP emissions from oil-fired turbines are constituents of the fuel, and that the arsenic emissions estimated by the EPA for the 2020 RTR were biased upward because “regulations requiring lower sulfur content for diesel fuel have resulted in lower arsenic content, if any, for these fuels, because the techniques used to remove sulfur from fuels necessarily remove metals such as arsenic also.” One example of such regulation is the 15 parts per million by weight (ppmw) sulfur standard for ultra-low sulfur diesel fuel in 40 CFR 1090.305. The petitioners, however, did not provide references supporting the statement that the arsenic content in ultra-low sulfur diesel

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<sup>28</sup> The Basics of Estimating Air Emissions. North Carolina Department of Environmental Quality. <https://www.deq.nc.gov/about/divisions/air-quality/outreach-education-engagement/air-quality-science-and-data/emission-inventories/general-information-emission-inventories>. Accessed on March 29, 2024.

<sup>29</sup> Email from Eladio Knipping, Electric Power Research Institute to Nick Hutson, Melanie King, and Greg Honda, EPA. Subject: FW: Response to EPA Feedback on EPRI CT Reports. April 15, 2020. Docket ID No. EPA-HQ-OAR-2020-0408.

fuel is universally lower or documenting that stationary combustion turbines in the source category are required to use ultra-low sulfur diesel fuel. Rather, the new source performance standards (NSPS) for stationary combustion turbines (units constructed, modified, or reconstructed after February 18, 2005) require the use of only fuel having a sulfur content that is equivalent to a sulfur dioxide content less than 0.06 pounds per million British thermal units (lb/MMBtu) (*i.e.*, approximately 500 ppmw of sulfur content in distillate fuel oil) for turbines located on the continent and 0.42 lb/MMBtu (4,000 ppmw) for turbines in non-continental areas (71 FR 38497; July 6, 2006 and 40 CFR part 60, NSPS subpart KKKK, at 40 CFR 60.4300). Notably, permitted thresholds for stationary combustion turbines vary, but the source identified to have the highest cancer risk in the 2020 RTR is permitted to combust diesel fuel with a sulfur content up to 1,500 ppmw (permit available in the docket to this rulemaking, Docket ID No. EPA-HQ-OAR-2020-0408), which further demonstrates that there is no assurance that turbines are using ultra-low sulfur diesel fuel.

The petitioners also provided summary fuel analysis reports from a few stationary combustion turbines in the source category. In those cases, fuel arsenic concentrations reported by the petitioners were below the limit of detection of the instruments. The petitioners, however, did not provide any information regarding the methods and procedures that were used for the fuel sampling and the determination of the detection limits for arsenic. Instead, results were only indicated by a qualitative statement that the measurement was below the limit of detection. Additionally, raw data were not provided. After receipt of the first supplement to the petition, the EPA asked the petitioners to provide more detail regarding the methods used for the fuel measurements, including calibration data and information on the determination of non-detects.<sup>30</sup> The petitioners indicated that such information would be provided, but the second supplement only included more summary fuel sampling results and did not provide the more detailed

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<sup>30</sup> Email from Eladio Knipping, Electric Power Research Institute to Nick Hutson, Melanie King, and Greg Honda, EPA. Subject: FW: Response to EPA Feedback on EPRI CT Reports. April 15, 2020. Docket ID No. EPA-HQ-OAR-2020-0408.

information requested by the EPA. Without this information, the EPA cannot evaluate whether the quality of the data is adequate or assess whether the detection limits are accurate and, therefore, cannot determine whether the arsenic emissions estimated for these facilities are representative of their actual emissions.

