ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[OAR–2002–0060; FRL–7417–8]

RIN 2060–AG67

National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This action proposes national emission standards for hazardous air pollutants (NESHAP) for stationary combustion turbines. We have identified stationary combustion turbines as major sources of hazardous air pollutants (HAP) emissions such as formaldehyde, toluene, benzene, and acetaldehyde. The proposed NESHAP would implement section 112(d) of the Clean Air Act (CAA) by requiring all major sources to meet HAP emission standards reflecting the application of the maximum achievable control technology (MACT) for combustion turbines. We estimate that 20 percent of the stationary combustion turbines affected by the proposed rule will be located at major sources. As a result, the environmental, energy, and economic impacts presented in this preamble reflect these estimates. The proposed standards would protect public health by reducing exposure to air pollution, by reducing total national HAP emissions by an estimated 81 tons/year in the 5th year after the standards are promulgated. This action also proposes to add Method 323 of 40 CFR part 63, appendix A for the measurement of formaldehyde emissions from natural gas-fired stationary sources.

DATES: *Comments.* Submit comments on or before February 13, 2003.

Public Hearing. If anyone contacts us requesting to speak at a public hearing by January 24, 2003, we will hold a public hearing on January 29, 2003.

ADDRESSES: Comments may be submitted by mail (in duplicate, if possible) to EPA West (Air Docket), U.S. EPA (MD–6102T), Room B–108, 1200 Pennsylvania Avenue, NW., Washington, DC 20460, Attention Docket ID No. OAR–2002–0060. By hand delivery/courier, comments may be submitted (in duplicate, if possible) to EPA Docket Center (Air Docket), U.S. EPA, MD–6102T), Room B–108, 1301 Constitution Avenue, NW., Washington, DC 20460, Attention Docket ID No. OAR–2002–0060. Comments may be submitted electronically according to the detailed instructions as provided in the **SUPPLEMENTARY INFORMATION** section.

Public Hearing. If a public hearing is held, it will be held at the new EPA facility complex in Research Triangle Park, North Carolina.

Docket. Docket No. OAR–2002–0060 contains supporting information used in developing the standards. The docket is located at the U.S. EPA, 1301 Constitution Avenue, NW., Washington, DC 20460 in room B102, and may be inspected from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. Sims Roy, Combustion Group, Emission Standards Division (MD–C439–01), U.S. EPA, Research Triangle Park, North Carolina 27711; telephone number (919) 541–5263; facsimile number (919) 541–5450; electronic mail address *roy.sims@epa.gov.*

SUPPLEMENTARY INFORMATION: *Regulated Entities.* Categories and entities potentially regulated by this action include:

Category	SIC	NAICS	Examples of regulated entities
Any industry using a stationary combustion turbine as defined in the regulation.	4911	2211	Electric power generation, transmission, or distribution.
	4922	486210	Natural gas transmission.
	1311	211111	Crude petroleum and natural gas production.
	1321	211112	Natural gas liquids producers.
	4931	221	Electric and other services combined.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. To determine whether your facility is regulated by this action, you should examine the applicability criteria in § 63.6085 of the proposed rule. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Docket. The EPA has established an official public docket for this action under Docket ID No. OAR–2002–0060. The official public docket consists of the documents specifically referenced in this action, any public comments received, and other information related to this action. Although a part of the official docket, the public docket does not include Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. The official public docket is the collection of materials that is available for public viewing at the Air and Radiation Docket in the EPA Docket Center, (EPA/DC) EPA West, Room B108, 1301 Constitution Ave., NW., Washington, DC. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566–1744, and the telephone number for the Air and Radiation Docket is (202) 566–1742. A reasonable fee may be charged for copying docket materials.

Electronic Access. You may access this **Federal Register** document electronically through the EPA Internet under the **Federal Register** listings at *http://www.epa.gov/fedrgstr/.*

An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may use EPA Dockets at *http://www.epa.gov/edocket/* to submit or view public comments, access the index listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. Once in the system, select ''search,'' then key in the appropriate docket identification number.

Certain types of information will not be placed in the EPA Dockets. Information claimed as CBI and other information whose disclosure is restricted by statute, which is not included in the official public docket, will not be available for public viewing in EPA's electronic public docket. The EPA's policy is that copyrighted material will not be placed in EPA's electronic public docket but will be available only in printed paper form in the official public docket. To the extent feasible, publicly available docket materials will be made available in EPA's electronic public docket. When a document is selected from the index list in EPA Dockets, the system will identify whether the document is available for viewing in EPA's electronic public docket. Although not all docket materials may be available electronically, you may still access any of the publicly available docket materials through the docket facility identified above. The EPA intends to work towards providing electronic access to all of the publicly available docket materials through EPA's electronic public docket.

For public commenters, it is important to note that EPA's policy is that public comments, whether submitted electronically or on paper, will be made available for public viewing in EPA's electronic public docket as EPA receives them and without change, unless the comment contains copyrighted material, CBI, or other information whose disclosure is restricted by statute. When EPA identifies a comment containing copyrighted material, EPA will provide a reference to that material in the version of the comment that is placed in EPA's electronic public docket. The entire printed comment, including the copyrighted material, will be available in the public docket.

Public comments submitted on computer disks that are mailed or delivered to the docket will be transferred to EPA's electronic public docket. Public comments that are mailed or delivered to the Docket will be scanned and placed in EPA's electronic public docket. Where practical, physical objects will be photographed, and the photograph will be placed in EPA's electronic public docket along with a brief description written by the docket staff.

For additional information about EPA's electronic public docket visit EPA Dockets online or see 67 FR 38102, May 31, 2002.

You may submit comments electronically, by mail, or through hand delivery/courier. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your comment. Please ensure that your comments are submitted within the specified comment period. Comments received after the close of the comment period will be marked "late." The EPA is not required to consider these late comments. However, late comments may be considered if time permits.

Electronically. If you submit an electronic comment as prescribed below, EPA recommends that you include your name, mailing address, and an e-mail address or other contact information in the body of your comment. Also include this contact information on the outside of any disk or CD ROM you submit, and in any cover letter accompanying the disk or CD ROM. This ensures that you can be identified as the submitter of the comment and allows EPA to contact you in case EPA cannot read your comment due to technical difficulties or needs further information on the substance of your comment. The EPA's policy is that EPA will not edit your comment, and any identifying or contact information provided in the body of a comment will be included as part of the comment that is placed in the official public docket and made available in EPA's electronic public docket. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment.

Your use of EPA's electronic public docket to submit comments to EPA electronically is EPA's preferred method for receiving comments. Go directly to EPA Dockets at *http://www.epa.gov/edocket*, and follow the online instructions for submitting comments. To access EPA's electronic public docket from the EPA Internet Home Page, select "Information Sources," "Dockets," and "EPA Dockets." Once in the system, select "search," and then key in Docket ID No. OAR–2002–0060. The system is an "anonymous access" system, which means EPA will not know your identity, e-mail address, or other contact information unless you provide it in the body of your comment.

Comments may be sent by electronic mail (e-mail) to *a-and-r-docket@epa.gov*, Attention Docket ID No. OAR–2002–0060. In contrast to EPA's electronic public docket, EPA's e-mail system is not an "anonymous access" system. If you send an e-mail comment directly to the Docket without going through EPA's electronic public docket, EPA's e-mail system automatically captures your e-mail address. E-mail addresses that are automatically captured by EPA's e-mail system are included as part of the comment that is placed in the official public docket and made available in EPA's electronic public docket.

You may submit comments on a disk or CD ROM that you mail to the mailing address identified below. These electronic submissions will be accepted in WordPerfect or ASCII file format. Avoid the use of special characters and any form of encryption.

By Mail. Send your comments (in duplicate if possible) to: Air and Radiation Docket and Information Center, U.S. EPA, Mailcode: 6102T, 1200 Pennsylvania Ave., NW, Washington, DC, 20460, Attention Docket ID No. OAR–2002–0060. The EPA requests a separate copy also be sent to the contact person listed above (see **FOR FURTHER INFORMATION CONTACT**).

By Hand Delivery or Courier. Deliver your comments to: EPA Docket Center, Room B108, 1301 Constitution Ave., NW, Washington, DC, 20460, Attention Docket ID No. OAR–2002–0060. Such deliveries are only accepted during the Docket's normal hours of operation as identified above.

Do not submit information that you consider to be CBI electronically through EPA's electronic public docket or by e-mail. Send or deliver information identified as CBI only to the following address: Mr. Sims Roy, c/o OAQPS Document Control Officer (Room C404–2), U.S. EPA, Research Triangle Park, 27711, Attention Docket ID No. OAR–2002–0060. You may claim information that you submit to EPA as CBI by marking any part or all of that information as CBI (if you submit CBI on disk or CD ROM, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is CBI). Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

In addition to one complete version of the comment that includes any information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket and EPA's electronic public docket. If you submit the copy that does not contain CBI on disk or CD ROM, mark the outside of the disk or CDROM clearly that it does not contain CBI. Information not marked as CBI will be included in the public docket and EPA's electronic public docket without prior notice. If you have any questions about CBI or the procedures for claiming CBI, please consult the person identified in the **FOR FURTHER INFORMATION CONTACT** section.

You may find the following suggestions helpful for preparing your comments:

1. Explain your views as clearly as possible.
2. Describe any assumptions that you used.
3. Provide any technical information and/or data you used that support your views.
4. If you estimate potential burden or costs, explain how you arrived at your estimate.
5. Provide specific examples to illustrate your concerns.
6. Offer alternatives.
7. Make sure to submit your comments by the comment period deadline identified.

8. To ensure proper receipt by EPA, identify the appropriate docket identification number in the subject line on the first page of your response. It would also be helpful if you provided the name, date, and **Federal Register** citation related to your comments.

Public Hearing. Persons interested in presenting oral testimony or inquiring as to whether a hearing is to be held should contact Mrs. Kelly Hayes, Combustion Group, Emission Standards Division (MD–C439–01), U.S. EPA, Research Triangle Park, North Carolina 27711, (919) 541–5578 at least 2 days in advance of the public hearing. Persons interested in attending the public hearing must also call Mrs. Hayes to verify the time, date, and location of the hearing. The public hearing will provide interested parties the opportunity to present data, views, or arguments concerning the proposed rule. If a public hearing is requested and held, EPA will ask clarifying questions during the oral presentation but will not respond to the presentations or comments. Written statements and supporting information will be considered with equivalent weight as any oral statement and supporting information presented at a public hearing, if held.

Outline. The information presented in this preamble is organized as follows:

I. Background

A. What Is the Regulatory Development Background of the Source Category?

In September 1996, we chartered the Industrial Combustion Coordinated Rulemaking (ICCR) advisory committee under the Federal Advisory Committee Act (FACA). The committee's objective was to develop recommendations for regulations for several combustion source categories under sections 112 and 129 of the CAA. The ICCR advisory committee, also known as the Coordinating Committee, formed Source Work Groups for the various combustor types covered under the ICCR. One work group, the Combustion Turbine Work Group, was formed to research issues related to stationary combustion turbines. The Combustion Turbine Work Group submitted recommendations, information, and data analyses to the Coordinating Committee, which in turn considered them and submitted recommendations and information to us. The Committee's 2-year charter expired in September 1998. We considered the Committee's recommendations in developing the proposed rule for stationary combustion turbines.

B. What Is the Source of Authority for Development of NESHAP?

Section 112 of the CAA requires us to list categories and subcategories of major sources and area sources of HAP and to establish NESHAP for the listed source categories and subcategories. The stationary turbine source category was listed on July 16, 1992 (57 FR 31576). Major sources of HAP are those that have the potential to emit greater than 10 ton/yr of any one HAP or 25 ton/yr of any combination of HAP.

C. What Criteria Are Used in the Development of NESHAP?

Section 112 of the CAA requires that we establish NESHAP for the control of HAP from both new and existing major sources. The CAA requires the NESHAP to reflect the maximum degree of reduction in emissions of HAP that is achievable. This level of control is commonly referred to as the MACT.

The MACT floor is the minimum control level allowed for NESHAP and is defined under section 112(d)(3) of the CAA. In essence, the MACT floor ensures that the standard is set at a level that assures that all major sources achieve the level of control at least as stringent as that already achieved by the better controlled and lower emitting sources in each source category or subcategory. For new sources, the MACT standards cannot be less stringent than the emission control that is achieved in practice by the best controlled similar source. The MACT standards for existing sources can be less stringent than standards for new sources, but they cannot be less stringent than the average emission limitation achieved by the best performing 12 percent of existing sources in the category or subcategory (or the best performing 5 sources for categories or subcategories with fewer than 30 sources).

In developing MACT, we also consider control options that are more stringent than the floor. We may establish standards more stringent than the floor based on the consideration of cost of achieving the emissions reductions, any nonair quality health and environmental impacts, and energy requirements.

D. What Are the Health Effects Associated With HAP From Stationary Combustion Turbines?

Emission data collected during development of the proposed NESHAP show that several HAP are emitted from stationary combustion turbines. These HAP emissions are formed during combustion or result from HAP compounds contained in the fuel burned.

Among the HAP which have been measured in emission tests that were conducted at natural gas fired and distillate oil fired combustion turbines are: 1,3 butadiene, acetaldehyde, acrolein, benzene, ethylbenzene, formaldehyde, naphthalene, poly aromatic hydrocarbons (PAH) propylene oxide, toluene, and xylenes. Metallic HAP from distillate oil fired stationary combustion turbines that have been measured are: arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, and selenium.

Although numerous HAP may be emitted from combustion turbines, only a few account for essentially all the mass of HAP emissions from stationary combustion turbines. These HAP are: formaldehyde, toluene, benzene, and acetaldehyde.

The HAP emitted in the largest quantity is formaldehyde. Formaldehyde is a probable human carcinogen and can cause irritation of the eyes and respiratory tract, coughing, dry throat, tightening of the chest, headache, and heart palpitations. Acute inhalation has caused bronchitis, pulmonary edema, pneumonitis, pneumonia, and death due to respiratory failure. Long-term exposure can cause dermatitis and sensitization of the skin and respiratory tract.

Other HAP emitted in significant quantities from stationary combustion turbines include toluene, benzene, and acetaldehyde. The health effect of primary concern for toluene is dysfunction of the central nervous system (CNS). Toluene vapor also causes narcosis. Controlled exposure of human subjects produced mild fatigue, weakness, confusion, lacrimation, and paresthesia; at higher exposure levels there were also euphoria, headache, dizziness, dilated pupils, and nausea. After effects included nervousness, muscular fatigue, and insomnia persisting for several days. Acute exposure may cause irritation of the eyes, respiratory tract, and skin. It may also cause fatigue, weakness, confusion, headache, and drowsiness. Very high concentrations may cause unconsciousness and death.

Benzene is a known human carcinogen. The health effects of benzene include nerve inflammation, CNS depression, and cardiac sensitization. Chronic exposure to benzene can cause fatigue, nervousness, irritability, blurred vision, and labored breathing and has produced anorexia and irreversible injury to the blood-forming organs; effects include aplastic anemia and leukemia. Acute exposure can cause dizziness, euphoria, giddiness, headache, nausea, staggering gait, weakness, drowsiness, respiratory irritation, pulmonary edema, pneumonia, gastrointestinal irritation, convulsions, and paralysis. Benzene can also cause irritation to the skin, eyes, and mucous membranes.

Acetaldehyde is a probable human carcinogen. The health effects for acetaldehyde are irritation of the eyes, mucous membranes, skin, and upper respiratory tract, and it is a CNS depressant in humans. Chronic exposure can cause conjunctivitis, coughing, difficult breathing, and dermatitis. Chronic exposure may cause heart and kidney damage, embryotoxicity, and teratogenic effects. Acetaldehyde is a potential carcinogen in humans.

II. Summary of the Proposed Rule

A. Am I Subject to the Proposed Rule?

The proposed rule applies to you if you own or operate a stationary combustion turbine which is located at a major source of HAP emissions. A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year.

Section 112(n)(4) of the CAA requires that the aggregation of HAP for purposes of determining whether an oil and gas production facility is major or nonmajor be done only with respect to particular sites within the source and not on a total aggregated site basis. We incorporated the requirements of section 112(n)(4) of the CAA into our NESHAP for Oil and Natural Gas Production Facilities in subpart HH of part 63. As in subpart HH, we plan to aggregate HAP emissions for the purposes of determining a major HAP source for turbines only with respect to particular sites within an oil and gas production facility. The sites are called surface sites and may include a combination of any of the following equipment; glycol dehydrators, tanks which have potential for flash emissions, reciprocating internal combustion engines and combustion turbines.

Six subcategories have been defined within the stationary combustion turbine source category. While all stationary combustion turbines are subject to the proposed rule, each subcategory has distinct requirements. For example, existing diffusion flame combustion turbines and stationary combustion turbines with a rated peak power output of less than 1.0 megawatt (MW) (at International Organization for Standardization (ISO) standard day conditions) are not required to comply with emission limitations, recordkeeping or reporting requirements in the proposed rule. New or reconstructed stationary combustion turbines and existing lean premix stationary combustion turbines with a rated peak power output of 1.0 MW or more that either operate exclusively as an emergency stationary combustion turbine, as a limited use stationary combustion turbine, or as a stationary combustion turbine which burns landfill gas or digester gas as its primary fuel must only comply with the initial notification requirements. New or reconstructed diffusion flame or lean premix combustion turbines must comply with emission limitations, recordkeeping and reporting requirements in the proposed rule. The emission limitations for each subcategory are summarized in Table 2 of this preamble. You must determine your source's subcategory to determine which requirements apply to your source.

The proposed rule does not apply to stationary combustion turbines located at an area source of HAP emissions. An area source of HAP emissions is a plant site that does not emit any single HAP at a rate of 10 tons (9.07 megagrams) or greater per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or greater per year. To determine whether a facility is a major source, EPA will accept HAP emissions estimated using HAP emission factors listed in Table 1 of this preamble.

TABLE 1.—SUMMARY OF HAP EMISSION FACTORS

Turbine	Load	Fuel	HAP emission factor (lb/MMBtu)
Diffusion Flame	All loads	Natural Gas	0.0188
Diffusion Flame	>80%	Natural Gas	0.00479
Diffusion Flame	All loads	Diesel	0.00241
Diffusion Flame	>80%	Diesel	0.00233
Lean Premix	All loads	Natural Gas	0.000644
Lean Premix	>80%	Natural Gas	0.000212

If the turbine mainly operates at high load, the emission factor for greater than 80 percent load should be used. If the turbine operates on varying loads, the emission factor for all loads should be used. Emission factors were developed based on data from the combustion turbines emissions database. A copy of the emissions database may be downloaded off the internet at *http://www.epa.gov/ttn/atw/combust/turbine/turbpg.html.*

The proposed rule does not cover duct burners. They are part of the waste heat recovery unit in a combined cycle system. Waste heat recovery units, whether part of a cogeneration system or a combined cycle system, are steam generating units and are not covered by the proposed rule.

Finally, the proposed rule does not apply to stationary combustion engine test cells/stands since these facilities will be covered by another NESHAP, 40 CFR part 63, subpart PPPPP.

B. What Source Categories and Subcategories Are Affected by the Proposed Rule?

The proposed rule covers stationary combustion turbines. A stationary combustion turbine is any simple cycle stationary combustion turbine, any regenerative/recuperative cycle stationary combustion turbine, the combustion turbine portion of any stationary cogeneration cycle combustion system, or the combustion turbine portion of any stationary combined cycle steam/electric generating system. Stationary means that the combustion turbine is not self propelled or intended to be propelled while performing its function. The combustion turbine may, however, be mounted on a vehicle for portability or transportability.

Stationary combustion turbines have been divided into the following six subcategories: (1) Emergency stationary combustion turbines, (2) limited use stationary combustion turbines, (3) stationary combustion turbines which fire landfill gas or digester gas as their primary fuel, (4) stationary combustion turbines of less than 1 MW rated peak power output, (5) stationary diffusion flame combustion turbines, and (6) stationary lean premix combustion turbines.