## 2. The Measured Rates for Formaldehyde Emissions

Formaldehyde was the HAP emitted in the largest quantities from stationary combustion turbines evaluated in the EPA's 2020 risk analysis (see Table 3.1-1 of Risk Report). An examination of the formaldehyde emission rates measured during the CAA section 114 testing showed emissions that are significantly higher for some turbines than those estimated in the petition analysis (as well as the 2020 RTR). For instance, formaldehyde emissions at the two landfill gas-fired turbines at the BMW Manufacturing facility averaged 0.28 lb/hour (for unit GT05) and 0.65 lb/hour (for unit GT06) during the CAA section 114 testing. Multiplying the hourly emission rate by the highest annual hours of operation on 100 percent landfill gas for the turbines reported for the CAA section 114 request, which occurred in the year 2016, yields annual formaldehyde emissions of 0.80 tons/year for unit GT05 and 1.85 tons/year for unit GT06. The formaldehyde emissions assumed for those units in the petition analysis were 0.0096 tons/year for each turbine. The measured emissions were 80 times higher than estimated for unit GT05 and 190 times higher than estimated for unit GT06. A similar analysis of the formaldehyde emissions for units 7 and 8 at Northern Natural Gas's Waterloo Compressor Station showed that the measured formaldehyde emissions were 31 times (unit 7) and 18 times (unit 8) higher than the estimated emissions.<sup>31</sup> These differences in the measured formaldehyde emissions versus the petitioners' estimated formaldehyde emissions demonstrate that the petitioners' data are not adequate for purposes of the Administrator's determination under CAA section 112(c)(9)(B).

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<sup>31</sup> Comparison of estimated emissions in delisting petition with actual measured emissions from CAA section 114 testing for BMW Manufacturing and Waterloo Compressor Station. November 22, 2023. Docket ID No. EPA-HQ-OAR-2020-0408. Note that the annual emissions for the BMW Manufacturing turbines do not include emissions from the additional hours that the turbines were operated on a blend of 80 percent landfill gas and 20 percent natural gas.

These higher measured formaldehyde emissions may also indicate that the EPA's finding in the 2020 RTR of a maximum individual lifetime cancer risk for the Stationary Combustion Turbines source category of 3-in-1 million may be a significant underestimation. But the EPA has also long acknowledged that the maximum individual lifetime cancer risk, under CAA section 112(f)(2), "does not necessarily reflect the true risk, but [rather] displays a conservative risk level which is an upper-bound that is unlikely to be exceeded."<sup>32</sup> Moreover, as previously explained, for delisting source categories that emit carcinogenic HAP, CAA section 112(c)(9)(B)(i) sets a lifetime cancer risk to the most exposed individual threshold of 1-in-1 million, which differs significantly from the acceptable risk determination for standards promulgated under CAA section 112(f)(2), where a lifetime cancer risk to the most exposed individual of 100-in-1 million is ordinarily the upper bound of acceptability. And, ultimately, sources would remain subject to standards promulgated under CAA section 112(f)(2) in contrast to removal of all CAA section 112 regulatory requirements if the EPA grants a delisting petition under CAA section 112(c)(9)(B).<sup>33</sup>

### 3. Acute Multiplier

The acute multiplier used by the petitioners to assess the health impacts from short-term exposures to HAP emissions for two facilities is not adequately supported by the evidence. As discussed previously, the risk analyses for both the 2020 RTR and the petition evaluated the acute health risks posed by actual baseline emissions. To assess the potential health impacts from short-term exposures, the petitioners estimated worst-case 1-hour HAP emission rates ("acute emissions") from each turbine included in their analysis. For most sources, the petitioners' analysis used an acute multiplier of 10 times the average annual hourly emission rate for each turbine. Use of this value is consistent with the acute multiplier used by the EPA in the 2020 RTR, as discussed in the March 6, 2019, memorandum titled *Review of the Acute Multiplier*

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<sup>32</sup> 54 FR 38045.

<sup>33</sup> The EPA readopted existing standards under CAA section 112(f)(2) (85 FR at 13530).



that reviewed the acute multiplier and that is available in the docket for the Stationary Combustion Turbines RTR (Docket ID No. EPA-HQ-OAR-2017-0688-0070).

As discussed in the memorandum, the basis for the use of a default acute multiplier of 10 in the 2020 RTR is a study of short-term emissions variability in a heavily industrialized four-county area in Texas.<sup>34</sup> At the time of the RTR proposal, the EPA evaluated the suitability of the default acute multiplier of 10 by reviewing available stack test data for formaldehyde emissions from stationary combustion turbines to determine the variability of hourly test runs. To determine the emissions variability, the average formaldehyde concentration for each unit was calculated using all available valid stack test data for that unit, and then the concentration of formaldehyde for each hourly test run was divided by that unit's average to determine the run-to-average emissions ratio. The highest run-to-average ratio in the EPA's analysis for the 2020 RTR was 6.7. For two facilities, Salinas River Cogeneration and Sargent Canyon Cogeneration, the petitioners stated that using the EPA's default ratio of 10 in their analysis yielded acute hazard quotients exceeding 1. The petitioners then used a value of 2 for the acute multiplier in their analysis for those two facilities and justified this based on the ratio of hours in the year to annual operating hours at those facilities, rather than on information regarding worst-case emissions data. The petitioners did not provide any information to show how a comparison of the hours in the year to annual operating hours was relevant for an analysis of potential worst-case 1-hour HAP emission rates or how a multiplier of 2 was more valid than the multiplier used for the 2020 RTR, which was based on actual hourly emissions data. The EPA believes that the petitioners' approach does not adequately account for spikes in emissions and variability in emission rates at non-baseload conditions (*e.g.*, startup, part-load operation). At lower loads, more incomplete

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<sup>34</sup> Allen, D., C. Murphy, Y. Kimura, W. Vizquete, and T. Edgar. 2004. *Variable Industrial VOC Emissions and their impact on ozone formation in the Houston Galveston Area*. Final Report, Texas Environmental Research Consortium Project H-13. April 16, 2004. Docket ID No. EPA-HQ-OAR-2017-0688-0005.

combustion may occur and result in proportionately greater organic HAP emissions.

Furthermore, the oxidation catalysts used to control organic HAP emissions for some turbines may not operate effectively during startup until the catalyst reaches its appropriate operating temperature.

After receipt of the initial petition and the first supplement, the EPA discussed these issues with the petitioners. The petitioners indicated that they would provide an expanded justification for the use of an acute multiplier of 2.<sup>35</sup> The discussion of the acute multiplier for Salinas River Cogeneration and Sargent Canyon Cogeneration in the second supplement did not address the questions raised by the EPA. Instead, it just restated the petitioners' previous justification for using the ratio of hours in the year to annual operating hours. Therefore, the petitioners have not adequately demonstrated that an acute multiplier of 2 is appropriate for the turbines at the Salinas River Cogeneration and Sargent Canyon Cogeneration facilities and, therefore, that the hazard quotients for those two facilities are below 1.

#### 4. Accounting for Potential Increases in Emissions

As previously noted, emission estimates in the petition analyses were primarily based on emission factors and historical fuel usage data. For the purposes of determining whether the delisting criteria under CAA section 112(c)(9)(B) are satisfied, risk evaluations must be based on emission estimates that assume the controls required under CAA section 112 are not in place unless they are also known to be required under a different regulatory authority. This is because deleting a source category from the list of major sources would result in removal of the regulatory requirements specified in the applicable NESHAP. However, the petitioners' emission estimates for those units with oxidation catalyst were based on controlled emissions, and the petitioners did not specify whether those oxidation catalysts were installed to meet the Stationary Combustion Turbines NESHAP or to satisfy regulatory requirements under other EPA programs

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<sup>35</sup> Email from Eladio Knipping, Electric Power Research Institute to Nick Hutson, Melanie King, and Greg Honda, EPA. Subject: FW: Response to EPA Feedback on EPRI CT Reports. April 15, 2020. Docket ID No. EPA-HQ-OAR-2020-0408.

(e.g., new source review (NSR) or prevention of significant deterioration (PSD) permits).<sup>36</sup> As a result, the petitioners did not explain – and the EPA was not able to determine based on the information submitted – whether the emissions estimates and risk assessment presented by the petitioners account for potential increases in emissions that might result from delisting the Stationary Combustion Turbines source category.