An emergency stationary combustion turbine means any stationary combustion turbine that operates as a mechanical or electrical power source when the primary power source for a facility has been rendered inoperable by an emergency situation. One example is emergency power for critical networks or equipment when electric power from the normal source of power is interrupted. Another example is to pump water in the case of fire or flood. Peaking units at electric utilities and other types of stationary combustion turbines that typically operate at low capacity factors, but are not confined to operation in an emergency, are not emergency stationary combustion turbines.

A limited use stationary combustion turbine means any stationary combustion turbine that operates 50 hours or less per calendar year. One example is a stationary combustion turbine used to stabilize electrical power voltage and protect sensitive electronic equipment during periods of brown outs. Another example is periodic operation of an emergency stationary combustion turbine to check readiness or perform maintenance checks. Since electrical power has not been interrupted during these readiness and maintenance checks, the stationary combustion turbine is not operating as an emergency stationary combustion turbine.

We are specifically soliciting comments on creating a subcategory of limited use combustion turbines with a capacity utilization of 10 percent or less. This is further discussed in the ‘‘Solicitation of Comments and Public Participation’’ section of this preamble.

Stationary combustion turbines which fire landfill gas or digester gas as their primary fuel qualify as a separate subcategory because the types of control available for these turbines are limited.

Stationary combustion turbines of less than 1 MW rated peak power output were also identified as a subcategory. These small stationary combustion turbines are few in number and, to our knowledge, none use emission control technology to reduce HAP. Given the very small size of these stationary combustion turbines and the lack of application of HAP emission control technologies, we have concerns about the applicability of HAP emission control technology to them.

The stationary diffusion flame combustion turbines subcategory includes only diffusion flame combustion turbines that are greater than 1 MW rated peak power output and are not emergency stationary combustion turbines, limited use stationary combustion turbines, or stationary combustion turbines which fire landfill gas or digester gas as their primary fuel. In a diffusion flame combustor, the fuel and air are injected at the combustor and are mixed only by diffusion prior to ignition. Hazardous air pollutants emissions from these turbines can be significantly decreased with the addition of air pollution control equipment.

The stationary lean premix combustion turbines subcategory includes only lean premix combustion turbines that are greater than 1 MW rated peak power output and are not emergency stationary combustion turbines, limited use stationary combustion turbines, or stationary combustion turbines which fire landfill gas or digester gas as their primary fuel. Lean premix technology, introduced in the 1990's, was developed to reduce NO_X emissions without the use of add on controls. In a staged lean premix combustor, the air and fuel are thoroughly mixed to form a lean mixture before delivery to the combustor. The staged entry limits the flame temperature and the residence time at the peak flame temperature. Lean premix combustors emit lower levels of NO_X, carbon monoxide (CO), formaldehyde and other HAP than diffusion flame combustion turbines.

C. What Are the Primary Sources of HAP Emissions and What Are the Emissions?

The sources of emissions are the exhaust gases from combustion of gaseous and liquid fuels in a stationary combustion turbine. Hazardous air pollutants that are present in the exhaust gases from stationary combustion turbines include formaldehyde, toluene, benzene, and acetaldehyde.

D. What Are the Emission Limitations and Operating Limitations?

As the owner or operator of an existing lean premix stationary combustion turbine or a new or reconstructed stationary combustion turbine located at a major source of HAP emissions, you must comply with one of the following two emission limitations by the effective date of the standard (or upon startup if you start up your stationary combustion turbine after the effective date of the standard): (1) Reduce CO emissions in the exhaust from the new or reconstructed stationary combustion turbine by 95 percent or more, if you use an oxidation catalyst emission control device; or (2) reduce the concentration of formaldehyde in the exhaust from the new or reconstructed stationary combustion turbine to 43 parts per billion by volume or less, dry basis (ppbvd), at 15 percent oxygen, if you use means other than an oxidation catalyst emission control device.

There are no operating limitations if you choose to comply with the emission limitation for CO emission reduction. If you comply with the emission limitation for formaldehyde emissions and your stationary combustion turbine is not lean premix or diffusion flame, you must comply with any additional operating limitations approved by the Administrator, as discussed later.

Finally, as mentioned earlier, stationary combustion turbines with a rated peak power output of less than 1.0 MW, emergency stationary combustion turbines, limited use stationary combustion turbines, and stationary combustion turbines which burn landfill gas or digester gas as their primary fuel, are not required to comply with these emission limitations. In addition, existing diffusion flame stationary combustion turbines, are not required to comply with these emission limitations. The emission limitations for each subcategory are summarized in Table 2 of this preamble.

TABLE 2.—SUMMARY OF EMISSION LIMITATIONS

Subcategory	Emission limitation	Comment
Existing Diffusion Flame Stationary Combustion Turbine ≥ 1.0 MW.	None	No requirements.
Existing Lean Premix Stationary Combustion Turbine ≥ 1.0 MW. or New/Reconstructed Stationary Combustion Turbine ≥ 1.0 MW.	(1) Reduce CO emissions by 95% or more, if you use an oxidation catalyst emission control device. or (2) Reduce the concentration of formaldehyde to 43 ppbvd @ 15% O_2, if you use means other than an oxidation catalyst emission control device.	
Emergency Stationary Combustion Turbine or Limited Use Stationary Combustion Turbine or Landfill/Digester Gas Stationary Combustion Turbine.	No emission limitations	Initial notification requirements only.
≤ 1 MW Stationary Combustion Turbine	None	No requirements.

E. What Are the Initial Compliance Requirements?

The initial compliance requirements for a stationary combustion turbine vary depending on the subcategory of your combustion turbine and your control strategy.

If you operate a new or reconstructed stationary combustion turbine and comply with the emission limitation for CO emission reduction, you must install a continuous emission monitoring system (CEMS) to measure CO and either carbon dioxide or oxygen simultaneously at the inlet and outlet of the oxidation catalyst emission control device. To demonstrate initial compliance, you must conduct an initial performance evaluation using Performance Specifications 3 and 4A of 40 CFR part 60, appendix B. You must demonstrate that the reduction of CO emissions is at least 95 percent using the first 4-hour average after a successful performance evaluation. Your inlet and outlet measurements must be on a dry basis and corrected to 15 percent oxygen or equivalent carbon dioxide content. You must also conduct an annual relative accuracy test audit (RATA) of the CEMS using Performance Specifications 3 and 4A of 40 CFR part 60, appendix B.

If you operate a new or reconstructed combustion turbine or an existing lean premix combustion turbine and comply with the emission limitation for formaldehyde emissions, you must conduct an initial performance test using Test Method 320 of 40 CFR part 63, appendix A; ARB Method 430 of California Environmental Protection Agency, Air Resources Board, 2020 L Street, Sacramento, CA 95812; or EPA Solid Waste (SW)–846 Method 0011 to demonstrate that the outlet concentration of formaldehyde is 43 ppbvd or less (corrected to 15 percent oxygen). Natural gas-fired sources may also use the proposed Test Method 323 of 40 CFR part 63, appendix A, to measure formaldehyde. To correct to 15 percent oxygen, dry basis, you must measure oxygen using Method 3A or 3B of 40 CFR part 60, appendix A, and moisture using Method 4 of 40 CFR part 60, appendix A.

As stated previously, if you choose to comply with the emission limitation for formaldehyde emissions and your stationary combustion turbine is not lean premix or diffusion flame, you must also petition the Administrator for approval of operating limitations or approval of no operating limitations.

If you petition the Administrator for approval of operating limitations, your petition must include the following: (1) Identification of the specific parameters you propose to use as operating limitations; (2) a discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters and how limitations on these parameters will serve to limit HAP emissions; (3) a discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations; (4) a discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and (5) a discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

If you petition the Administrator for approval of no operating limitations, your petition must include the following: (1) Identification of the parameters associated with operation of the stationary combustion turbine and any emission control device which could change intentionally (*e.g.*, operator adjustment, automatic controller adjustment, etc.) or unintentionally (*e.g.*, wear and tear, error, etc.) on a routine basis or over time; (2) a discussion of the relationship, if any, between changes in these parameters and changes in HAP emissions; (3) for those parameters with a relationship to HAP emissions, a discussion of whether establishing limitations on these parameters would serve to limit HAP emissions; (4) for those parameters with a relationship to HAP emissions, a discussion of how you could establish upper and/or lower values for these parameters which would establish limits on these parameters in operating limitations; (5) for those parameters with a relationship to HAP emissions, a discussion identifying the methods you could use to measure these parameters and the instruments you could use to monitor them, as well as the relative accuracy and precision of these methods and instruments; (6) for these parameters, a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and (7) a discussion of why, from your point of view, it is infeasible or unreasonable to adopt these parameters as operating limitations.

F. What Are the Continuous Compliance Provisions?

Several general continuous compliance requirements apply to stationary combustion turbines required to comply with the emission limitations. You are required to comply with the emission limitations and the operating limitations (if applicable) at all times, except during startup, shutdown, and malfunction of your stationary combustion turbine. You must also operate and maintain your stationary combustion turbine, air pollution control equipment, and monitoring equipment according to good air pollution control practices at all times, including startup, shutdown, and malfunction. You must conduct all monitoring at all times that the stationary combustion turbine is operating, except during periods of malfunction of the monitoring equipment or necessary repairs and quality assurance or control activities, such as calibration checks.

To demonstrate continuous compliance with the CO emission reduction limitation, you must calibrate and operate your CEMS according to the requirements in 40 CFR 63.8. You must continuously monitor and record the CO concentration before and after the oxidation catalyst emission control device and calculate the percent reduction of CO emissions hourly. The reduction in CO emissions must be 95 percent or more, based on a rolling 4-hour average, averaged every hour.

To demonstrate continuous compliance with the operating limitations (if applicable), you must continuously monitor the values of any parameters which have been approved by the Administrator as operating limitations.

The proposed rule does not require your lean premix combustion turbine to demonstrate continuous compliance. It is assumed that if you meet the low NO_X emission levels required by your federally enforceable permit (or guaranteed by the turbine manufacturer if there is no permit level), your turbine is in compliance with the 43 ppbvd formaldehyde emission limit.

G. What Monitoring and Testing Methods Are Available to Measure These Low Concentrations of CO and Formaldehyde?

Continuous emissions monitoring systems are available which can accurately measure CO emission reduction at the low concentrations found in the combustion turbine exhaust following an oxidation catalyst emission control device. Our performance specification for CO CEMS (PS–4A) of 40 CFR part 60, appendix A, however, has not been updated recently and does not reflect the performance capabilities of these systems. We are currently undertaking a review of PS–4A of 40 CFR part 60, appendix A, for CO CEMS and, in conjunction with this effort, we solicit comments on the performance capabilities of CO CEMS and their ability to accurately measure the low concentrations of CO experienced in the exhaust of a combustion turbine following an oxidation catalyst emission control device.

Similarly, our Fourier Transform Infrared (FTIR) test method, Method 320 of 40 CFR part 63, appendix A, as well as EPA SW–846 Method 0011 and CARB Method 430, can be used to accurately measure formaldehyde concentrations in the exhaust of a combustion turbine as low as 43 ppbvd. As these test methods are currently written, however, they do not provide for this level of accuracy. These methods must be used with some revisions to achieve such accuracy.

As a result, we are currently undertaking a review of our FTIR method, Method 320 of 40 CFR part 63, appendix A, to incorporate revisions to ensure it can be used to accurately measure formaldehyde concentrations as low as 43 ppbvd in the exhaust from a combustion turbine. In conjunction with this effort, we solicit comments on revisions to Method 320 of 40 CFR part 63, appendix A, to ensure accurate measurement of such low concentrations of formaldehyde.

We are also proposing to add Method 323 of 40 CFR part 63, appendix A. Method 323 is for the measurement of formaldehyde emissions from natural gas-fired stationary sources using acetyl acetone derivitization. We solicit comments on the use of this method to measure low concentrations of formaldehyde.

H. What Are the Notification, Recordkeeping and Reporting Requirements?

You must submit all of the applicable notifications as listed in the NESHAP General Provisions (40 CFR part 63, subpart A), including an initial notification, notification of performance test or evaluation, and a notification of compliance, for each stationary combustion turbine which must comply with the emission limitations. If your new or reconstructed source is located at a major source, has greater than 1 MW rated peak power output, and is an emergency stationary combustion turbine, limited use stationary combustion turbine or a combustion turbine which fires landfill or digester gas as its primary fuel, you must submit only an initial notification.

For each combustion turbine subject to the emission limitations, you must record all of the data necessary to determine if you are in compliance with the emission limitations. Your records must be in a form suitable and readily available for review. You must also keep each record for 5 years following the date of each occurrence, measurement, maintenance, report, or record. Records must remain on site for at least 2 years and then can be maintained off site for the remaining 3 years.

You must submit a compliance report semiannually for each new or reconstructed stationary combustion turbine that must comply with the CO emission reduction limitation. This report must contain the company name and address, a statement by a responsible official that the report is accurate, a statement of compliance, or documentation of any deviation from the requirements of the proposed rule during the reporting period.

III. Rationale for Selecting the Proposed Standards

A. How Did We Select the Source Category and Any Subcategories?

Stationary combustion turbines can be major sources of HAP emissions and, as a result, we listed them as a major source category for regulatory development under section 112 of the CAA. Section 112 of the CAA allows us to establish subcategories within a source category for the purpose of regulation. Consequently, we evaluated several criteria associated with stationary combustion turbines which might serve as potential subcategories.

We identified six subcategories of stationary combustion turbines located at major sources: (1) Emergency stationary combustion turbines, (2) limited use stationary combustion turbines, (3) stationary combustion turbines which fire landfill gas or digester gas as their primary fuel, (4) stationary combustion turbines of less than 1 MW rated peak power output, (5) stationary diffusion flame combustion turbines, and (6) stationary lean premix combustion turbines.

Stationary combustion turbines can be classified as either diffusion flame or lean premix. We examined formaldehyde test data for both diffusion flame and lean premix stationary combustion turbines and observed that uncontrolled formaldehyde emissions for stationary lean premix combustion turbines are significantly lower than those of stationary diffusion flame combustion turbines. An analysis of the formaldehyde emissions data shows that uncontrolled formaldehyde emissions from stationary lean premix combustion turbines are comparable to controlled formaldehyde emissions from stationary diffusion flame combustion turbines controlled with oxidation catalyst systems. Due to the difference in the two technologies, we decided to establish subcategories for diffusion flame and lean premix stationary combustion turbines.

We identified emergency stationary combustion turbines as a subcategory. Emergency stationary combustion turbines operate only in emergencies, such as a loss of power provided by another source. These types of stationary combustion turbines operate infrequently and, when called upon to operate, must respond without failure and without lengthy periods of startup. These conditions limit the applicability of HAP emission control technology to emergency stationary combustion turbines.

Limited use stationary combustion turbines were also identified as a subcategory. These types of stationary combustion turbines are operated 50 hours per calendar year or less. They are used primarily to stabilize electrical power voltage levels during periods of brown outs to prevent damage to sensitive electronic equipment. As with emergency stationary combustion turbines, they are operated infrequently and, when called upon to operate, must respond without failure and without lengthy periods of startup. These conditions limit the applicability of HAP emission control technology.

Similarly, stationary combustion turbines which fire landfill gas or digester gas as their primary fuel were identified as a subcategory. Landfill and digester gases contain a family of chemicals referred to as siloxanes, which limit the application of HAP emission control technology.

Stationary combustion turbines of less than 1 MW rated peak power output were also identified as a subcategory. We believe these small stationary combustion turbines are few in number and, to our knowledge, none use emission control technology to reduce HAP. Given the very small size of these stationary combustion turbines and the lack of application of HAP emission control technologies, we have concerns about the applicability of HAP emission control technology to them.

B. What About Stationary Combustion Turbines Located at Area Sources?

The proposed rule does not apply to stationary combustion turbines located at an area source of HAP emissions. In developing our Urban Air Toxics Strategy, we identified area sources we believe warrant regulation to protect the environment and the public health and satisfy the statutory requirements in section 112 of the CAA pertaining to area sources. Stationary combustion turbines located at area sources were not included on that list. As a result, the proposed rule does not apply to these stationary combustion turbines.

C. What Is the Affected Source?

The proposed rule applies to any stationary combustion turbine located at a major source. Consequently, stationary combustion turbines located at major sources of HAP emissions are the affected source under the proposed rule.

D. How Did We Determine the Basis and Level of the Proposed Emission Limitations for Existing Sources?

As established in section 112 of the CAA, the MACT standards must be no less stringent than the MACT floor. The MACT floor for existing sources is the average emission limitation achieved by the best performing 12 percent of existing sources.

1. MACT Floor for Existing Diffusion Flame Combustion Turbines

To determine the MACT floor for existing stationary diffusion flame combustion turbines, we primarily consulted two databases: an inventory database and an emissions database. The MACT floors and MACT for stationary diffusion flame combustion turbines located at major sources were developed through the analyses of these databases.

The inventory database provides population information on stationary combustion turbines in the United States (U.S.) and was constructed in order to support the proposed rulemaking. Data in the inventory database are based on information from available databases, such as the Aerometric Information Retrieval System (AIRS), the Ozone Transport and Assessment Group (OTAG), and State and local agencies' databases. The first version of the database was released in 1997. Subsequent versions have been released reflecting additional or updated data. The most recent release of the database is version 4, released in November 1998.

The inventory database contains information on approximately 4,800 stationary combustion turbines. The current stationary combustion turbine population is estimated to be about 8,000 turbines. Therefore, the inventory database represents about 60 percent of the stationary combustion turbines in the U.S. At least 90 percent of those turbines are assumed to be diffusion flame combustion turbines, based on conversations with turbine manufacturers.

The information contained in the inventory database is believed to be representative of stationary combustion turbines primarily because of its comprehensiveness. The database includes both small and large stationary combustion turbines in different user segments. Forty-eight percent are ''industrial,'' 39 percent are ''utility,'' and 13 percent are ''pipeline.'' Note that independent power producers (IPP) are included in the utility and industrial segments.

We examined the inventory database for information on HAP emission control technology. There were no turbines controlled with oxidation catalyst systems in the inventory database so we used information supplied by catalyst vendors. There are about 200 oxidation catalyst systems installed in the U.S. The only control technology currently proven to reduce HAP emissions from stationary diffusion flame combustion turbines is an oxidation catalyst emission control device, such as a CO oxidation catalyst. These control devices are used to reduce CO emissions and are currently installed on several stationary combustion turbines. However, less than 3 percent of existing stationary diffusion flame combustion turbines in the U.S., based on information in our inventory database and information from catalyst vendors, are equipped with oxidation catalyst emission control devices; thus, the average of the best performing 12 percent of existing diffusion flame combustion turbines is no HAP emissions reductions.

We also investigated the use of good operating practices for stationary diffusion flame combustion turbines to determine if the use of such practices might identify a MACT floor. There are no references in the inventory database to good operating practices for any stationary combustion turbines.

Most stationary diffusion flame combustion turbines will not operate unless preset conditions established by the manufacturer are met. Stationary diffusion flame combustion turbines, by manufacturer design, permit little operator involvement and there are no operating parameters, such as air/fuel ratio, for the operator to adjust. We concluded, therefore, that there are no specific good operating practices which could reduce HAP emissions or which could serve to identify a MACT floor.

We also investigated switching fuels in existing diffusion flame combustion turbines using fuels which result in higher HAP emissions with fuels that result in lower HAP emissions. When we compared the HAP emissions of the various fuels from combustion turbines using the April 2000 revision of Chapter 3.1 (Stationary Gas Turbines) of ''Compilation of Air Pollutant Emission Factors AP–42, Fifth Edition, Volume 1: Stationary Point and Area Sources,'' we could not find a fuel that was clearly less HAP emitting. The summation of emission factors for various HAP when using natural gas (usually considered the cleanest fuel), diesel fuel, landfill, or digester gas were comparable based on the emission factor information that is available. Therefore, we could not identify a MACT floor based on use of a particular fuel.

Another approach we investigated to identify a MACT floor was to review the requirements in existing State regulations and permits. No State regulations exist for HAP emission limits for stationary combustion turbines. Only one State permit limitation for a single HAP (benzene) was identified. Therefore, we were unable to use State regulations or permits to identify a MACT floor.

As a result, we concluded the MACT floor for existing stationary diffusion flame combustion turbines is no emissions reductions.

2. MACT for Existing Diffusion Flame Combustion Turbines

To determine MACT for existing stationary diffusion flame combustion turbines, we evaluated regulatory alternatives more stringent than the MACT floor. For existing diffusion flame sources, in terms of an emission control technology which could serve as the basis for MACT, we considered two beyond-the-floor options. The first option considered was the use of an oxidation catalyst emission control device. However, we concluded that the incremental cost per ton of HAP removed for this option is excessive.

The incremental cost per ton is the difference in annual costs between this regulatory option and the MACT floor divided by the difference in annual emissions. It is often used as a measure of the economic feasibility of applying emission control technology to a source.

We also considered the nonair health, environmental, and energy impacts of an oxidation catalyst system, as discussed previously in this preamble, and concluded that there would be only a small energy impact and no nonair health or environmental impacts. However, as stated above, we did not adopt this regulatory option due to cost considerations.

The second option considered was to switch fuels in existing turbines using fuels which result in higher HAP emissions with fuels that result in lower HAP emissions. As stated above, we could not find a fuel that was clearly less HAP emitting. Therefore, we could find no basis to further consider fuel switching as a beyond-the-floor HAP emissions reductions option. We were unable to identify any other beyond-the-floor regulatory option to consider. As discussed above, we are not aware of any specific good operating practices for diffusion flame turbines that could reduce HAP emissions. As a result, we concluded that MACT for existing diffusion flame combustion turbines is the MACT floor (*i.e.*, no emissions reductions).

3. MACT Floor for Existing Lean Premix Combustion Turbines

There are an estimated 800 lean premix combustion turbines in the U.S., of which 160 are estimated to be major sources. For existing lean premix combustion turbines, we must establish a MACT floor which represents the average emission limitation achieved by the best performing 12 percent of the existing sources for which we have emissions information. We have emissions information on five existing lean premix combustion turbines. Therefore, we plan to establish the MACT floor based on the performance of the best performing lean premix combustion turbine. (This best performing turbine represents the top 20 percent of the existing turbines for which we have emissions information and will also be used to establish the MACT floor for new lean premix combustion turbines.) The best performing existing lean premix combustion turbine achieved a level of formaldehyde concentration emission which averaged 6.1 parts per billion (ppb) formaldehyde at 15 percent oxygen (O2). This is the best performer out of five lean premix combustion turbine tests for which we have data. The three-run average formaldehyde emissions from these five turbines ranged from 6.1 to 41 ppb formaldehyde. The formaldehyde concentrations for the individual runs for the best performing turbine were 5.1 ppb, 5.7 ppb, and 7.7 ppb.

The test method that was used to measure the emissions from the best performing turbine was California Air Resources Board (CARB) Method 430. We do not believe that the MACT emission limit should be set lower than the limit of detection of the method. If it were, we could not determine whether a source with test results at the limit of detection was actually in compliance with the MACT emission limit. For the test runs on the best performing turbine, we determined that the method had a minimum detection level (MDL) of between 2 and 3 ppb formaldehyde. We expect the MDL to vary somewhat in actual practice and, thus, do not assume that the MDL would be the same if the method were run by another person or at another laboratory. We have no information regarding the distribution of the CARB Method 430 MDL actually achieved by other testers. We want to ensure that the MACT floor reflects the variability in the limit of detection determined by different, competent testers throughout the U.S. using the same method, *i.e.*, CARB Method 430. We only have one test, the test conducted on the best performing turbine, to try to determine a limit of detection for this method, and this is not enough information to determine the variability in the limit of detection among different testers. If we had sufficient information on the limit of detection determined by different competent testers using Method 430, under similar conditions, we would analyze the results to determine the average limit of detection and its standard deviation. To establish a limit of detection that would be achievable by approximately 99 percent of all the testers, we would add three times the standard deviation to the average limit of detection. Since we do not have this information, we can attempt to estimate it. We believe that it is reasonable to assume that the standard deviation of the limit of detection is no greater than the single estimate of the limit that we have. If we multiply the single value of the limit of detection by three and add it to itself, the result is an estimate of the upper bound for the limit of detection that is four times the single measured value that we have. Based on the considerations above, the lowest MACT floor that we believe would take into account the variability in the MDL is 12 ppb. This level provides a safety factor of four to account for uncertainty in whether testers could routinely achieve a limit of detection of 2 to 3 ppb formaldehyde.

The combustion turbine MACT would be a national standard, and therefore, the MACT limit should reflect variations in the performance of the best performing turbine that could occur. There are two major sources of variability that together produce the total variability observed in the emissions sample results. These sources of variability are: the actual variability in the emissions, and the variability associated with procedures for sampling and analyzing the emissions samples. We believe there is substantial basis to conclude that sources of variability unrelated to turbine performance account for the differences in formaldehyde emissions concentrations between the five turbines. We discuss these sources of variability in more detail below.

When we began investigating the possible sources of the actual (non-sampling, non-analytical) variability in lean premix combustion turbine emissions, we realized that turbine performance was only one of several possible sources of that variability, and that turbine emissions also could vary widely due to environmental and operational factors that are unrelated to turbine performance and that are beyond an operator's control.

Specifically, formaldehyde concentrations are expected to vary temporally (*e.g.*, seasonally) and spatially (*e.g.*, geographically) due to environmental and operational factors such as temperature, humidity, atmospheric pressure, fuel quality, and the concentrations of formaldehyde present in the ambient air. It is our judgement that if the turbines were tested at various times during the year and at various locations throughout the U.S., the concentration of formaldehyde emitted by a given turbine could vary by a factor of seven or more, solely due to geographic and temporal differences in temperature, humidity, atmospheric pressure, fuel quality, and formaldehyde concentration in the ambient air. This factor is based not only on the short term variability of the data for the turbine with the lowest reported formaldehyde emissions, but also on the test data from all five turbines.

Variations in temperature, humidity, atmospheric pressure, and fuel quality are known to have resulted in fluctuations in criteria pollutant stack concentrations (*e.g.*, NO_X, VOC, and CO), and we anticipate that they also would cause variations in formaldehyde concentrations in the combustion turbine stack. An owner or operator cannot control the variability of environmental parameters such as ambient temperature, humidity, or atmospheric pressure. With regard to fuel quality, an owner or operator cannot control the quality of the natural gas delivered through a pipeline, or the nature and concentration of natural gas additives or contaminants. The five turbines for which we have formaldehyde emissions data operate at four locations in the Western U.S. that are at considerably different altitudes. Moreover, each of the five turbines was sampled over only a 3-hour period, and the five sampling events occurred in four different months of the year: April, May, June (two turbines), and December. Therefore, we believe that the variability in formaldehyde concentration of the turbine emissions will be greater than the variability reflected in the 3-hour sampling period.

Furthermore, we believe that the variability observed in the available turbine emissions data may reflect the variability of formaldehyde concentrations in ambient air—much of which is due to natural causes. The average concentration of formaldehyde in ambient air varies between 2 and 25 ppb within the U.S., with a U.S. annual average urban concentration of 5.17 ug/m^3 (4.2 ppb).[1] The difference between hourly maximum and minimum formaldehyde concentrations across the U.S. would be even greater than the average annual 23 ppb range in U.S. formaldehyde concentrations. We do not have information that specifically shows that the ambient concentration of formaldehyde affects the stack outlet concentration of formaldehyde. We expect that some formaldehyde, especially the portion that goes through the combustors, would be destroyed. However, about two-thirds of the inlet combustion turbine air bypasses the combustors. We are not sure that all of the ambient formaldehyde that enters with the combustion air is destroyed and, therefore, ambient formaldehyde may affect the formaldehyde concentration in the outlet stack of the combustion turbine. For example, if half of the ambient formaldehyde passes through to the outlet stack, the annual average contribution of ambient formaldehyde to the stack formaldehyde concentration may be in the 10 ppb range in some parts of the U.S. This means that hourly formaldehyde emissions from the outlet stack of a given turbine could differ by over 10 ppb based solely on the region of the country where the turbine is located.

Sampling variability is a result of the fact that it is impossible to collect two samples in exactly the same way. Sampling variability occurs both when an individual intends to collect replicate samples of the same emissions stream, and when sampling is conducted by different personnel using different procedures and different equipment under different physical conditions. If the same sampling personnel collect a suite of samples using the same equipment and procedures, the variability of the sampling results will be reduced. However, a given individual or a given piece of equipment may impart bias, a

[1] 1998 National Air Quality and Emission Trends Report, Table 5–2 and Figure 5–1a.

systematic error, into the sampling procedure. In the context of an aggregate of data collected by different personnel using different procedures and different equipment under different physical conditions, this bias could have the effect of increasing the variability of the data. The emissions sample results for the five turbines evaluated for the proposed rule were provided by state agencies, and samples were not collected by the same sampling personnel, or even personnel acting in coordination with one another and following the same sampling plan and methodologies, increasing the non-systematic sampling-induced variability across the five sets of turbine samples and also increasing the chance that any bias imposed on each set of turbine samples might also increase the variability of the results. Moreover, two different sampling and analysis procedures were used to collect the samples, EPA Method 0011 and CARB Method 430, likely introducing additional variability into the sampling procedure. For example, EPA generally recognizes that the quality assurance/quality control (QA/QC) protocols for CARB Method 430 are more rigorous than those for EPA Method 0011. Similar to sampling variability, variability occurs when samples are analyzed at the same time in the same laboratory (*e.g.*, variability is seen in the results of a laboratory's repeated analysis of the same sample) and occurs when samples are analyzed by different laboratories. For example, analytic variability may result from the use of different analytical procedures, different equipment, different laboratory environments, different reagents, different sampling handling procedures, and different analysts. The emissions samples evaluated for the proposed rule were analyzed in different laboratories, by different analysts, and using two different analytical procedures. The EPA suspects that sampling and analytic variability may be a significant source of the variability of formaldehyde emissions results reported for the five tested turbines, and that if stricter QA/QC protocols were followed, the results for the five turbines might have been closer in magnitude.

One measure of overall variability (*i.e.*, variability from all sources—environmental, operational, test method, etc.) is the variability of formaldehyde concentration that the best performing turbine demonstrated during the three test runs. The formaldehyde concentration varied between 5.1 and 7.7 ppb formaldehyde, a factor of 1.5 during only a 3-hour period. Another measure of formaldehyde concentration variability is the variability in formaldehyde concentration from the five lean premix combustion turbines tested. As stated previously, the average formaldehyde concentration varied between 6.1 and 41 ppb (a factor of seven). We reviewed the emission test reports and could not find any specific reason to account for the variability. These tests were properly conducted, and the lean premix combustion turbines were operating properly. Therefore, we believe that at least some portion, and possibly all, of that variability is due to factors other than turbine performance. As a result, we believe that some variability in formaldehyde concentration of the best performing turbine will occur beyond the variability reflected by the three test runs. It is our judgement that if the best performing turbine were tested at various times during the year and at various locations throughout the U.S., the overall formaldehyde concentration of the best performing turbine could vary by a factor of seven or more. This factor is based on the short term variability of the test data from the best performing turbine and also on the test data from the five turbine tests mentioned previously. Therefore, we believe that 43 ppbvd formaldehyde is a reasonable approximation of the performance of the best performing turbine, taking into account all of the types of variability discussed above. As a result, we are proposing an emission limit of 43 ppbvd formaldehyde as the MACT floor for existing lean premix combustion turbines.

The lean premix combustor turbine technology varies to some extent regarding its uncontrolled emissions of NO_X and CO and possibly HAP. The data that we have obtained for the five source tests were based primarily on lean premix combustor turbines that can achieve lower than 15 ppm NO_X and less than 5 ppm CO (at full load) at 15 percent O_2 without add-on controls. Lean premix combustor turbines which have these characteristics are the types of lean premix combustor turbines that we believe will most likely achieve the 43 ppb formaldehyde emission limit. Other types of lean premix combustor turbines which achieve 45 ppm NO_X and as high as 200 ppm CO at 15 percent O_2 may not achieve the 43 ppb formaldehyde emission limit. Typically, the lean premix combustor turbines in the latter category are smaller aeroderivative turbines.

Therefore, we realize that not all lean premix combustor turbines will be able to achieve the 43 ppb formaldehyde emission limitation and some will have to install add-on controls. Most new turbines projected to be installed at power plants are expected to be able to achieve the 43 ppb emission limitation.

We request public comment on the proposed MACT floor level for existing lean premix combustion turbines. We are particularly interested in obtaining information on the annual/seasonal and geographic variability in formaldehyde emissions that occur for lean premix combustion turbines. Formaldehyde emission test reports that were conducted over time for the same lean premix combustion turbine would be especially helpful. We are also soliciting information regarding the contribution of ambient formaldehyde to the variability of outlet stack concentrations of formaldehyde.

4. MACT for Existing Lean Premix Combustion Turbines

To determine MACT for existing stationary lean premix combustion turbines, we evaluated regulatory alternatives more stringent than the MACT floor. For existing lean premix turbines, in terms of an emission control technology which could serve as the basis for MACT, we considered the use of an oxidation catalyst emission control device. According to catalyst vendors, oxidation catalyst emission control is being used on some existing lean premix combustion turbines, however, we lack specific data regarding the performance of turbines with such controls. The concentration of formaldehyde in the exhaust stream from lean premix combustion turbines is already significantly lower than the concentration of formaldehyde in the exhaust stream from diffusion flame combustion turbines, and any reduction achieved by oxidation catalyst control would be difficult to measure. Thus, we concluded that the incremental cost per ton of HAP removed for that option is excessive. We also considered the use of good operating practices to reduce HAP emissions, but determined that we could not identify specific good operating practices that would reduce HAP emissions. Similarly, we also considered requiring the use of a particular fuel to reduce HAP emissions but concluded that fuel switching would not result in further HAP emissions reductions. As a result, we are proposing to set MACT for existing lean premix combustion turbines at the MACT floor (*i.e.*, 43 ppbvd formaldehyde).

E. How Did We Determine the Basis and Level of the Proposed Emission Limitations and Operating Limitations for New Sources?

For new sources, the MACT floor is defined as the emission control that is achieved in practice by the best controlled similar source.

1. MACT Floor for New Diffusion Flame Combustion Turbines

To identify the MACT floor for new stationary combustion turbines located at major sources, we consulted the inventory database and oxidation catalyst vendor information. As mentioned earlier, oxidation catalyst emission control devices are currently installed on about 3 percent of stationary diffusion flame combustion turbines. This 3 percent represents about 200 stationary combustion turbines. We also considered whether the best controlled diffusion flame combustion turbine might be using good operating practices or a particular fuel that would reduce HAP emissions further and concluded, as we had previously in this preamble for existing sources, that we could not identify specific good operating practices that would reduce HAP emissions, and that fuel switching would not result in further HAP emissions reductions. We concluded, therefore, that the level of HAP emission control achieved by the use of oxidation catalyst emission control devices is the MACT floor for new stationary combustion turbines.

After establishing this basis for the MACT floor, we determined the level of performance based on the data available in the emissions database. The emissions database, which is a compilation of available HAP emission test reports, was created for the purpose of supporting rulemaking for the proposed rule. The majority of HAP emission test reports collected were conducted in California as part of the AB 2588 (Air Toxics ‘‘Hot Spots’’ Information Assessment Act of 1987) program. Complete copies of HAP emission test reports for stationary combustion turbines were gathered from all air districts in California and from other sources, such as the EPA Source Test Information Retrieval System (STIRS). Other States, including Washington, Texas, Pennsylvania, and New Jersey, and trade associations such as the Western States Petroleum Association (WSPA) and the Gas Research Institute (GRI) were also contacted for available HAP emission test reports.

We then examined the emission control efficiency achieved by an oxidation catalyst emission control device on a stationary combustion turbine. We concluded that CO emission reductions are a good surrogate for HAP emissions reductions for oxidation catalyst emission control devices.

This conclusion that CO emission reductions are a good surrogate for HAP emissions reductions achieved through the use of oxidation catalyst emission control devices is also supported by data we have collected from the use of oxidation catalyst emission control devices on stationary reciprocating internal combustion engines (RICE). These data from stationary RICE also show a direct relationship between CO emission reductions and HAP emissions reductions. When oxidation catalyst emission control devices are used to reduce CO emissions, they will reduce HAP emissions.

The emissions database contains several emission test reports that measured HAP and CO emissions from stationary combustion turbines, but no emission test reports that measure the emission reduction efficiency of an oxidation catalyst emission control device (measuring CO and HAP emissions both before and after the control device). However, we obtained information from a catalyst vendor for two tests for one turbine. The results of those tests show that a CO reduction of 95 to 98 percent was achieved using an oxidation catalyst control system. We reviewed the test report for the data to assure that the turbine was operated correctly and that there was no turbine or control device malfunction; we found no discrepancy. In addition to emissions testing data, we reviewed design data from oxidation catalyst vendors for the systems installed in the U.S. The typical emission reduction for turbines that have been installed is 90 percent CO emission reduction, with a few systems that are designed to be 95 percent or greater.

We reviewed other factors such as operator training in addition to the control technology itself that could potentially result in better emission reduction, but we found no effect of those factors on the control efficiency. Based on the conclusions and data, we believe that 95 percent represents the level of control that can be achieved by the best controlled similar source. As a result, we concluded that the level of performance associated with the MACT floor (*i.e.*, use of an oxidation catalyst emission control device) is an emission reduction efficiency of 95 percent or more for CO. The MACT floor for new stationary diffusion flame combustion turbines is, therefore, a CO emission reduction efficiency of 95 percent or more, using an oxidation catalyst control system.

2. MACT for New Diffusion Flame Combustion Turbines

We were unable to identify any beyond-the-floor regulatory alternatives for new stationary combustion turbines. We know of no emission control technology currently available which can reduce HAP emissions to levels lower than that achieved through the use of oxidation catalyst emission control devices. Similarly, we know of no work practice that could further reduce HAP emissions. In addition, fuel switching will not result in further reductions of HAP emissions. We concluded, therefore, that MACT for new diffusion flame stationary combustion turbines is equivalent to the MACT floor. It should be noted that the majority of new combustion turbines are expected to be lean premix combustion turbines based on the significantly reduced emissions of NO_X, CO, and formaldehyde. We estimate that less than 5 percent of new combustion turbines will be diffusion flame. Diesel-fired combustion turbines cannot be operated in the lean premix mode, and these turbines would have to install an oxidation catalyst system.

3. MACT Floor for New Lean Premix Combustion Turbines

To determine the MACT floor for new stationary lean premix combustion turbines, we based our analysis on the same emissions data for formaldehyde that we used for the existing MACT floor. The MACT floor for existing lean premix combustion turbines is based on the performance of the best performing lean premix combustion turbine; this same level of performance can, therefore, be used to determine the MACT floor for new lean premix combustion turbines. As discussed previously in the existing source MACT, we believe that 43 ppbvd formaldehyde represents the best performing turbine. The MACT floor for new lean premix combustion turbines is, therefore, an emission limit of 43 ppbvd formaldehyde.

4. MACT for New Lean Premix Combustion Turbines

To determine MACT for new stationary lean premix combustion turbines, we evaluated regulatory alternatives more stringent than the MACT floor. As with existing lean premix combustion turbines, we considered the use of an oxidation catalyst control system. However, although catalyst vendors have indicated that some existing lean premix combustion turbines are using oxidation catalyst emission control, we lack specific data regarding the performance of turbines with such controls. The HAP concentration in the lean premix combustion turbine exhaust is very low and, therefore, would be difficult to measure if it were further reduced through the installation of an oxidation catalyst. Due to the low HAP levels, the cost per ton of HAP removed would be very high. We concluded, therefore, that MACT for new stationary lean premix combustion turbines is equivalent to the MACT floor.