#### *D. HAP and Turbines Not Included in Petition*

Regarding HAP emissions, in addition to the deficiencies discussed in section IV.C., the emission estimates in the information submitted by the petitioners do not include several HAP that have been demonstrated to be emitted by stationary combustion turbines and do not include one-fourth of the turbines in the source category. As discussed in section III.C., the EPA required testing of stationary combustion turbines to obtain data on emissions of formaldehyde, acid gases (hydrogen fluoride and hydrogen chloride), and metallic HAP. The emissions testing showed that there are measurable emissions of metallic HAP from turbines operating on natural gas and landfill gas. The risk analysis submitted by the petitioners did not include metallic HAP emissions for natural gas and landfill gas turbines. Several metallic HAP (arsenic, cadmium, lead, and mercury compounds) and acid gases are included in both the EPA's health risk analysis and screening for adverse environmental effects.

Regarding the universe of affected sources, the EPA has identified an additional 245 turbines that are subject to the Stationary Combustion Turbines NESHAP that were not included in the petitioners' risk analyses. These additional turbines include units that are owned and operated by companies that are members of the organizations that submitted the petition to delist.<sup>37</sup> The EPA has identified a total of 1,015 turbines that are subject to the NESHAP. Hence,

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<sup>36</sup> As discussed previously, the EPA proposed to remove the stay of the standards for new lean premix gas-fired and diffusion flame gas-fired turbines on April 12, 2019 (84 FR 15046), prior to the submittal of the petition to delist in August 2019. The EPA finalized the removal of the stay on March 9, 2022 (87 FR 13183).

<sup>37</sup> Turbine NESHAP Unit List – Updated October 2023. Docket ID No. EPA-HQ-OAR-2020-0408.

the petitioners' analyses do not account for nearly one-fourth of the turbines that are subject to the Stationary Combustion Turbines NESHAP. This contrasts with, for example, the delisting of the non-mercury cell chlorine production subcategory where the EPA "obtained chlorine and HCl emission estimates from every known major source facility in the non-mercury cell chlorine production subcategory using our authority under section 114 of the CAA and conducted risk assessments for each facility."<sup>38</sup> As previously noted, a petitioner must provide a detailed assessment of the available data concerning the potential adverse human health and environmental effects and the potential for human and environmental exposures from the source category that is to be delisted. Such data must demonstrate that no source in the category or subcategory emits HAP in quantities which may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source or that no source in the category exceeds a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from that source category.

#### **V. What is the rationale for denying the petition?**

The EPA is denying the petition because the EPA has determined that the petition is incomplete. The petitioners did not address all the necessary subject areas under CAA section 112(c)(9)(B) and did not present adequate information and analyses for the requested determination. As stated previously, CAA section 112 (c)(9)(B)(i) requires the EPA to determine that no source in the category emits HAP in quantities which may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source. Here, the petition and all the supplements to the petition did not include HAP emissions measurements for all of the HAP emitted by the Stationary

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<sup>38</sup> 68 FR 70951.

Combustion Turbines source category.<sup>39</sup> The risk analysis submitted by the petitioners did not include metallic HAP emissions for natural gas and landfill gas turbines, which the CAA section 114 information request results demonstrated are emitted from turbines operating on both natural gas and landfill gas. Further, the petitioners' analyses did not include nearly one-fourth of the stationary combustion turbines that are subject to the Stationary Combustion Turbines NESHAP. For the fuel sampling data and the acute multiplier, the petitioners did not provide information requested by the EPA that is necessary to evaluate the adequacy of the data. The EPA also afforded petitioners opportunities to address the above referenced identified gaps in the data and information underpinning their petition, which petitioners declined. For these reasons, the EPA cannot conclude that the petitioners have demonstrated that the maximum individual lifetime cancer risk from all stationary combustion turbines subject to CAA section 112 is less than the 1-in-1 million delisting threshold under CAA section 112(c)(9)(B)(i).

The EPA construes CAA section 112(c)(9)(B)(i) as calling for the Administrator to make a determination that the criteria for delisting are satisfied. Any such determination must be supported by measured emissions data or otherwise reasonably account for operational variability.<sup>40</sup> This is because delisting of a source category would result in the removal of applicable regulatory requirements under CAA section 112 for such source category. The EPA cannot grant a petition to delist a source category if there are major uncertainties that must be addressed for the EPA to have sufficient information to make the requisite substantive determination, under CAA section 112(c)(9)(B)(i). And the burden remains on a petitioner to

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<sup>39</sup> See, *e.g.*, 66 FR at 21933, "As the [Health Effects Institute] Health Review Committee noted in its commentary, the experiments in this study were 'well designed and executed with appropriate quality control and quality assurance procedures. Thus, one can have confidence in the data.'" (The EPA explaining and agreeing with the use of certain health effect studies in the delisting petition for Methanol).