5. MACT for Other Subcategories

Although the proposed rule would apply to all stationary combustion turbines located at major sources of HAP emissions, emergency stationary combustion turbines, limited use stationary combustion turbines, stationary combustion turbines which fire landfill gas or digester gas as their primary fuel, and stationary combustion turbines of less than 1 MW rated peak power output are not required to meet the emission limitations or operating limitations.

For each of the subcategories of stationary combustion turbines, as mentioned earlier, we have concerns about the applicability of emission control technology. For example, emergency stationary combustion turbines operate infrequently. In addition, when called upon to operate they must respond immediately without failure and without lengthy startup periods. This infrequent operation limits the applicability of HAP emission control technology.

Limited use stationary combustion turbines also operate infrequently. As with emergency stationary combustion turbines, it is this infrequent operation that limits the applicability of HAP emission control technology.

Landfill and digester gases contain a family of silicon based gases called siloxanes. Combustion of siloxanes forms compounds that can foul post-combustion catalysts, rendering catalysts inoperable within a very short time period. Pretreatment of exhaust gases to remove siloxanes was investigated. However, no pretreatment systems are in use and their long term effectiveness is unknown. We also considered fuel switching for this subcategory of turbines. Switching to a different fuel such as natural gas or diesel would potentially allow the turbine to apply an oxidation catalyst emission control device. However, fuel switching would defeat the purpose of using this type of fuel which would then either be allowed to escape uncontrolled or would be burned in a flare with no energy recovery. We believe that switching landfill or digester gas to another fuel is inappropriate and is an environmentally inferior option.

For stationary combustion turbines of less than 1 MW rated peak power output, we have concerns about the effectiveness of scaling down the oxidation catalyst emission control technology. Just as there are often unforeseen problems associated with scaling up a technology, there can be problems associated with scaling down a technology.

As a result, we identified subcategories for each of these types of stationary combustion turbines and investigated MACT floors and MACT for each subcategory. As expected, since we identified these types of stationary combustion turbines as separate subcategories based on concerns about the applicability of emission control technology, we found no stationary combustion turbines in these subcategories using any emission control technology to reduce HAP emissions. As discussed above, we are not aware of any work practices that might constitute a MACT floor, nor did we find that the use of a particular fuel results in HAP emissions reductions. The MACT floor, therefore, for each of these subcategories is no emissions reduction.

Despite our concerns with the applicability of emission control technology, we examined the cost per ton of HAP removed for these subcategories. Whether our concerns are warranted or not, we consider the incremental cost per ton of HAP removed excessive—primarily because of the very small reduction in HAP emissions that would result.

We also considered the nonair health, environmental, and energy impacts of an oxidation catalyst system, as discussed previously in this preamble, and concluded that there would be only a small energy impact and no nonair health or environmental impacts. However, as stated above, we did not adopt this regulatory option due to cost considerations and concerns about the applicability of this technology to these subcategories. We were not able to identify any other means of achieving HAP emissions reductions for these subcategories.

As a result, for all of these reasons, we conclude that MACT for these subcategories is the MACT floor (*i.e.*, no emissions reductions).

F. How Did We Select the Format of the Standard for New Diffusion Flame Combustion Turbines?

We are proposing two options for complying with the standard for new diffusion flame combustion turbines. You may reduce CO by 95 percent if you use an oxidation catalyst emission control device, or reduce the concentration of formaldehyde in the exhaust from the turbine to 43 ppb by volume or less, dry basis, at 15 percent oxygen.

We considered proposing an emission limitation for HAP, but are proposing a CO emission reduction limitation as a surrogate for a HAP emission limitation. We have decided to propose the use of the CO emission reduction limitation as a surrogate for the HAP emission limitation, because CO monitoring is currently being used by combustion turbine owners and operators, it is significantly easier and less expensive to measure and monitor CO than to measure and monitor each HAP, and because we believe that CO reduction is a good measure of performance of the oxidation catalyst emission control device. Monitoring equipment for CO is readily available, which is not the case for HAP monitoring equipment.

We are also proposing a percent reduction in CO emissions as the emission limitation, rather than a single value for CO emissions. The data upon which MACT are based show that while the level of CO emissions entering an oxidation catalyst emission control device may vary, the oxidation catalyst emission control device is able to maintain a CO emission reduction efficiency of 95 percent or more.

We are also proposing an alternative emission limitation for formaldehyde emissions. You may choose to comply with the emission limitation for CO emission reduction (if you use an oxidation catalyst emission control device) or you may choose to comply with the emission limitation for formaldehyde emission concentration (if you use some means other than an oxidation catalyst control device to reduce HAP emissions). We would like to promote the development and eventual use of alternative emission control technologies (including pollution prevention technologies) to reduce HAP emissions, and we believe an alternative emission limitation written in terms of formaldehyde emissions will serve to do so. We are soliciting information on HAP and CO emissions data from alternative emission control technologies during the comment period. We are particularly interested in obtaining test reports where HAP and CO emissions reductions were measured with methods that we are recommending to be used to measure HAP in the proposed rule.

For the emission limitation, we propose to use formaldehyde as a surrogate for all HAP. Formaldehyde is the HAP emitted in the highest concentrations from stationary combustion turbines. In addition, the emission data show that HAP emission levels and formaldehyde emission levels are related, in the sense that when emissions of one are low, emissions of the other are low and vice versa. This leads us to conclude that emission control technologies which lead to reductions in formaldehyde emissions will lead to reductions in HAP emissions.

The emission limitation for formaldehyde is in units of parts per billion, and all measurements must be corrected to 15 percent oxygen, dry basis, to provide a common basis. A volume concentration was chosen for the emission limitation because it can be measured directly.

We based the alternative emission limitation on the ability of lean premix technology to reduce emissions to 43 ppbvd (at 15 percent oxygen). The reduction in formaldehyde emissions is approximately equivalent to that achieved when CO emissions are reduced by 95 percent through the use of an oxidation catalyst emission control device.

As discussed later, we consider the cost of formaldehyde CEMS excessive for the purpose of ensuring continuous compliance with this emission limitation for formaldehyde emissions. As a result, we selected stack emission testing to demonstrate compliance with the emission limitation.

G. How Did We Select the Initial Compliance Requirements?

The emissions tests which form the basis of the proposed rule were conducted using EPA or CARB test methods. The proposed rule requires the use of these EPA or CARB test methods to determine compliance. This ensures that the same procedures that were used to obtain the emission data upon which the emission limitations are based are used for compliance testing. By using the same test methods, we eliminate the possibility of measurement bias and interference influencing determinations of compliance.

For sources complying with the emission limitation to reduce CO emissions, an initial performance evaluation is required. The performance evaluation will validate performance of the CEMS. The proposed rule also requires an annual relative accuracy test audit (RATA) to ensure that performance of the CEMS does not deteriorate over time. The first 4-hour period following this performance evaluation of the CO CEMS will be used to determine initial compliance with the CO emission reduction limitation.

New and reconstructed sources and existing lean premix combustor turbines complying with the emission limitation to reduce formaldehyde emissions are required to conduct an initial performance test. The purpose of the initial test is to demonstrate initial compliance with the formaldehyde emission limitation.

H. How Did We Select the Continuous Compliance Requirements?

If you must comply with the emission limitations, continuous compliance with these requirements is required at all times except during startup, shutdown, and malfunction of your stationary combustion turbine. You are not required to develop a startup, shutdown or malfunction plan since we do not believe meaningful procedures could be developed.

We consider the use of CEMS the best means of ensuring continuous compliance with emission limitations, and alternatives to CEMS are considered only if we consider the use of a CEMS technically or economically infeasible. For sources complying with the emission limitation for CO emission reduction, we believe it is feasible to require a CEMS because the costs for a CO CEMS are reasonable. Thus, the proposed rule requires the use of a CO CEMS to continuously monitor the reduction in CO emissions.

For sources complying with the emission limitation for formaldehyde emissions, we also considered requiring a CEMS; however, we concluded that the costs of a formaldehyde CEMS were excessive. We considered requiring those sources to continuously monitor operating load to demonstrate continuous compliance because the data establishing the formaldehyde outlet concentration level are based on tests that were done at high loads. However, we believe that the performance of a stationary lean premix combustion turbine at high load is also indicative of its operation at lower loads. In fact, the operator can make no parameter adjustments that would lead to lower emissions.

We request comments on the continued monitoring of stationary lean premix combustion turbines that have demonstrated initial compliance. The stationary lean premix combustion turbines are low NO_X emitting and are permitted to continuously attain the permitted NO_X levels. The same technology that results in the maintenance of low NO_X levels is also related to the achievement of low HAP emissions. Therefore, we would like to solicit comments on the feasibility of requiring no additional testing or monitoring after the lean premix stationary combustion turbine has demonstrated initial compliance and is relying on the NO_X permit levels, or low NO_X levels characteristic of lean premix combustor turbines (*e.g.* NO_X levels guaranteed by the manufacturer) if there are no permit levels, to assure continuing good performance. We are proposing this in an attempt to streamline the continuous testing, monitoring, and reporting requirements.

Finally, since we are unsure what new HAP emission control technologies might emerge, we do not know whether it will be necessary to establish additional operating limitations to ensure continuous compliance with the formaldehyde emission limitation for sources that are not lean premix or diffusion flame. Thus, as outlined earlier, the proposed rule requires you to petition the Administrator for approval of additional operating limitations or for approval of no additional operating limitations.

I. How Did We Select the Monitoring and Testing Methods to Measure These Low Concentrations of CO and Formaldehyde?

We believe CEMS are available which can measure CO emissions at the low concentrations found in the exhaust from a stationary combustion turbine following an oxidation catalyst emission control device. Our performance specifications for CO CEMS (PS4 and PS4A), however, have not been updated recently and do not reflect the performance capabilities of such systems at these low CO concentration levels.

As a result, we solicit comments on the performance capabilities of state-of-the-art CO CEMS and their ability to accurately measure the low concentrations of CO experienced in the exhaust of a stationary combustion turbine following an oxidation catalyst emission control device. We also solicit comments with specific recommendations on the changes we should make to our performance specifications for CO CEMS (PS4 and PS4A) to ensure the installation and use of CEMS which can be used to determine compliance with the proposed emission limitation for CO emission reduction. In addition, we solicit comments on the availability of instruments capable of meeting the changes they recommend to our performance specifications for CO CEMS.

Today's proposal specifies the use of Method 10 as the reference method to certify the performance of the CO CEMS. We also believe Method 10 is capable of measuring CO concentrations as low as those experienced in the exhaust of a stationary combustion turbine following an oxidation catalyst emission control device. However, the performance criteria in addenda A of Method 10 have not been revised recently and are not suitable for certifying the performance of a CO CEMS at these low CO concentrations. Specifically, we believe the range and minimum detectable sensitivity should be changed to reflect target concentrations as low as 0.1 parts per million (ppm) CO in some cases. We also expect that dual range instruments will be necessary to measure CO concentrations at the inlet and at the outlet of an oxidation catalyst emission control device.

As a result, we solicit comments with specific recommendations on the changes we should make to Method 10 and the performance criteria in addenda A. We also solicit comments on the availability of instruments capable of meeting the changes they recommend to Method 10 and the performance criteria in addenda A, while also meeting the remaining addenda A performance criteria.

With regard to formaldehyde, we believe systems meeting the requirements of Method 320, a self-validating FTIR method, can be used to attain detection limits for formaldehyde concentrations below 43 ppbvd. We expect path lengths in the range of 100 to 125 meters and state-of-the-art digital signal processing (to reduce signal to noise ratio) would be needed. Method 320 also includes formaldehyde spike recovery criteria, which require spike recoveries of 70 to 130 percent.

While we believe FTIR systems can meet Method 320 and measure formaldehyde concentrations at these low levels, we have limited experience with their use. As a result, we solicit comments on the ability and use of FTIR systems to meet the validation and quality assurance requirements of Method 320 for the purpose of determining compliance with the emission limitation for formaldehyde emissions.

As an alternative to Method 320, we are proposing Method 323 for natural gas-fired sources. Method 323 uses the acetyl acetone colorimetric method to measure formaldehyde emissions in the exhaust of natural gas-fired, stationary combustion sources. We believe the proposed method can measure low concentrations of formaldehyde at a cost which is less than or equal to the cost of testing using Method 320; therefore, we solicit comments on the use of Method 323 by natural gas-fired sources to demonstrate compliance with the formaldehyde emission limitation.

We also believe CARB Method 430 and EPA SW–846 Method 0011 are capable of measuring formaldehyde concentrations at these low levels. Accordingly, we solicit comments on the use of CARB 430 and EPA SW–846 Method 0011 to determine compliance with the emission limitations for formaldehyde.

Based on the comments we receive on CO CEMS, we anticipate revising Method 10 and our performance specifications (PS4 and PS4A) for CO CEMS to ensure the installation and use of CEMS suitable for determining compliance with the emission limitation for CO emission reduction. If we should promulgate today's proposed rule for stationary combustion turbines before completing these revisions, however, we may require all new and reconstructed stationary combustion turbines subject to the final rule to demonstrate compliance with the formaldehyde emission limitation, or a formaldehyde percent reduction limitation similar to the CO percent reduction emission limitation, until we have adopted final revisions to Method 10 and our performance specifications for CO CEMS.

On the other hand, if the comments we receive lead us to conclude that CO CEMS are not capable of being used to determine compliance with the emission limitation for CO emission reduction, there are several alternatives we may consider. One alternative would be to delete the proposed percent reduction emission limitation for CO and require compliance with a comparable formaldehyde percent reduction limitation. This alternative would require periodic stack emission testing before and after the control device and would also require owners and operators to petition the Administrator for additional operating limitations, as proposed today for those choosing to comply with the emission limitation for formaldehyde. Another alternative would be to delete the proposed emission limitation for CO emission reduction and require compliance with the proposed emission limitation for formaldehyde. This alternative could require more frequent emission testing and could also require owners and operators to petition the Administrator for additional operating limitations.

Another alternative would be to require the use of Method 320 (*i.e.*, FTIR systems) to determine compliance with the emission limitation for CO emission reduction. This alternative could also require more frequent emission testing and require owners and operators to petition the Administrator for additional operating limitations, as proposed today for those choosing to comply with the emission limitation for formaldehyde.

Based on the comments we receive on FTIR systems and Method 320, we may develop additional or revised criteria for the use of FTIR systems and/or Method 320 to determine compliance with the emission limitation for formaldehyde.

If we should conclude that neither CO CEMS or FTIR systems are capable of being used to determine compliance with the emission limitations for CO or formaldehyde emissions, then we may delete the emission limitations for CO and formaldehyde emissions and adopt an emission limitation consisting of an equipment and work practice requirement. This alternative would require the use of oxidation catalyst emission control devices which meet specific and narrow design and operating criteria.

We believe the emission limitations we are proposing for CO emission reduction and formaldehyde emission concentration are superior to these alternatives for a number of reasons. We believe that the CO emission limitation is better because it is easier and cheaper to continuously monitor CO, and it has been shown to be a good surrogate for HAP. Also, we prefer to have an emission limitation rather than an equipment or work practice standard. An emission limitation is superior because it ensures that emissions are below a certain level, as demonstrated by a CEMS or performance testing. However, we solicit comments on these alternatives, should we conclude that the proposed emission limitations for CO emission reduction and formaldehyde emission concentration are inappropriate because of difficulties in monitoring or measuring CO emission reduction or formaldehyde emission concentration to determine compliance. We also solicit suggestions and recommendations for other alternatives, should we conclude the proposed emission limitations are inappropriate because of monitoring or measurement difficulties.

J. How Did We Select the Notification, Recordkeeping and Reporting Requirements?

The proposed notification, recordkeeping, and reporting requirements are based on the NESHAP General Provisions of 40 CFR part 63.

IV. Summary of Environmental, Energy and Economic Impacts

We estimate that 20 percent of the stationary combustion turbines affected by the proposed rule will be located at major sources. As a result, the environmental, energy, and economic impacts presented in this preamble reflect these estimates.

A. What Are the Air Quality Impacts?

The proposed rule will reduce total national HAP emissions by an estimated 81 tons/year in the 5th year after the standards are promulgated. The emissions reductions achieved by the proposed rule would be due to the sources that install an oxidation catalyst control system. We estimate that about 10 existing lean premix combustion turbines will install oxidation catalyst control to comply with the standard. In addition, we estimate that about 5 percent of new stationary combustion turbines will install oxidation catalyst control to comply with the standards. The other 95 percent of new stationary combustion turbines will be lean premix, a pollution prevention technology which in most cases does not require the use of oxidation catalyst control. The lean premix turbines are currently being installed to meet NO_X emission standards. The reduction of HAP emissions for these stationary combustion turbines is difficult to assess because it is a pollution prevention technology and is being installed to meet NO_X limits, not as a result of MACT for stationary combustion turbines. Therefore, as stated previously, the HAP emissions reductions obtained by the proposed rule result only from the sources that install an oxidation catalyst control system.

To estimate air impacts, national HAP emissions in the absence of the proposed rule (*i.e.*, HAP emission baseline) were calculated using an emission factor from the emissions database. We assumed new stationary combustion turbines are operated 8,760 hours annually. We then assumed a HAP reduction of 95 percent, achieved by using oxidation catalyst emission control devices to comply with the emission limitation to reduce CO emissions, and applied this reduction to the baseline HAP emissions to estimate total national HAP emission reduction. The total national HAP emission reduction is the sum of formaldehyde, acetaldehyde, benzene, and toluene emission reductions. In addition to HAP emission reductions, the proposed rule will reduce criteria air pollutant emissions, primarily CO emissions.

B. What Are the Cost Impacts?

The national total annualized cost of the proposed rule in the 5th year following promulgation is estimated to be about $21.5 million. Approximately $267,500 of that amount is the estimated annualized cost for monitoring, recordkeeping, and reporting. To calculate the annualized control costs, we obtained estimates of the capital costs of oxidation catalyst emission control devices from vendors. We then calculated the national total annualized costs of control for the new stationary combustion turbines installing oxidation catalyst emission control in the next 5 years. Our projection of new stationary combustion turbine capacity that will come online over the next 5 years is based on review of permit data gathered by EPA from 1998 to the present time, confidential projection data from turbine manufacturers, and published sales data. We believe this projection is a reasonable estimate based on the available information.

C. What Are the Economic Impacts?

The EPA prepared an economic impact analysis to evaluate the impacts the proposed rule would have on the combustion turbines producers, consumers of goods and services produces by combustion turbines, and society. The analysis shows minimal changes in prices and output for products made by the 24 industries affected by the proposed rule. The price increase for affected output is less than 0.01 percent and the reduction in output is less than 0.01 percent for each affected industry. Estimates of impacts on fuel markets show price increases of less than 0.012 percent for petroleum products and natural gas, and price increases of 0.13 and 0.17 percent for base-load and peak-load electricity, respectively. The price of coal is expected to decline by about 0.06 percent, and this is due to a small reduction in demand for this fuel type. Reductions in output are expected to be less than 0.16 percent for each energy type, including base-load and peak-load electricity. The social costs of the proposed rule are estimated at $13.3 million (1998 dollars). Social costs include the compliance costs, but also include those costs that reflect changes in the national economy due to changes in consumer and producer behavior resulting from the compliance costs associated with a regulation. In this case, changes in energy use among both consumers and producers to reduce the impact of the regulatory requirements of the proposed rule on them lead to the estimated social costs being somewhat less than the total annualized compliance cost estimate of $21.5 million (1998$). The primary reason for the much lower social cost estimate is the increase in electricity supply generated by existing unaffected sources, which mostly offsets the impact of increased electricity prices to consumers.

For more information on these impacts, please refer to the economic impact analysis in the public docket.

D. What Are the Nonair Health, Environmental and Energy Impacts?

The only energy requirement is a small increase in fuel consumption resulting from back pressure caused by operating an oxidation catalyst emission control device. This energy impact is small in comparison to the costs of other impacts. There are no known nonair environmental or health impacts as a result of the implementation of the rule as proposed.

V. Solicitation of Comments and Public Participation

A. General

We are requesting comments on the proposed rule. We request comments on all aspects of the proposed rule, such as the proposed emission limitations and operating limitations, recordkeeping and monitoring requirements, as well as aspects you may feel have not been addressed.

Specifically, we request comments on the performance capabilities of state-of-the-art CO CEMS and their ability to measure the low concentrations of CO in the exhaust of a stationary combustion turbine following an oxidation catalyst emission control device. We also request comments with recommendations on changes commenters believe we should make to our performance specifications for CO CEMS (PS4 and PS4A) of 40 CFR part 60, appendix B, and to Method 10 of 40 CFR part 60, appendix A, and the performance criteria in addenda A to Method 10. In addition, we request comments from these commenters on the availability of instruments capable of meeting the changes they recommend to our performance specifications for CO CEMS (PS4 and PS4A) of 40 CFR part 60, Method 10 of 40 CFR part 60, appendix A, and addenda A to method 10.

As also mentioned earlier, we request comments on the ability and use of FTIR systems to meet the validation and quality assurance requirements of Method 320 of 40 CFR part 63, appendix A, for the purpose of determining compliance with the emission limitation for formaldehyde emissions. In addition, we request comments on the use of Method 323 of 40 CFR part 63, appendix A, SW–846 Method 0011, and CARB 430 to determine compliance with the emission limitations for formaldehyde.

We request any HAP emissions test data available from stationary combustion turbines; however, if you submit HAP emissions test data, please submit the full and complete emission test report with this data. Without a complete emission test report, which includes sections describing the stationary combustion turbine and its operation during the test as well as identifying the stationary combustion turbine for purposes of verification, discussion of the test methods employed and the Quality Assurance/Quality Control (QA/QC) procedures followed, the raw data sheets, all the calculations, etc., which such reports contain, submittal of HAP emission data by itself is of little use.

B. Can We Achieve the Goals of the Proposed Rule in a Less Costly Manner?

We have made every effort in developing the proposal to minimize the cost to the regulated community and allow maximum flexibility in compliance options consistent with our statutory obligations. We recognize, however, that the proposal may still require some facilities to take costly steps to further control emissions even though those emissions may not result in exposures which could pose an excess individual lifetime cancer risk greater than one in 1 million or exceed thresholds determined to provide an ample margin of safety for protecting public health and the environment from the effects of HAP. We also recognize that in some cases the proposal may require facilities to undertake emissions testing and monitoring even when the rule will not require them to reduce emissions at all. However, this is necessary to assure the proper initial performance and continuing performance of the emission reduction-pollution prevention technology. We are, therefore, specifically soliciting comment on whether there are further ways to structure the proposed rule to focus on the facilities which pose significant risks and avoid the imposition of high costs on facilities that pose little risk to public health and the environment.

Representatives of the plywood and composite wood products industry provided EPA with descriptions of three mechanisms that they believed could be used to implement more cost-effective reductions in risk. The docket for today's proposed rule contains white papers prepared by the plywood and composite wood products industry that outline their proposed approaches (see docket OAR–2002–0060). These approaches could be effective in focusing regulatory controls on facilities that pose significant risks and avoiding the imposition of high costs on facilities that pose little risk to public health or the environment, and we are seeking public comment on the utility of each of these approaches with respect to the proposed rule.

One of the approaches, an applicability cutoff for threshold pollutants, would be implemented under the authority of CAA section 112(d)(4); the second approach, subcategorization and delisting, would be implemented under the authority of CAA sections 112(c)(1) and 112(c)(9); and the third approach would involve the use of a concentration-based applicability threshold. We are seeking comment on whether these approaches are legally justified and, if so, we ask for information that could be used to support such approaches. In addition, on August 21, 2002, the Agency received a petition from the Gas Turbine Association (GTA) requesting that natural gas fueled combustion turbines be delisted and a study that they believed would justify delisting. Section 112(c)(9) of the CAA provides EPA with the authority to delist categories or subcategories either in response to the petition of any person or upon the Administrator's own motion. The GTA states that the study supports a determination that HAP emissions from gas turbines would not result in a lifetime cancer risk greater than one in a million to the individual in the population most exposed to the emissions or non-carcinogenic health risk exceeding a level which is adequate to protect public health with an ample margin of safety. We have reviewed the GTA study and responded to the GTA on October 11, 2002 with questions and areas that we believe need further analysis. The EPA's request for further information and all information provided by the petitioner to date is located in the docket for today's proposed rule.

The MACT program outlined in CAA section 112(d) is intended to reduce emissions of HAP through the application of MACT to major sources of toxic air pollutants. Section 112(c)(9) is intended to allow EPA to avoid setting MACT standards for sources or subcategories of sources that pose less than a specified level of risk to public health and the environment. The EPA requests comment on whether the proposals described here appropriately coordinate these provisions of CAA section 112. The two health-based approaches focus on assessing inhalation exposures or accounting for adverse environmental impacts. EPA specifically requests comment on the appropriateness and necessity of extending these approaches to account for non-inhalation exposures of certain HAP which may deposit from the atmosphere after being emitted into the air or to account for adverse environmental impacts. In addition to the specific requests for comment noted in this section, we are also interested in any information or comment concerning technical limitations, environmental and cost impacts, compliance assurance, legal rationale, and implementation relevant to the identified approaches. We also request comment on appropriate practicable and verifiable methods to ensure that sources' emissions remain below levels that protect public health and the environment. We will evaluate all comments before determining whether to include an approach in the final rule.

1. Industry HAP Emissions and Potential Health Effects

For the stationary combustion turbines source category, four HAP account for essentially all of the mass of HAP emissions. Those four HAP are formaldehyde, toluene, benzene, and acetaldehyde. Additional HAP which have been measured in emission tests that were conducted at natural gas fired and distillate oil fired combustion turbines are: 1,3 butadiene, acrolein, ethylbenzene, naphthalene, polycyclic aromatic hydrocarbons (PAH), propylene oxide, and xylenes. The following metallic HAP emissions have been measured from distillate oil fired stationary combustion turbines: arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, and selenium.

Of the four HAP emitted in the largest quantities by this source category, all can cause toxic effects following sufficient exposure. The potential toxic effects of these four HAP are discussed previously in this preamble.

In accordance with section 112(k), EPA developed a list of 33 HAP which present the greatest threat to public health in the largest number of urban areas. Of the four predominant HAP, three (acetaldehyde, benzene, and formaldehyde) are included on this list for the EPA's Urban Air Toxics Program. Eleven of the other emitted HAP (acrolein, arsenic compounds, beryllium compounds, 1,3-butadiene, cadmium compounds, chromium compounds, lead compounds, manganese compounds, mercury compounds, nickel compounds, and PAH (as POM)) also appear on the list. In November 1998, EPA published ''A Multimedia Strategy for Priority Persistent, Bioaccumulative, and Toxic (PBT) Pollutants.'' None of the predominant four HAP emitted by stationary combustion turbine operations appears on the published list of compounds referred to in the EPA's PBT strategy. Three of the other HAP (mercury compounds, cadmium compounds, and PAH) appear on the list.

Of the HAP emitted by stationary combustion turbine operations, fifteen (acetaldehyde, acrolein, arsenic compounds, benzene, beryllium compounds, 1,3-butadiene, cadmium compounds, chromium compounds, formaldehyde, lead compounds, mercury compounds, naphthalene, nickel compounds, PAH, and propylene oxide) are carcinogens that, at present, are not considered to have thresholds for cancer effects. Formaldehyde, however, is a potential threshold carcinogen, and EPA is currently revising the dose-response assessment for formaldehyde.

2. Applicability Cutoffs for Threshold Pollutants Under Section 112(d)(4) of the CAA

The first approach is an applicability cutoff for threshold pollutants that is based on EPA's authority under CAA section 112(d)(4) to establish standards for HAP which are threshold pollutants. A threshold pollutant is one for which there is a concentration or dose below which adverse effects are not expected to occur over a lifetime of exposure. For such pollutants, CAA section 112(d)(4) allows EPA to consider the threshold level, with an ample margin of safety, when establishing emissions standards. Specifically, CAA section 112(d)(4) allows EPA to establish emission standards that are not based upon the MACT specified under CAA section 112(d)(2) for pollutants for which a health threshold has been established. Such standards may be less stringent than MACT. Historically, EPA has interpreted CAA section 112(d)(4) to allow categories of sources that emit only threshold pollutants to avoid further regulation if those emissions result in ambient levels that do not exceed the threshold, with an ample margin of safety.[2]

A different interpretation would allow us to exempt individual facilities within a source category that meet the CAA section 112(d)(4) requirements. There are three potential scenarios under this interpretation of the CAA section 112(d)(4) provision. One scenario would allow an exemption for individual facilities that emit only threshold pollutants and can demonstrate that their emissions of threshold pollutants would not result in air concentrations above the threshold levels, with an ample margin of safety, even if the category is otherwise subject to MACT. A second scenario would allow the CAA section 112(d)(4) provision to be applied to both threshold and non-threshold pollutants, using the one in a million cancer risk level for decisionmaking for non-threshold pollutants.

A third scenario would allow a CAA section 112(d)(4) exemption at a facility that emits both threshold and non-threshold pollutants. For those emission points where only threshold pollutants are emitted and where emissions of the threshold pollutants would not result in air concentrations above the threshold levels, with an ample margin of safety, those emission points could be exempt from the MACT standards. The MACT standards would still apply to non-threshold emissions from other emission points at the source. For this third scenario, emission points that emit a combination of threshold and nonthreshold pollutants that are co-controlled by MACT would still be subject to the MACT level of control. However, any threshold HAP eligible for exemption under CAA section 112(d)(4) that are controlled by control devices different from those controlling nonthreshold HAP would be able to use the exemption, and the facility would still be subject to the parts of the standards that control non-threshold pollutants or that control both threshold and non-threshold pollutants.

a. Estimation of hazard quotients and hazard indices. Under the CAA section 112(d)(4) approach, EPA would have to determine that emissions of each of the threshold pollutants emitted by stationary combustion turbines at the facility do not result in exposures which exceed the threshold levels, with an ample margin of safety.The common approach for evaluating the potential hazard of a threshold air pollutant is to calculate a hazard quotient by dividing the pollutant's inhalation exposure concentration (often assumed to be equivalent to its estimated concentration in air at a location where people could be exposed) by the pollutant's inhalation Reference Concentration (RfC). An RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure that, over a lifetime, likely would not result in the occurrence of adverse health effects in humans, including sensitive individuals.

The EPA typically establishes an RfC by applying uncertainty factors to the critical toxic effect derived from the lowest- or no-observed-adverse-effect level of a pollutant.[3] A hazard quotient less than one means that the exposure concentration of the pollutant is less than the RfC, and, therefore, presumed to be without appreciable risk of adverse health effects. A hazard quotient greater than one means that the exposure concentration of the pollutant is greater than the RfC. Further, EPA guidance for assessing exposures to mixtures of threshold pollutants recommends calculating a hazard index (HI) by summing the individual hazard quotients for those pollutants in the mixture that affect the same target organ or system by the same mechanism.[4] The HI values would be interpreted similarly to hazard quotients; values below one would generally be considered to be without appreciable risk of adverse health effects, and values above one would generally be cause for concern.

For the determinations discussed herein, EPA would generally plan to use RfC values contained in EPA's toxicology database, the Integrated Risk Information System (IRIS). When a pollutant does not have an approved RfC in IRIS, or when a pollutant is a carcinogen, EPA would have to determine whether a threshold exists based upon the availability of specific data on the pollutant's mode or mechanism of action, potentially using a health threshold value from an alternative source such as the Agency for Toxic Substances and Disease Registry (ATSDR) or the California Environmental Protection Agency (CalEPA).

Table 3 provides RfC, as well as unit risk estimates, for the HAP emitted by

[2] See 63 FR 18754, 18765–66 (April 15, 1998) (Pulp and Paper Sources Proposed NESHAP)

[3] ''Methods for Derivation of Inhalation Reference Concentrations and Applications of Inhalation Dosimetry.'' EPA–600/8–90–066F, Office of Research and Development, USEPA, October 1994.

[4] ''Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures. Risk Assessment Forum Technical Panel,'' EPA/630/R–00/002. USEPA, August 2000. *http://www.epa.gov/nceawww1/pdfs/chem_mix/chem_mix 08_2001.pdf.*2

combustion turbine operations. A unit risk estimate is defined as the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1 ug/m³ in the air.

TABLE 3.—DOSE-RESPONSE ASSESSMENT VALUES FOR HAP REPORTED EMITTED BY THE COMBUSTION TURBINE SOURCE CATEGORY

Chemical name	CAS No.	Reference concentration [a] (mg/m³)	Unit risk estimate [b] (1/(ug/m³))
Acetaldehyde	75–07–0	9.0E–03 IRIS	2.2E–06 IRIS
Acrolein	107–02–8	2.0E–05 IRIS	
Arsenic compounds	7440–38–2	3.0E–05 CAL	4.3E–03 IRIS
Benzene	71–43–2	6.0E–02 CAL	7.8E–06 IRIS
Beryllium compounds	7440–41–7	2.0E–05 IRIS	2.4E–03 IRIS
1,3-Butadiene	106–99–0	2.0E–03 IRIS	3.0E–05 EPA ORD
Cadmium compounds	7440–43–9	2.0E–05 IRIS	1.8E–03 IRIS
Chromium (VI) compounds	18540–29–9	1.0E–04 IRIS	1.2E–02 IRIS
Ethyl benzene	100–41–4	1.0E+00 IRIS	
Formaldehyde	50–00–0	9.8E–03 ATSDR	1.3E–05 IRIS
Lead compounds	7439–92–1		1.2E–05 CAL
Manganese compounds	7439–96–5	5.0E–05 IRIS	
Mercury compounds	HG_CMPDS	9.0E–05 CAL	
Naphthalene	91–20–3	3.0E–03 IRIS	
Nickel compounds	7440–02–0	2.0E–04 ATSDR	9.1E–01 CAL
PAH (shown below as 7–PAH)			
Benzo (a) anthracene	56–55–3		1.1E–04 CAL
Benzo (b) fluoranthene	205–99–2		1.1E–04 CAL
Benzo (k) fluoranthene	207–08–9		1.1E–04 CAL
Benzo (a) pyrene	50–32–8		1.1E–03 CAL
Chrysene	218–01–9		1.1E–05 CAL
Dibenz (a,h) anthracene	53–70–3		1.2E–03 CAL
Indeno (1,2,3-cd) pyrene	193–39–5	.	1.4E–04 CAL
Propylene oxide	75–56–9	3.0E–02 IRIS	3.7E–06 IRIS
Selenium compounds	7782–49–2	2.0E–02 CAL	
Toluene	108–88–3	4.0E–01 IRIS	
Xylenes (mixed)	1330–20–7	4.3E–01 ATSDR	

[a] Reference Concentration: An estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups which include children, asthmatics, and the elderly) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from various types of human or animal data, with uncertainty factors generally applied to reflect limitations of the data used.

[b] Unit Risk Estimate: The upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1 ug/m³ in air. The interpretation of the Unit Risk Estimate would be as follows: If the Unit Risk Estimate = 1.5 × 10–6 per ug/m³, 1.5 excess tumors are expected to develop per 1,000,000 people if exposed daily for a lifetime to 1 ug of the chemical in 1 cubic meter of air. Unit Risk Estimates are considered upper bound estimates, meaning they represent a plausible upper limit to the true value. (Note that this is usually not a true statistical confidence limit.) The true risk is likely to be less, but could be greater.

Sources:

IRIS = EPA Integrated Risk Information System (*http://www.epa.gov/iris/subst/index.html*).

ATSDR = U.S. Agency for Toxic Substances and Disease Registry (*http://www.atsdr.cdc.gov/mrls.html*).

CAL = California Office of Environmental Health Hazard Assessment. (*http://www.oehha.ca.gov/air/hot_spots/index.html*).

HEAST = EPA Health Effects Assessment Summary Tables (#PB(=97–921199, July 1997).

To establish an applicability cutoff under CAA section 112(d)(4), EPA would need to define ambient air exposure concentration limits for any threshold pollutants involved. There are several factors to consider when establishing such concentrations. First we would need to ensure that the concentrations that would be established would protect public health with an ample margin of safety. As discussed above, the approach EPA commonly uses when evaluating the potential hazard of a threshold air pollutant is to calculate the pollutant's hazard quotient, which is the exposure concentration divided by the RfC. The EPA's ''Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures'' suggests that the noncancer health effects associated with a mixture of pollutants ideally are assessed by considering the pollutants' common mechanisms of toxicity [5]. The guidance also suggests that when exposures to mixtures of pollutants are being evaluated, the risk assessor may calculate a HI. The recommended method is to calculate multiple hazard indices for each exposure route of interest, and for a single specific toxic effect or toxicity to a single target organ. The default approach recommended by the guidance is to sum the hazard quotients for those pollutants that induce the same toxic effect or affect the same target organ. A mixture is then assessed by several HI, each representing one toxic effect or target organ. The guidance notes that the pollutants included in the HI calculation are any pollutants that show the effect being assessed, regardless of the critical effect upon which the RfC is based. The guidance cautions that if the target organ or toxic effect for which the HI is calculated is different from the RfC's critical effect, then the RfC for that chemical will be an overestimate, that is, the resultant HI potentially may be overprotective. Conversely, since the calculation of a HI does not account for the fact that the potency of a mixture of HAP can be more potent than the sum of the individual HAP potencies, a HI may potentially be underprotective in some situations.

[5] ibid.

b. Options for establishing a HI limit. One consideration in establishing a HI limit is whether the analysis considers the total ambient air concentrations of all the emitted HAP to which the public is exposed [6]. There are several options for establishing a HI limit for the § 112(d)(4) analysis that reflect, to varying degrees, public exposure.

One option is to allow the hazard index posed by all threshold HAP emitted by combustion turbines at the facility to be no greater than one. This approach is protective if no additional threshold HAP exposures would be anticipated from other sources at, or in the vicinity of, the facility or through other routes of exposure (*i.e.*, through ingestion).

A second option is to adopt a default percentage approach, whereby the HI limit of the HAP emitted by the facility is set at some percentage or fraction of one (*e.g.*, 20 percent or 0.2). This approach recognizes the fact that the facility in question is only one of many sources of threshold HAP to which people are typically exposed every day. Because noncancer risk assessment is predicated on total exposure or dose, and because risk assessments focus only on an individual source, establishing a HI limit of 0.2 would account for an assumption that 20 percent of an individual's total exposure is from that individual source. For the purposes of this discussion, we will call all sources of HAP, other than operations within the source category at the facility in question, ''background'' sources. If the affected source is allowed to emit HAP such that its own impacts could result in HI values of one, total exposures to threshold HAP in the vicinity of the facility could be substantially greater than one due to background sources, and this would not be protective of public health, since only HI values below one are considered to be without appreciable risk of adverse health effects. Thus, setting the HI limit for the facility at some default percentage of one will provide a buffer which would help to ensure that total exposures to threshold HAP near the facility (*i.e.*, in combination with exposures due to background sources) will generally not exceed one, and can generally be considered to be without appreciable risk of adverse health effects.

The EPA requests comment on using the default percentage approach and on setting the default HI limit at 0.2. The EPA is also requesting comment on whether an alternative HI limit, in some multiple of one, would be a more appropriate applicability cutoff.

A third option is to use available data (from scientific literature or EPA studies, for example) to determine background concentrations of HAP, possibly on a national or regional basis. These data would be used to estimate the exposures to HAP from non-combustion turbine sources in the vicinity of an individual facility. For example, EPA's National Scale Air Toxics Assessment (NATA) [7] and ATSDR's Toxicological Profiles [8] contain information about background concentrations of some HAP in the atmosphere and other media. The combined exposures from an affected source and from background emissions (as determined from the literature or studies) would then not be allowed to exceed a HI limit of 1. The EPA requests comment on the appropriateness of setting the hazard index limit at one for such an analysis.