<sup>40</sup> "Although public information indicated that over 140 million pounds of these substances are used annually in the U.S. and that there is a general trend towards greater usage, the petitioner did not provide measurements or estimates regarding the emissions associated with such use. In the absence of such information, EPA cannot make the substantive determination contemplated by CAA Section 112(b)(3)." 58 FR 4165 (The EPA explaining the decision to deny the petition to delist five glycol ethers as a HAP for lack of emission measurements and HAP estimated use).

demonstrate that the available data support an affirmative determination that HAP emissions from a source category may not be reasonably anticipated to result in adverse effects on human health or the environment. *See American Forest and Paper Ass'n v. EPA*, 294 F.3d at 119 (“The statutory language unambiguously places on a delisting petitioner the burden to make a showing that there is adequate data about a substance to determine exposure to it *may* not reasonably be anticipated to cause adverse effects.” (Emphasis in original; cleaned up)).

In addition to the incompleteness of the petition, the EPA’s technical review identified major uncertainties in the emission estimates provided by the petitioners that are an additional and separate independent basis for denial of the petition. The results of the 2020 RTR risk analysis (based on actual emissions), under CAA section 112(f)(2), indicated that the estimated maximum individual lifetime cancer risk is 3-in-1 million. The petitioners’ analyses contained in their submittals claimed a maximum individual lifetime cancer risk of 0.76-in-1 million as support for their petition to delist under CAA section 112(c)(9). But the petitioners’ analyses, which included revised HAP emission estimates and a revised evaluation of the 2020 RTR risk analysis, were primarily based on emission factors and historical fuel usage data for a subset of the turbines that are subject to CAA section 112.

The petitioners also did not include any stack testing on the turbines that they analyzed to determine actual emissions. As stated previously, emission factors do not provide sufficient certainty regarding site-specific emissions that would provide confidence that no source in the category exceeds the criteria for delisting. In addition, the CAA section 114 emissions testing showed actual formaldehyde emissions for some turbines that are significantly higher than those estimated by the petitioners. Lastly, the petitioners did not explain whether the emission estimates they relied on would continue to be applicable if the EPA were to delist the source category. Overall, and as shown in section IV., the petitioners did not provide sufficient data or analyses for the purpose of estimating maximum offsite pollutant concentrations that would enable the Administrator to make the substantive determination contemplated by CAA section

112(c)(9)(B).<sup>41</sup>

The EPA has concluded that the available evidence is inadequate to support a determination that no source in the Stationary Combustion Turbines source category emits such HAP in quantities which may cause a lifetime risk of cancer greater than 1-in-1 million to the individual in the population who is most exposed to emissions of such pollutants from the source category as called for under CAA section 112(c)(9)(B)(i). Because the petition is denied under CAA section 112(c)(9)(B)(i) for the reasons stated above, the EPA finds that it is not necessary to make any determinations as to whether any source in the category exceeds a level which is adequate to protect public health with an ample margin of safety and presents adverse environmental effects under CAA section 112(c)(9)(B)(ii).

For the reasons stated in this section, the EPA concludes that the petitioners have not demonstrated that the Stationary Combustion Turbines source category may be delisted under CAA section 112(c)(9)(B)(i). This means that the petitioners have failed to meet the delisting criteria outlined in CAA section 112(c)(9)(B)(i), and the EPA must deny the petition. Finally, because the EPA has determined that the petitioners did not address all the necessary subject areas under CAA section 112(c)(9)(B) and did not present adequate information and analyses for each of the subject areas, the EPA is denying the petition with prejudice. Any future petition to delist will be denied as a matter of law unless such future petition is accompanied by substantial new information or analysis.

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**Michael S. Regan,**

*Administrator.*

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<sup>41</sup> 58 FR 4165 (denying petition to delist five glycol ethers as a HAP on similar grounds).