A fourth option is to allow facilities to estimate or measure their own facility-specific background HAP concentrations for use in their analysis. With regard to the third and fourth options, EPA requests comment on how these analyses could be structured. Specifically, EPA requests comment on how the analyses should take into account background exposure levels from air, water, food and soil encountered by the individuals exposed to emissions from this source category. In addition, we request comment on how such analyses should account for potential increases in exposures due to the use of a new HAP or the increased use of a previously emitted HAP, or the effect of other nearby sources that release HAP.

The EPA requests comment on the feasibility and scientific validity of each of these or other options. Finally, EPA requests comment on how we should implement the CAA section 112(d)(4) applicability cutoffs, including appropriate mechanisms for applying cutoffs to individual facilities. For example, would the title V permit process provide an appropriate mechanism?

c. Tiered analytical approach for predicting exposure. Establishing that a facility meets the cutoffs established under CAA section 112(d)(4) will necessarily involve combining estimates of pollutant emissions with air dispersion modeling to predict exposures. The EPA envisions that we would promote a tiered analytical approach for these determinations. A tiered analysis involves making successive refinements in modeling methodologies and input data to derive successively less conservative, more realistic estimates of pollutant concentrations in air and estimates of risk.

As a first tier of analysis, EPA could develop a series of simple look-up tables based on the results of air dispersion modeling conducted using conservative input assumptions. By specifying a limited number of input parameters, such as stack height, distance to property line, and emission rate, a facility could use these look-up tables to determine easily whether the emissions from their sources might cause a hazard index limit to be exceeded.

A facility that does not pass this initial conservative screening analysis could implement increasingly more site-specific but more resource-intensive tiers of analysis using EPA-approved modeling procedures, in an attempt to demonstrate that their facility does not exceed the HI limit. Existing EPA guidance could provide the basis for conducting such a tiered analysis. [9]

The EPA requests comment on methods for constructing and implementing a tiered analysis for determining applicability of the CAA section 112(d)(4) criterion to specific combustion turbine sources. Ambient monitoring data could possibly be used to supplement or supplant the tiered modeling analysis described above. We envision that the appropriate monitoring to support such a determination could be extensive. The EPA requests comment on the appropriate use of monitoring in the determinations described above.

d. Accounting for dose-response relationships. In the past, EPA routinely treated carcinogens as nonthreshold pollutants. The EPA recognizes that advances in risk assessment science and policy may affect the way EPA differentiates between threshold and nonthreshold HAP. The EPA's draft Guidelines for Carcinogen Risk Assessment [10] suggest that carcinogens be assigned non-linear dose-response relationships where data warrant. Moreover, it is possible that dose-response curves for some pollutants may reach zero risk at a dose greater

[6] Senate Debate on Conference Report (October 27, 1990), reprinted in ''A Legislative History of the Clean Air Act Amendments of 1990,'' Comm. Print S. Prt. 103–38 (1993) (''Legis. Hist.'') at 868.

[7] *See http://www.epa.gov/ttn/atw/nata.*

[8] *See http://www.atsdr.cdc.gov/toxpro2.html.*

[9] ''A Tiered Modeling Approach for Assessing the Risks due to Sources of Hazardous Air Pollutants.'' EPA–450/4–92–001. David E. Guinnup, Office of Air Quality Planning and Standards, USEPA, March 1992.

[10] ''Draft Revised Guidelines for Carcinogen Risk Assessment.'' NCEA–F–0644, USEPA, Risk Assessment Forum, July 1999. pp 3–9ff. *http://www.epa.gov/ncea/raf/pdfs/cancer__gls.pdf.*

than zero, creating a threshold for carcinogenic effects. It is possible that future evaluations of the carcinogens emitted by this source category would determine that one or more of the carcinogens in the category is a threshold carcinogen or is a carcinogen that exhibits a non-linear dose-response relationship but does not have a threshold.

The dose-response assessment for formaldehyde is currently undergoing revision by EPA. As part of this revision effort, EPA is evaluating formaldehyde as a potential non-linear carcinogen. The revised dose-response assessment will be subject to review by the EPA Science Advisory Board, followed by full consensus review, before adoption into the EPA IRIS. At this time, EPA estimates that the consensus review will be completed by the end of 2003. The revision of the dose-response assessment could affect the potency factor of formaldehyde, as well as its status as a threshold or nonthreshold pollutant. At this time, the outcome is not known. In addition to the current reassessment by EPA, there have been several reassessments of the toxicity and carcinogenicity of formaldehyde in recent years, including work by the World Health Organization and the Canadian Ministry of Health.

The EPA requests comment on how we should consider the state of the science as it relates to the treatment of threshold pollutants when making determinations under CAA section CAA section 112(d)(4). In addition, EPA requests comment on whether there is a level of emissions of a non-threshold carcinogenic HAP at which it would be appropriate to allow a facility to use the scenarios discussed under the CAA section 112(d)(4) approach.

If the CAA section 112(d)(4) approach were adopted, the requirements of the rule as proposed would not apply to any source that demonstrates, based on a tiered analysis that includes EPA-approved modeling of the affected source's emissions, that the anticipated HAP exposures do not exceed the specified HI limit.

3. Subcategory Delisting Under Section 112(c)(9)(B) of the CAA

The EPA is authorized to establish categories and subcategories of sources, as appropriate, pursuant to CAA section 112(c)(1), in order to facilitate the development of MACT standards consistent with section 112 of the CAA. Further, section CAA section 112(c)(9)(B) allows EPA to delete a category (or subcategory) from the list of major sources for which MACT standards are to be developed when the following can be demonstrated: (1) In the case of carcinogenic pollutants, that ''no source in the category * * * emits [carcinogenic] air pollutants in quantities which may cause a lifetime risk of cancer greater than one in 1 million to the individual in the population who is most exposed to emissions of such pollutants from the source''; (2) in the case of pollutants that cause adverse noncancer health effects, 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''; and (3) in the case of pollutants that cause adverse environmental effects, that ''no adverse environmental effect will result from emissions from any source.''

One way in which the Agency could use these authorities would be to define a subcategory of facilities within the source category based upon technological differences, such as differences in turbine design characteristics, fuel type, production rate, emission vent flow rates, overall facility size, emissions characteristics, processes, or air pollution control device viability. The EPA requests comment on how we might establish subcategories based on these, or other, source characteristics. If it could then be determined that each source in this technologically-defined subcategory presents a low risk to the surrounding community, the subcategory could then be delisted in accordance with CAA section 112(c)(9). The GTA letter discussed above provides two examples of technological differences that may allow us to create subcategories of stationary combustion turbines. Those subcategories could be delisted if it were demonstrated that they met the requirements of CAA section 112(c)(9).

The GTA letter includes information on the risks created by emissions from lean-premix turbines. We are already proposing a subcategory for lean-premix turbines and in that discussion describe how these turbines are clearly technologically different from other types of stationary combustion turbines. While the GTA letter did not provide sufficient information for us to delist lean-premix turbines at this time, lean-premix turbines are a subcategory that could be delisted if GTA or other commenters provide sufficient information for us to determine that this subcategory satisfies the requirements of CAA section 112(c)(9).

Natural gas fired turbines are another example of a subcategory that might be delisted under this approach. We have created subcategories based on fuel type in other MACT rules and believe that fuel type could be an appropriate way of subcategorizing stationary combustion turbines or of creating further subdivisions within the subcategories contained in the proposed rule. We are not proposing a subcategory for natural gas fired turbines at this time, although we could create such a subcategory in the future, if appropriate. While the information presented in GTA's letter is not sufficient for us to make this determination at this time, additional information on the emissions and risks from natural gas fired turbines could lead us to delist natural gas fired turbines under this approach.

The EPA requests comment on the concept of identifying technologically-based subcategories that may include only low-risk facilities within the combustion turbine source category and on the specific examples presented above.

Another approach to using the authority granted in CAA section 112(c)(9) is presented in the white paper prepared by representatives of the plywood and composite wood products industry (see docket OAR 2002–0060). The EPA is considering whether it would be possible to establish a subcategory of facilities within the larger source category that would meet the risk-based criteria for delisting. Such criteria would likely include the same requirements as described previously for the second scenario under the CAA section 112(d)(4) approach, whereby a facility would be in the low-risk subcategory if its emissions of threshold pollutants do not result in exposures which exceed the HI limits and if its emissions of nonthreshold pollutants do not exceed a cancer risk level of 10^{-6}. The EPA requests comment on what an appropriate HI limit would be for a determination that a facility be included in the low-risk subcategory.

Since each facility in such a subcategory would be a low-risk facility (*i.e.*, if each met these criteria), the subcategory could be delisted in accordance with CAA section 112(c)(9), thereby limiting the costs and impacts of the proposed MACT rule to only those facilities that do not qualify for subcategorization and delisting.

Facilities seeking to be included in the delisted subcategory would be responsible for providing all data required to determine whether they are eligible for inclusion. Facilities that could not demonstrate that they are eligible to be included in the low-risk subcategory would be subject to MACT and possible future residual risk standards. The EPA solicits comment on implementing a risk-based approach for establishing subcategories of stationary combustion turbines.

Since each facility in such a subcategory would be a low-risk facility (*i.e.*, if each met these criteria), the subcategory could be delisted in accordance with CAA section 112(c)(9), thereby limiting the costs and impacts of the proposed MACT rule to only those facilities that do not qualify for subcategorization and delisting.

Establishing that a facility qualifies for the low-risk subcategory under CAA section 112(c)(9) will necessarily involve combining estimates of pollutant emissions with air dispersion modeling to predict exposures. The EPA envisions that we would employ the same tiered analysis described earlier in the CAA section 112 (d)(4) discussion for these determinations.

One concern that EPA has with respect to the CAA section 112(c)(9) approach is the effect that it could have on the MACT floors. If many of the facilities in the low-risk subcategory are well-controlled, that could make the MACT floor less stringent for the remaining facilities. One approach that has been suggested to mitigate this effect would be to establish the MACT floor now based on controls in place for the entire category and to allow facilities to become part of the low-risk subcategory in the future, after the MACT standards are established. This would allow low-risk facilities to use the CAA section 112(c)(9) exemption without affecting the MACT floor calculation. The EPA requests comment on this suggested approach.

If a CAA section 112(c)(9) approach were adopted, the requirements of the rule as proposed would not apply to any source that demonstrates that it belongs in a subcategory which has been delisted under CAA section 112(c)(9).

C. Limited Use Subcategory

We are soliciting comments on creating a subcategory of limited use stationary combustion turbines with capacity utilization of 10 percent or less (876 or fewer hours of annual operation). Units in this subcategory would include combustion turbines used for electric power peak shaving that are called upon to operate fewer than 876 hours per year. These units operate only during peak energy use periods, typically in the summer months. We believe that these infrequently operated units typically operate 10 percent of the year or less. While these are potential sources of emissions, and it is appropriate for EPA to address them in the proposed rule, the Agency believes that their use and operation are different compared to typical combustion turbines. We believe that it may be appropriate for such limited use units to have their own subcategory. Therefore, we are soliciting comment on subcategorizing combustion turbines having a capacity utilization of less than 10 percent.

We are interested in comments on creating a subcategory for limited use peak shaving (less than 10 percent capacity utilization) combustion turbines. We are interested in comments on the validity and appropriateness under the CAA for a subcategory for limited use peak shaving combustion turbines, data on the levels of control currently achieved by such combustion turbines, and any technical limitations that might make it impossible to achieve control of emissions from limited use peak shaving combustion turbines.

VI. Administrative Requirements

A. Executive Order 12866, Regulatory Planning Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), we must determine whether a regulatory action is ''significant'' and, therefore, subject to review by the Office of Management and Budget (OMB) and the requirements of the Executive Order. The Executive Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligation of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, we have determined that the proposed rule is a ''significant regulatory action'' within the meaning of the Executive Order. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are included in the docket.

B. Executive Order 13132, Federalism

Executive Order 13132 (64 FR 43255, August 10, 1999) requires us to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' are defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

The proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132.

We are required by section 112 of the CAA, 42 U.S.C. § 7412, to establish the standards in the proposed rule. The proposed rule primarily affects private industry, and does not impose significant economic costs on State or local governments. The proposed rule does not include an express provision preempting State or local regulations. Thus, the requirements of section 6 of the Executive Order do not apply to the proposed rule.

Although section 6 of Executive Order 13132 does not apply to the proposed rule, we consulted with representatives of State and local governments to enable them to provide meaningful and timely input into the development of the proposed rule. This consultation took place during the ICCR FACA committee meetings where members representing State and local governments participated in developing recommendations for EPA's combustion-related rulemakings, including the proposed rule. The concerns raised by representatives of State and local governments were considered during the development of the proposed rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on the proposed rule from State and local officials.

C. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' ''Policies that have tribal implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes.''

The proposed rule does not have tribal implications. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes, as specified in Executive Order 13175. We do not know of any stationary combustion turbines owned or operated by Indian tribal governments. However, if there are any, the effect of these rules on communities of tribal governments would not be unique or disproportionate to the effect on other communities. Thus, Executive Order 13175 does not apply to the proposed rule.

D. Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that we have reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, we must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives.

We interpret Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5–501 of the Executive Order has the potential to influence the regulation. The proposed rule is not subject to Executive Order 13045 because it is based on technology performance and not on health or safety risks.

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

Executive Order 13211 (66 FR 28355, May 22, 2001), provides that agencies shall prepare and submit to the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, a Statement of Energy Effects for certain actions identified as ''significant energy actions.'' Section 4(b) of Executive Order 13211 defines ''significant energy actions'' as ''any action by an agency (normally published in the **Federal Register**) that promulgates or is expected to lead to the promulgation of a final rule or regulation, including notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking: (1) (i) That is a significant regulatory action under Executive Order 12866 or any successor order, and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (2) that is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action.'' The proposed rule is a significant regulatory action within the meaning of Executive Order 12866. We have, therefore, prepared a Statement of Energy Effects for this action as follows.

The increase in petroleum product output, which includes increases in fuel production, is estimated at 0.003 percent, or about 475 barrels per day based on 2000 U.S. fuel production nationwide. The reduction in coal production is estimated at 0.006 percent, or about 700,000 short tons per year based on 2000 U.S. coal production nationwide. The reduction in electricity output is estimated at 0.02 percent, or about 4.9 billion kilowatt-hours per year based on 2000 U.S. electricity production nationwide. Production of natural gas is expected to increase by 3.0 million cubic feet (ft^3) per day. The maximum of all energy price increases, which include increases in natural gas prices as well as those for petroleum products, coal, and electricity, is estimated to be the 0.18 percent increase in peak-load electricity rates nationwide. Energy distribution costs may increase by roughly no more than the same amount as electricity rates. We expect that there will be no discernable impact on the import of foreign energy supplies, and no other adverse outcomes are expected to occur with regards to energy supplies. Also, the increase in cost of energy production should be minimal given the very small increase in fuel consumption resulting from back pressure related to operation of oxidation catalyst emission control devices. All of the estimates presented above account for some passthrough of costs to consumers as well as the direct cost impact to producers. For more information on these estimated energy effects, please refer to the economic impact analysis for the proposed rule. This analysis is available in the public docket.

No new combustion turbines with a capacity of less than 1.0 MW will be affected. Also, the control level applied to affected new combustion turbines is the minimum that can be applied consistent with the provisions of the Clean Air Act.

Therefore, we conclude that the proposed rule when implemented will not have a significant adverse effect on the supply, distribution, or use of energy.

F. Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, we generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any 1 year. Before promulgating a rule for which a written statement is needed, section 205 of the UMRA generally requires us to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows us to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before we establish any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, we must develop a small government agency plan under section 203 of the UMRA. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

We have determined that the proposed rule contains a Federal mandate that will not result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any 1 year. Accordingly, we have not prepared a written statement under section 202 of the UMRA.

1. Statutory Authority

As discussed in previously in this preamble, the statutory authority for the proposed rulemaking is section 112 of the CAA. Title III of the CAA was enacted to reduce nationwide air toxic emissions. Section 112(b) of the CAA lists the 188 chemicals, compounds, or groups of chemicals deemed by Congress to be HAP. These toxic air pollutants are to be regulated by NESHAP.

Section 112(d) of the CAA directs us to develop NESHAP which require existing and new major sources to control emissions of HAP using MACT. The NESHAP apply to all stationary combustion turbines located at major sources of HAP emissions, however, only new or reconstructed stationary combustion turbines have substantive regulatory requirements.

In compliance with section 205(a) we identified and considered a reasonable number of regulatory alternatives. Additional information on the costs and environmental impacts of the regulatory alternatives is presented in the ''Stationary Combustion Turbines Control Options Cost Information Summary'' in the docket.

The regulatory alternative upon which the proposed rule is based represents the MACT floor for stationary combustion turbines and, as a result, it is the least costly and least burdensome alternative. In addition, we have conducted an economic impact analysis of today's proposed rule that includes the impacts on State and local government entities in order to provide information on the effects of the proposed rule on such entities. The analysis is available in the docket for the proposed rule.

2. Consultation With Government Officials

The Unfunded Mandates Act requires that we describe the extent of the Agency's prior consultation with affected State, local, and tribal officials, summarize the officials' comments or concerns, and summarize our response to those comments or concerns.

In addition, section 203 of the UMRA requires that we develop a plan for informing and advising small governments that may be significantly or uniquely impacted by a proposal. Although the proposed rule does not significantly affect any State, local, or tribal governments, we have consulted with State and local air pollution control officials. We also have held meetings on the proposed rule with many of the stakeholders from numerous individual companies, environmental groups, consultants and vendors, labor unions, and other interested parties. We have added materials to the Air docket to document those meetings.

In addition, we have determined that the proposed rule contains no regulatory requirements that might significantly or uniquely affect small governments. Therefore, today's proposed rule is not subject to the requirements of section 203 of the UMRA.

G. Regulatory Flexibility Act (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

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

For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: (1) A small business whose parent company has fewer than 100 or 1,000 employees, depending on size definition for the affected North American Industry Classification System (NAICS) code, or fewer than 4 billion kW-hr per year of electricity usage; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. It should be noted that small entities in 6 NAICS codes are affected by the proposed rule, and the small business definition applied to each industry by NAICS code is that listed in the Small Business Administration (SBA) size standards (13 CFR 121).

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. This certification is based upon (1) examining the impacts to small entities based on the existing combustion turbines inventory, and presuming that the existing mix of combustion turbines among industries is a good approximation of the mix of turbines that will be installed and affected by the proposed rule up to 2005, and (2) considering influences on the decision by small entities to install new turbines. We have determined, based on the existing combustion turbines inventory, that 29 small entities out of 300 in the industries impacted by the proposed rule may be affected. None of these small entities will incur control costs associated with the proposed rule, but will incur monitoring, recordkeeping, and reporting costs and the costs of performance testing. These 29 small entities own 51 affected turbines in the existing combustion turbines inventory, which represents only 2.5 percent of the existing turbines overall. Of these entities, 22 of these entities are small communities and 7 are affected small firms. None of the 29 affected small entities are estimated to have compliance costs that exceed one-half of 1 percent of their revenues. The median compliance costs to affected small entities is only 0.07 percent of sales. In addition, the proposed rule is likely to also increase profits at the many small firms and increase revenues for the many small communities using combustion turbines that are not affected by the rule as a result of the very slight increase in market prices. Thus, we conclude that the proposed rule will not have a significant impact on a substantial number of small entities. It should be noted that it is likely that the ongoing deregulation of the electric power industry across the nation should minimize the proposed rule's impacts on small entities. Increased competition in the electric power industry is forecasted to decrease the market price for wholesale electric power. Open access to the grid and lower market prices for electricity will make it less attractive for local communities to purchase and operate new combustion turbines. For more information on the results of the analysis of small entity impacts, please refer to the economic impact analysis in the docket.

Although the proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of the rule on small entities. In the proposed rule, the Agency is applying the minimum level of control and the minimum level of monitoring, recordkeeping, and reporting to affected sources allowed by the Clean Air Act. In addition, as mentioned earlier in the preamble, new turbines with capacities under 1.0 MW are not covered by the proposed rule. This provision should reduce the level of small entity impacts. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

H. Paperwork Reduction Act

The information collection requirements in the proposed rule will be submitted for approval to the Office of Management and Budget under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared (ICR No. 1967.01) and a copy may be obtained from Susan Auby by mail at the Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Avenue NW, Washington, DC 20460, by e-mail at *auby.susan@epa.gov*, or by calling (202) 566–1672. A copy may also be downloaded off the internet at *http://www.epa.gov/icr*.

The information requirements are based on notification, recordkeeping, and reporting requirements in the NESHAP General Provisions (40 CFR part 63, subpart A), which are mandatory for all operators subject to national emission standards. These recordkeeping and reporting requirements are specifically authorized by section 114 of the CAA (42 U.S.C. 7414). All information submitted to EPA pursuant to the recordkeeping and reporting requirements for which a claim of confidentiality is made is safeguarded according to Agency policies set forth in 40 CFR part 2, subpart B.

The proposed rule would require maintenance inspections of the control devices but would not require any notifications or reports beyond those required by the General Provisions. The recordkeeping requirements require only the specific information needed to determine compliance.

The annual monitoring, reporting, and recordkeeping burden for this collection (averaged over the first 3 years after the effective date of the standards) is estimated to be 8,458 labor hours per year at a total annual cost of $2.4 million. This estimate includes a one-time performance test, semiannual excess emission reports, maintenance inspections, notifications, and recordkeeping. Total capital/startup costs associated with the monitoring requirements over the 3-year period of the ICR are estimated at $515,262, with operation and maintenance costs of $21,047 per year.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for our regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

Comments are requested on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques. Send comments on the ICR to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822), 1200 Pennsylvania Ave., NW, Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th St., NW, Washington, DC 20503, marked Attention: Desk Officer for EPA. Include the ICR number in any correspondence.

Since OMB is required to make a decision concerning the ICR between 30 and 60 days after January 14, 2003, a comment to OMB is best assured of having its full effect if OMB receives it by February 13, 2003. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995 (Public Law No. 104–113; 15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in their regulatory and procurement activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, business practices) developed or adopted by one or more voluntary consensus bodies. The NTTAA directs us to provide Congress, through annual reports to the Office of Management and Budget (OMB), with explanations when an agency does not use available and applicable voluntary consensus standards.

The proposed rulemaking involves technical standards. We propose in the rule to use EPA Methods 1, 1A, 3A, 3B, 4 of 40 CFR part 60, appendix A; Method 320 of 40 CFR part 63, appendix A; Method 323 of 40 CFR part 63, appendix A; Performance Specification (PS) 3, PS 4A of 40 CFR part 60, appendix B; EPA SW–846 Method 0011; and ARB Method 430, California Environmental Protection Agency, Air Resources Board, 2020 L Street, Sacramento, CA 95812. Consistent with the NTTAA, we conducted searches to identify voluntary consensus standards in addition to these EPA methods. No applicable voluntary consensus standards were identified for EPA Methods 1A, 3B of 40 CFR part 60, appendix A; PS 3, PS 4 of 40 CFR part 60, appendix B; and ARB Method 430, California Environmental Protection Agency, Air Resources Board, 2020 L Street, Sacramento, CA 95812. The search and review results have been documented and are placed in the docket for the proposed rule.

This search for emission measurement procedures identified nine voluntary consensus standards. We determined that six of these nine standards were impractical alternatives to EPA test methods for the purposes of the proposed rulemaking. Therefore, we do not propose to adopt these standards today. The reasons for this determination for the six methods are discussed below.

Two of the six voluntary consensus standards are impractical alternatives to EPA test methods for the purposes of the proposed rulemaking because they are too general, too broad, or not sufficiently detailed to assure compliance with EPA regulatory requirements: ASTM E337–84 (Reapproved 1996), ''Standard Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures),'' for EPA Method 4; and CAN/CSA Z223.2–M86(1986), ''Method for the Continuous Measurement of Oxygen, Carbon Dioxide, Carbon Monoxide, Sulphur Dioxide, and Oxides of Nitrogen in Enclosed Combustion Flue Gas Streams,'' for EPA Method 3A of 40 CFR part 60, appendix A.

Four of the six voluntary consensus standards are impractical alternatives to EPA test methods for the purposes of the proposed rulemaking because they lacked sufficient quality assurance and quality control requirements necessary for EPA compliance assurance requirements: ASTM D3154–91, ''Standard Method for Average Velocity in a Duct (Pitot Tube Method),'' for EPA Methods 1, 2, 2C, 3, 3B, and 4 of 40 CFR part 60, appendix A; ASTM D5835–95, ''Standard Practice for Sampling Stationary Source Emissions for Automated Determination of Gas Concentration,'' for EPA Method 3A of 40 part 60, appendix A; ISO 10396:1993, ''Stationary Source Emissions: Sampling for the Automated Determination of Gas Concentrations,'' for EPA Method 3A of 40 CFR part 60, appendix A; and ISO 9096:1992, ''Determination of Concentration and Mass Flow Rate of Particulate Matter in Gas Carrying Ducts—Manual Gravimetric Method,'' for EPA Method 5 of 40 CFR part 60, appendix A.

The following three of the nine voluntary consensus standards identified in this search were not available at the time the review was conducted for the purposes of the proposed rulemaking because they are under development by a voluntary consensus body: ASME/BSR MFC 13M, ''Flow Measurement by Velocity Traverse,'' for EPA Method 1 (and possibly 2) of 40 CFR part 60, appendix A; ISO/DIS 12039, ''Stationary Source Emissions—Determination of Carbon Monoxide, Carbon Dioxide, and Oxygen—Automated Methods,'' for EPA Method 3A of 40 CFR part 60, appendix A; and ASTM D6348–98, ''Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform (FTIR) Spectroscopy,'' for EPA Method 320 of 40 CFR part 63, appendix A. While we are not proposing to include these three voluntary consensus standards in today's proposal, we will consider the standards when final.

For the voluntary consensus standard, ASTM D6348–98, Determination of Gaseous Compounds by Extractive Direct Interface Fourier Transform (FTIR) Spectroscopy, we have submitted comments to ASTM regarding EPA's technical evaluation of ASTM D6348–98. Currently, the ASTM Subcommittee D22–03 is undertaking a revision of the ASTM standard in part to address EPA's comments. Upon successful ASTM balloting and demonstration of technical equivalency with the EPA's FTIR methods, the revised ASTM standard could be incorporated by reference into the proposed rule at a later date.

We are taking comment on the compliance demonstration requirements in the proposed rulemaking and specifically invite the public to identify potentially-applicable voluntary consensus standards. Commenters should also explain why the proposed rule should adopt these voluntary consensus standards in lieu of or in addition to EPA's standards. Emission test methods and performance specifications submitted for evaluation should be accompanied with a basis for the recommendation, including method validation data and the procedure used to validate the candidate method (if a method other than Method 301, 40 CFR part 63, Appendix A, was used).

Tables 3 and 5 of proposed subpart YYYY list the EPA testing methods and performance standards included in the proposed rule. Under § 63.8 of 40 CFR part 63, subpart A, a source may apply to EPA for permission to use alternative monitoring in place of any of the EPA testing methods.

List of Subjects in 40 CFR Part 63

Environmental protection, Administrative practice and procedure, Air pollution control, Hazardous substances, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: November 26, 2002.

Christine Todd Whitman,

Administrator.

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

PART 63—[AMENDED]

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

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

2. Part 63 is proposed to be amended by adding subpart YYYY to read as follows:

Subpart YYYY—National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

What This Subpart Covers

§ 63.6080 What is the purpose of subpart YYYY?

Subpart YYYY establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emissions from stationary combustion turbines located at major sources of HAP emissions and requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

§ 63.6085 Am I Subject to This Subpart?

You are subject to this subpart if you own or operate a stationary combustion turbine located at a major source of HAP emissions.

(a) A stationary combustion turbine is one that is not self propelled or intended to be propelled while performing its function, although it may be mounted on a vehicle for portability or transportability. Stationary combustion turbines covered by this subpart include simple cycle stationary combustion turbines, regenerative/recuperative cycle stationary combustion turbines, cogeneration cycle stationary combustion turbines, and combined cycle stationary combustion turbines.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

§ 63.6090 What parts of my plant does this subpart cover?

This subpart applies to each affected source.

(a) *Affected source.* An affected source is any existing, new, or reconstructed stationary combustion turbine located at a major source of HAP emissions.

(1) *Existing stationary combustion turbine.* A stationary combustion turbine is existing if you commenced construction or reconstruction of the stationary combustion turbine on or before January 14, 2003. A change in ownership of an existing stationary combustion turbine does not make that stationary combustion turbine a new or reconstructed stationary combustion turbine.

(2) *New stationary turbine.* A stationary combustion turbine is new if you commenced construction of the stationary combustion turbine after January 14, 2003.

(3) *Reconstructed stationary turbine.* A stationary combustion turbine is reconstructed if you meet the definition of reconstruction in § 63.2 of subpart A of this part and reconstruction is commenced after January 14, 2003.

(b) *Exceptions.* (1) A new or reconstructed stationary combustion turbine located at a major source or an existing lean premix stationary combustion turbine located at a major source which meets any of the following criteria does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of § 63.6145(d):

(i) The stationary combustion turbine is an emergency stationary combustion turbine;

(ii) The stationary combustion turbine is a limited use stationary combustion turbine; or

(iii) The stationary combustion turbine burns landfill gas or digester gas as the primary fuel.

(2) An existing, new, or reconstructed stationary combustion turbine with a rated peak power output of less than 1.0 megawatt (MW) at International Organization for Standardization (ISO) standard day conditions, which is located at a major source, does not have to meet the requirements of this subpart and of subpart A of this part.

(3) Existing diffusion flame stationary combustion turbines do not have to meet the requirements of this subpart and of subpart A of this part.

(4) Combustion turbine engine test cells/stands do not have to meet the requirements of this subpart but may have to meet the requirements of subpart A of this part if subject to another subpart.

§ 63.6092 Are duct burners and waste heat recovery units covered by subpart YYYY?

No, duct burners and waste heat recovery units are considered steam generating units and are not covered under this subpart.

§ 63.6095 When do I have to comply with this subpart?

(a) *Affected sources.* (1) If you start up your new or reconstructed stationary combustion turbine before [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER], you must comply with the emission limitations and operating limitations in this subpart no later than [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER].

(2) If you start up your new or reconstructed stationary combustion turbine after [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER], you must comply with the emission limitations and operating limitations in this subpart upon startup of your affected source.

(3) If you have an existing stationary combustion turbine, you must comply with the emission limitations and operating limitations in this subpart no later than 3 years after [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER].

(b) *Area sources that become major sources.* If your new or reconstructed stationary combustion turbine is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, it must be in compliance with this subpart when it becomes a major source.

(c) You must meet the notification requirements in § 63.6145 according to the schedule in § 63.6145 and in 40 CFR part 63, subpart A.

Emission and Operating Limitations

§ 63.6100 What emission and operating limitations must I meet?

For each stationary combustion turbine with a rated peak power output of 1.0 MW or greater at ISO standard day conditions located at a major source, which is not:

(a) An emergency stationary combustion turbine;

(b) A stationary combustion turbine burning landfill gas or digester gas as its primary fuel;

(c) A limited use stationary combustion turbine; or

(d) An existing diffusion flame stationary combustion turbine; you must comply with the emission limitations and operating limitations in Table 1 and Table 2 of this subpart.

General Compliance Requirements

§ 63.6105 What are my general requirements for complying with this subpart?

(a) You must be in compliance with the emission limitations and operating limitations which apply to you at all times except during startup, shutdown, and malfunctions.

(b) If you must comply with emission and operating limitations, you must operate and maintain your stationary combustion turbine, oxidation catalyst emission control device or other air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.

Testing and Initial Compliance Requirements

§ 63.6110 By what date must I conduct the initial performance tests or other initial compliance demonstrations?

You must conduct the initial performance tests or other initial compliance demonstrations in Table 4 of this subpart that apply to you within 180 calendar days after the compliance date that is specified for your stationary combustion turbine in § 63.6095 and according to the provisions in § 63.7(a)(2).

§ 63.6115 When must I conduct subsequent performance tests?

If you are complying with the formaldehyde emission concentration limitation and your stationary combustion turbine is lean premix, this section applies to you. If you are not attaining low NO_X levels, as permitted by an enforcement agency, or if there are not permit levels and you are not attaining low NO_X levels characteristic of lean premix combustion (*e.g.*, NO_X levels guaranteed by the manufacturer), additional performance testing may be required by the enforcement agency.

§ 63.6120 What performance tests and other procedures must I use?

(a) You must conduct each performance test in Table 3 of this subpart that applies to you.

(b) For demonstrations of initial compliance with the emission limitation for carbon monoxide (CO) reduction, you must complete the actions described in paragraphs b(1) and (2) of this section.

(1) Normalize the CO concentrations at the inlet and outlet of the oxidation catalyst emission control device to a dry basis and to 15 percent oxygen or an equivalent percent carbon dioxide (CO_2).

(2) Calculate the percent reduction of CO using the following equation 1 of this section:

$$\frac{C_i - C_o}{C_i} \times 100 = R \qquad \text{Eq. 1}$$

Where:

C_i = CO concentration at inlet of the oxidation catalyst emission control device

C_o = CO concentration at the outlet of the oxidation catalyst emission control device

R = percent reduction in CO emissions.

(3) The initial demonstration of compliance consists of the first 4-hour average percent reduction in CO recorded after completion of the performance evaluation of the CEMS.

(c) Each performance test must be conducted according to the requirements of the General Provisions at § 63.7(e)(1) and under the specific conditions in Table 2 of this subpart.

(d) Do not conduct performance tests or compliance evaluations during periods of startup, shutdown, or malfunction.

(e) If you comply with the emission limit for formaldehyde emission concentration, you must conduct three separate test runs for each performance test, and each test run must last at least 1 hour.

(f) If you comply with the emission limitation for formaldehyde emission concentration and your stationary combustion turbine is not diffusion flame or lean premix, you must petition the Administrator for additional operating limitations to be established during the initial performance test and continuously monitored thereafter, or for approval of no additional operating limitations. You must not conduct the initial performance test until after the petition has been approved by the Administrator.

(g) If you comply with the emission limitation for formaldehyde emission concentration and your stationary combustion turbine is not diffusion flame or lean premix and you petition the Administrator for approval of additional operating limitations, your petition must include the following information described in paragraphs (g)(1) through (5) of this section.

(1) Identification of the specific parameters you propose to use as additional operating limitations;

(2) A discussion of the relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters and how limitations on these parameters will serve to limit HAP emissions;

(3) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(4) A discussion identifying the methods you will use to measure and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(5) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(h) If you comply with the emission limitation for formaldehyde emission concentration and you petition the Administrator for approval of no additional operating limitations, your petition must include the information described in paragraphs (h)(1) through (7) of this section.

(1) Identification of the parameters associated with operation of the stationary combustion turbine and any emission control device which could change intentionally (e.g, operator adjustment, automatic controller adjustment, etc.) or unintentionally (e.g., wear and tear, error, etc.) on a routine basis or over time;

(2) A discussion of the relationship, if any, between changes in the parameters and changes in HAP emissions;

(3) For the parameters which could change in such a way as to increase HAP emissions, a discussion of whether establishing limitations on the parameters would serve to limit HAP emissions;

(4) For the parameters which could change in such a way as to increase HAP emissions, a discussion of how you could establish upper and/or lower values for the parameters which would establish limits on the parameters in operating limitations;

(5) For the parameters, a discussion identifying the methods you could use to measure them and the instruments you could use to monitor them, as well as the relative accuracy and precision of the methods and instruments;

(6) For the parameters, a discussion identifying the frequency and methods for recalibrating the instruments you could use to monitor them; and

(7) A discussion of why, from your point of view, it is infeasible or unreasonable to adopt the parameters as operating limitations.

§ 63.6125 What are my monitor installation, operation, and maintenance requirements?

(a) If you comply with the emission limitation for CO reduction, you must install, operate, and maintain a CEMS to monitor CO and either oxygen or CO_2 at both the inlet and outlet of the oxidation catalyst emission control device according to the requirements described in paragraphs (a)(1) through (4) of this section.

(1) You must install, operate, and maintain each CEMS according to the applicable Performance Specification of 40 CFR part 60, appendix B (PS–4A).

(2) You must conduct a performance evaluation of each CEMS according to the requirements in 40 CFR 63.8 and according to the applicablePerformance Specification of 40 CFR part 60, appendix B.

(3) As specified in § 63.8(c)(4)(ii), each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each consecutive 15-minute period. You must have at least two data points, each representing a different 15-minute period within the same hour to have a valid hour of data.

(4) Continuous emission monitoring system data must be reduced as specified in § 63.8(g)(2) and recorded in parts per million (ppm) CO at 15 percent oxygen or equivalent CO_2 concentration.

(b) If you have monitors that are subject to paragraph (a) of this section, you must properly maintain and operate the monitors continuously according to the requirements described in paragraphs (b)(1) and (2) of this section.

(1) Proper maintenance. You must maintain the monitoring equipment at all times that the turbine is operating, including but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

(2) Continued operation. You must conduct all monitoring in continuous operation at all times that the combustion turbine is operating, except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments). Data recorded during monitoring malfunctions, associated repairs, out-of-control periods, and required quality assurance or control activities shall not be used for purposes of calculating data averages. You must use all of the data collected from all other periods in assessing compliance. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring equipment to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. Any period for which the monitoring system is out-of-control and data are not available for required calculations constitutes a deviation from the monitoring requirements.

§ 63.6130 How do I demonstrate initial compliance with the emission limitations?

(a) You must demonstrate initial compliance with each emission and operating limitation that applies to you according to Table 4 of this subpart.

(b) You must submit the Notification of Compliance Status containing results of the initial compliance demonstration according to the requirements in § 63.6145(f).

Continuous Compliance Requirements

§ 63.6135 How do I monitor and collect data to demonstrate continuous compliance?

(a) Except for monitor malfunctions, associated repairs, and required quality assurance or quality control activities (including, as applicable, calibration checks and required zero and span adjustments of the monitoring system), you must conduct all monitoring in continuous operation at all times the stationary combustion turbine is operating.

(b) Do not use data recorded during monitor malfunctions, associated repairs, and required quality assurance or quality control activities for meeting the requirements of this subpart, including data averages and calculations. You must use all the data collected during all other periods in assessing the performance of the control device or in assessing emissions from the new or reconstructed stationary combustion turbine.

§ 63.6140 How do I demonstrate continuous compliance with the emission and operating limitations?

(a) You must demonstrate continuous compliance with each emission limitation and operating limitation in Table 1 and Table 2 of this subpart according to methods specified in Table 5 and Table 6 of this subpart.

(b) You must report each instance in which you did not meet each emission limitation or operating limitation. You must also report each instance in which you did not meet the requirements in Table 8 of this subpart that apply to you. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in § 63.6150.

(c) Consistent with §§ 63.6(e) and 63.7(e)(1), deviations that occur during a period of startup, shutdown, and malfunction are not violations.

Notifications, Reports, and Records

§ 63.6145 What notifications must I submit and when?

(a) You must submit all of the notifications in §§ 63.7(b) and (c), 63.8(e), 63.8(f)(4) and (6), and 63.9(b) and (h) that apply to you by the dates specified.

(b) As specified in § 63.9(b)(2), if you start up your combustion turbine before [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER], you must submit an Initial Notification not later than 120 calendar days after [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER].

(c) As specified in § 63.9(b), if you start up your new or reconstructed stationary combustion turbine on or after [DATE THE FINAL RULE IS PUBLISHED IN THE FEDERAL REGISTER], you must submit an Initial Notification not later than 120 calendar days after you become subject to this subpart.

(d) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with § 63.6090(b), your notification should include the information in § 63.9(b)(2)(i) through (v) and a statement that your new or reconstructed stationary combustion turbine has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary combustion turbine).

(e) If you are required to conduct an initial performance test, you must submit a notification of intent to conduct an initial performance test at least 60 calendar days before the initial performance test is scheduled to begin as required in § 63.7(b)(1).

(f) If you are required to comply with either the emission limitation for CO reduction or the emission limitation for formaldehyde emission concentration, you must submit a Notification of Compliance Status according to § 63.9(h)(2)(ii).

(1) For each initial compliance demonstration with the emission limitation for CO reduction, you must submit the Notification of Compliance Status before the close of business on the 30th calendar day following the completion of the initial compliance demonstration.

(2) For each performance test required to demonstrate compliance with the emission limitation for formaldehyde emission concentration, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th calendar day following the completion of the performance test.

§ 63.6150 What reports must I submit and when?

(a) Any one who owns or operates a new or reconstructed stationary combustion turbine which must meet the emission limitation for CO reduction must submit a semiannual compliance report according to Table 7 of this subpart by the date specified in paragraphs (a)(1) through (5) of this section unless the Administrator has approved a different schedule, according to the information described in paragraphs (a)(1) through (5) of this section.

(1) The first semiannual compliance report must cover the period beginning on the compliance date specified in § 63.6095 and ending on June 30 or December 31, whichever date is the first date following the end of the first calendar half after the compliance date specified in § 63.6095.

(2) The first semiannual compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date follows the end of the first calendar half after the compliance date that is specified in § 63.6095.

(3) Each subsequent semiannual compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) Each subsequent semiannual compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each new or reconstructed stationary combustion turbine that is subject to permitting regulations pursuant to 40 CFR part 70 or 71, and if the permitting authority has established the date for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates in paragraphs (a)(1) through (4) of this section.

(b) The semiannual compliance report must contain the information described in paragraphs (b)(1) through (4) of this section.

(1) Company name and address.

(2) Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) If there is no deviation from any emission limitation that applies to you, a statement that there was no deviation from the emission limitations during the reporting period and that no CEMS was inoperative, inactive, malfunctioning, out of control, repaired, or adjusted.

(c) For each deviation from an emission limitation that occurs where you are not using a CEMS to comply with the emission limitations in this subpart, the compliance report must contain the information in paragraphs (b)(1) through (3) of this section and the information contained in paragraphs (c)(1) through (3) of this section.

(1) The total operating time of each new or reconstructed combustion turbine during the reporting period.

(2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.

(3) Information on the number, duration, and cause for monitor downtime incidents (including unknown cause, if applicable, other than downtime associated with zero and span and other daily calibration checks).

(d) For each deviation from an emission limitation occurring where you are using a CEMS to comply with an emission limitation, you must include the information in paragraphs (c)(1) through (3) of this section and the information included in paragraphs (d)(1) through (11) of this section.

(1) The date and time that each deviation started and stopped.

(2) The date and time that each CEMS was inoperative except for zero (low-level) and high-level checks.

(3) The date and time that each CEMS was out-of-control including the information in § 63.8(c)(8).

(4) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown or malfunction or during another period.

(5) A summary of the total duration of the deviation during the reporting period (recorded in 4-hour periods), and the total duration as a percent of the total operating time during that reporting period.

(6) A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.

(7) A summary of the total duration of CEMS downtime during the reporting period (reported in 4-hour periods), and the total duration of CEMS downtime as a percent of the total turbine operating time during that reporting period.

(8) A breakdown of the total duration of CEMS downtime during the reporting period into periods that are due to monitoring equipment malfunctions, non-monitoring equipment malfunctions, quality assurance/quality control calibrations, other known causes and other unknown causes.

(9) The monitoring equipment manufacturer(s) and model number(s) of each monitor.

(10) The date of the latest CEMS certification or audit.

(11) A description of any changes in CEMS or controls since the last reporting period.

§ 63.6155 What records must I keep?

(a) You must keep the records as described in paragraphs (a)(1) through (5) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted, according to the requirements in § 63.10(b)(2)(xiv).

(2) Records of performance tests and performance evaluations as required in § 63.10(b)(2)(viii).

(3) Records of the occurrence and duration of each startup, shutdown, or malfunction as required in § 63.10(b)(2)(i).

(4) Records of the occurrence and duration of each malfunction of the air pollution control equipment, if applicable, as required in § 63.10(b)(2)(ii).

(5) Records of all maintenance on the air pollution control equipment as required in § 63.10(b)(iii).

(b) For each CEMS, you must keep the records as described in paragraphs (b)(1) through (3) of this section.

(1) Records described in § 63.10(b)(2)(vi) through (xi).

(2) Previous (*i.e.*, superceded) versions of the performance evaluation plan as required in § 63.8(d)(3).

(3) Request for alternatives to the relative accuracy test for CEMS as required in § 63.8(f)(6)(i), if applicable.

(c) You must keep the records required in Tables 5 and 6 of this subpart to show continuous compliance with each emission limitation and operating limitation that applies to you.

§ 63.6160 In what form and how long must I keep my records?

(a) You must maintain all applicable records in such a manner that they can be readily accessed and are suitable for inspection according to § 63.10(b)(1).

(b) As specified in § 63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must retain your records of the most recent 2 years on site or your records must be accessible on site. Your records of the remaining 3 years may be retained off site.

Other Requirements and Information

§ 63.6165 What parts of the General Provisions apply to me?

Table 8 of this subpart shows which parts of the General Provisions in § 63.1 through 13 apply to you.

§ 63.6170 Who implements and enforces this subpart?

(a) This subpart is implemented and enforced by the U.S. EPA or a delegated authority such as your State, local, or tribal agency. If the EPA Administrator has delegated authority to your State, local, or tribal agency, then that agency (as well as the U.S. EPA) has the authority to implement and enforce this subpart. You should contact your EPA Regional Office to find out whether this subpart is delegated to your State, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a State, local, or tribal agency under section 40 CFR part 63, subpart E, the authorities contained in paragraph (c) of this section are retained by the EPA Administrator and are not transferred to the State, local, or tribal agency.

(c) The authorities that will not be delegated to State, local, or tribal agencies are:

(1) Approval of alternatives to the emission limitations or operating limitations in § 63.6100 under § 63.6(g).

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

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

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

§ 63.6175 What definitions apply to this subpart?

Terms used in this subpart are defined in the CAA; in 40 CFR 63.2, the General Provisions of this part; and in this section:

Area source means any stationary source of HAP that is not a major source as defined in this part.

Associated equipment as used in this subpart and as referred to in section 112(n)(4) of the CAA, means equipment associated with an oil or natural gas exploration or production well, and includes all equipment from the well bore to the point of custody transfer, except glycol dehydration units, storage vessels with potential for flash emissions, combustion turbines, and stationary reciprocating internal combustion engines.

CAA means the Clean Air Act (42 U.S.C. 7401 *et seq.*, as amended by Public Law 101–549, 104 Stat. 2399).

Cogeneration cycle stationary combustion turbine means any stationary combustion turbine that recovers heat from the stationary combustion turbine exhaust gases using an exhaust heat exchanger, such as a heat recovery steam generator.

Combined cycle stationary combustion turbine means any stationary combustion turbine that recovers heat from the stationary combustion turbine exhaust gases using an exhaust heat exchanger to generate steam for use in a steam turbine.

Combustion turbine engine test cells/stands means engine test cells/stands, as defined in subpart PPPPP of this part, that test stationary combustion turbines.

Custody transfer means the transfer of hydrocarbon liquids or natural gas: after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation. For the purposes of this subpart, the point at which such liquids or natural gas enters a natural gas processing plant is a point of custody transfer.

Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emission limitation or operating limitation;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Fails to meet any emission limitation or operating limitation in this subpart during malfunction, regardless or whether or not such failure is permitted by this subpart.

Diffusion flame stationary combustion turbine means any stationary combustion turbine where fuel and air are injected at the combustor and are mixed only by diffusion prior to ignition.

Digester gas means any gaseous by-product of wastewater treatment formed through the anaerobic decomposition of organic waste materials and composed principally of methane and CO_2.

Emergency stationary combustion turbine means any stationary combustion turbine that operates as a mechanical or electrical power source when the primary source of power is interrupted by an emergency situation. Examples include stationary combustion turbines used to produce power for critical networks or equipment when electric power from the local utility is interrupted, or stationary combustion turbines used to pump water in the case of fire or flood, etc. Emergency stationary combustion turbines do not include stationary combustion turbines used as peaking units at electric utilities or stationary combustion turbines at industrial facilities that typically operate at low capacity factors.

Hazardous air pollutant (HAP) means any air pollutant listed in or pursuant to section 112(b) of the CAA.

ISO standard day conditions means 288 degrees Kelvin (15 °C), 60 percent relative humidity and 101.3 kilopascals pressure.

Landfill gas means a gaseous by-product of the land application of municipal refuse formed through the anaerobic decomposition of waste materials and composed principally of methane and CO_2.

Lean premix stationary combustion turbine means any stationary combustion turbine where the air and fuel are thoroughly mixed to form a lean mixture before delivery to the combustor.

Limited use stationary combustion turbine means any stationary combustion turbine which is operated 50 hours or less per calendar year.

Major Source, as used in this subpart, shall have the same meaning as in § 63.2, except that:

(1) Emissions from any oil or gas exploration or production well (with its associated equipment (as defined in this section)) and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control except when they are on the same surface site;

(2) For oil and gas production facilities, emissions from processes, operations, or equipment that are not part of the same oil and gas production facility, as defined in this section, shall not be aggregated; and

(3) For production field facilities, only HAP emissions from glycol dehydration units, storage tanks with flash emissions potential, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Oil and gas production facility as used in this subpart means any grouping of equipment where hydrocarbon liquids are processed, upgraded (*i.e.*, remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For purposes of a major source determination, facility (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site as defined in this section. Equipment that is part of a facility will typically be located within close proximity to other equipment located at the same facility. Pieces of production equipment or groupings of equipment located on different oil and gas leases, mineral fee tracts, lease tracts, subsurface or surface unit areas, surface fee tracts, surface lease tracts, or separate surface sites, whether or not connected by a road, waterway, power line or pipeline, shall not be considered part of the same facility. Examples of facilities in the oil and natural gas production source category include, but are not limited to, well sites, satellite tank batteries, central tank batteries, a compressor station that transports natural gas to a natural gas processing plant, and natural gas processing plants.

Oxidation catalyst emission control device means an emission control device that incorporates catalytic oxidation to reduce CO emissions.

Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

Production field facility means those oil and gas production facilities located prior to the point of custody transfer.

Regenerative/recuperative cycle stationary combustion turbine means any stationary combustion turbine that recovers heat from the stationary combustion turbine exhaust gases using an exhaust heat exchanger to preheat the combustion air entering the combustion chamber of the stationary combustion turbine.

Simple cycle stationary combustion turbine means any stationary combustion turbine that does not recover heat from the stationary combustion turbine exhaust gases.

Surface site means any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.

Tables to Subpart YYYY of Part 63

As stated in §§ 63.6100 and 63.6140, you must comply with the following emission limitations:

TABLE 1 TO SUBPART YYYY OF PART 63.—EMISSION LIMITATIONS

For . . .	You must meet one of the following emission limitations . . .
1. each stationary combustion turbine described in § 63.6100	a. achieve a reduction in CO of 95 percent or greater, measured before and after an oxidation catalyst emission control device is installed to treat all of the stationary combustion turbine exhaust gases, if you install an oxidation catalyst emission control device or b. limit the concentration of formaldehyde to 43 ppbvd or less at 15 percent O_2, if you do not install an oxidation catalyst emission control device.

As stated in §§ 63.6100 and 63.6140, you must comply with the following operating limitations:

TABLE 2 TO SUBPART YYYY OF PART 63.—OPERATING LIMITATIONS

For . . .	You must . . .
1. Each stationary combustion turbine complying with the emission limitation for CO reduction.	Meet no operating limitations.
2. Each stationary combustion turbine complying with the emission limitation for formaldehyde emission concentration that is diffusion flame or lean premix.	Meet no operating limitations.
3. Each stationary combustion turbine complying with the emission limitation for formaldehyde emission concentration that is not diffusion flame or lean premix.	You must comply with any additional operating limitations approved by the Administrator.

As stated in § 63.6120, you must comply with the following requirements for performance tests and initial compliance demonstrations:

TABLE 3 OF SUBPART YYYY OF PART 63.—REQUIREMENTS FOR PERFORMANCE TESTS AND INITIAL COMPLIANCE DEMONSTRATIONS

For each stationary combustion turbine complying with . . .	You must . .	Using . . .	According to the following requirements . . .
1. The emission limitation for CO reduction.	Demonstrate a reduction in CO of 95 percent or more.	A CEMS for CO and either O_2 or CO_2 to monitor at both the inlet and outlet of the oxidation catalyst emission control device.	This demonstration is conducted immediately following a successful performance evaluation of the CEMS as required in § 63.6125(a). The demonstration consists of the first 4-hour average of measurements. The reduction in CO is calculated using the equation in § 63.6120 and must be normalized to 15 percent O_2 or equivalent percent CO_2.

TABLE 3 OF SUBPART YYYY OF PART 63.—REQUIREMENTS FOR PERFORMANCE TESTS AND INITIAL COMPLIANCE DEMONSTRATIONS—Continued

For each stationary combustion turbine complying with . . .	You must . .	Using . . .	According to the following requirements . . .
2. The emission limitation for formaldehyde emission concentration.	a. Demonstrate formaldehyde emissions are 43 ppbvd or less by a performance test and.	i. Test Method 320 of 40 CFR part 63, appendix A; or EPA SW–846 Method 0011; or California Environmental Protection Agency, Air Resources Board, Method 430* formaldehyde and acetaldehyde in emissions from stationary sources, adopted Sept 12, 1989, amended December 13, 1991 (ARB Method 430)*; or if your affected source fires natural gas, Test Method 323 of 40 CFR part 63, appendix A; or other methods approved by the Administrator.	(1) Formaldehyde concentration must be corrected to 15 percent O_2, dry basis. Results of this test consist of the average of the three 1 hour runs.
	b. Select the sampling port location and the number of traverse points and.	i. Method 1 or 1A of 40 CFR part 60, appendix A § 63.7(d)(1)(i).	(1) If using an air pollution control device, the sampling site must be located at the outlet of the air pollution control device.
	c. Determine the O_2 concentration at the sampling port location.	i. Method 3A or 3B of 40 CFR part 60, appendix A.	(1) Measurements to determine O_2 concentration must be made at the same time as the performance test.

* You may obtain a copy of ARB Method 430 from the California Environmental Protection Agency, Air Resources Board, 2020 L Street, Sacramento, CA 95812, or you may download a copy of ARB Method 430 from ARB's web site (http://www.arb.ca.gov/testmeth/vol3/vol3.htm).

As stated in §§ 63.6110 and 63.6130, you must comply with the following requirements to demonstrate initial compliance with emission limitations:

TABLE 4 TO SUBPART YYYY OF PART 63.—INITIAL COMPLIANCE WITH EMISSION LIMITATIONS

For the . . .	You have demonstrated initial compliance if . . .
1. Emission limitation for CO reduction	The average reduction of CO emissions is at least 95 percent, dry basis.
2. Emission limitation for formaldehyde	The average formaldehyde concentration is 43 ppbvd or less at 15 percent O_2.

As stated in §§ 63.6135 and 63.6140, you must comply with the following requirements to demonstrate continuing compliance with emissions limitations:

TABLE 5 OF SUBPART YYYY OF PART 63.—CONTINUOUS COMPLIANCE WITH EMISSION LIMITATIONS

For the . . .	You must demonstrate continous compliance by . . .
1. Emission limitation for CO reduction	a. Collecting the CEMS data according to § 63.6125(a), reducing the measurements to 1-hour averages, calculating the percent reduction in CO emissions according to § 63.6120; and b. Demonstrating a reduction in CO of 95 percent or more over each 4-hour averaging period; and c. Applying 40 CFR part 60 appendix F, procedure 1.

As stated in §§ 63.6135 and 63.6140, you must comply with the following requirements to demonstrate continuing compliance with operating limitations:

TABLE 6 OF SUBPART YYYY OF PART 63.—CONTINUOUS COMPLIANCE WITH OPERATING LIMITATIONS

For the emission limitation . . .	For the operating limitation . . .	You must demonstrate continuous compliance by . . .
For formaldehyde	To comply with operating limitations approved by the Administrator.	Collect the data according to § 63.6120(g) and maintain the operating parameters within the operating limits.

As stated in §§ 63.6145 and 63.6150, you must comply with the following requirements for reports:

TABLE 7 OF SUBPART YYYY OF PART 63.—REQUIREMENTS FOR REPORTS

If you own or operate a stationary combustion turbine which must comply with the CO emission reduction limitation, you must submit a . . .		
Semiannual compliance report	If there is no deviation from any emission limitation or operating limitation, a statement that you have had no deviation from the emission limitation or operating limitation during the reporting period and that no CEMS or CPMS was inoperative, inactive, out-of-control, repaired, or adjusted. If you had a deviation from any emission limitation or operating limitation during the reporting period, the report must contain the information in § 63.6150(d) or (e), as applicable.	Semiannually, according to the requirements in $63,6150.

You must comply with the applicable General Provisions requirements:

TABLE 8 OF SUBPART YYYY OF PART 63.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART YYYY

Citation	Subject	Applies to subpart YYYY	Explanation
§ 63.1(a)(1)	General applicability of the General Provisions.	Yes	Additional terms defined in § 63.6175.
§ 63.1(a)(2)–(4)		Yes..	
§ 63.1(a)(5)	[Reserved].		
§ 63.1(a)(6)–(7)	Contact for source category information; extension of compliance through early reduction.	Yes.	
§ 63.1(a)(8)		No	Refers to State programs.
§ 63.1(a)(9)	[Reserved].		
§ 63.1(a)(10)–(14)		Yes..	
§ 63.1(b)(1)	Initial applicability	Yes	Subpart YYYY clarifies applicability at § 63.6085.
§ 63.1(b)(2)	Title V operating permit-reference to part 70	Yes	All major affected sources are required to obtain a title V permit.
§ 63.1(b)(3)	Record of applicability determination	Yes.	
§ 63.1(c)(1)	Applicability after standards are set	Yes	Subpart YYYY clarifies the applicability of each paragraph of subpart A to sources subject to subpart YYYY.
§ 63.1(c)(2)	Title V permit requirement for sources	No	Area sources are not subject to area subpart YYYY.
§ 63.1(c)(3)	[Reserved].		
§ 63.1(c)(4)	Extension of compliance for existing sources	Yes.	
§ 63.1(c)(5)	Notification requirements for an area source becoming a major source.	Yes	
§ 63.1(d)	[Reserved].		
§ 63.1(e)	Applicability of permit program before a relevant standard has been set.	Yes.	
§ 63.2	Definitions	Yes	Additional terms defined in § 63.6175.
§ 63.3	Units and abbreviations	Yes.	
§ 63.4	Prohibited activities	Yes.	
§ 63.5(a)	Construction and reconstruction applicability	Yes.	

TABLE 8 OF SUBPART YYYY OF PART 63.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART YYYY—Continued

Citation	Subject	Applies to subpart YYYY	Explanation
§ 63.5(b)(1)	Requirements upon construction or reconstruction.	Yes.	
§ 63.5(b)(2)	[Reserved].		
§ 63.5(b)(3)	Approval of construction	Yes.	
§ 63.5(b)(4)	Notification of construction	Yes.	
§ 63.5(b)(5)	Compliance	Yes.	
§ 63.5(b)(6)	Addition of equipment	Yes.	
§ 63.5(c)	[Reserved].		
§ 63.5(d)	Application for construction reconstruction	Yes.	
§ 63.5(e)	Approval of construction or reconstruction	Yes.	
§ 63.5(f)	Approval of construction or reconstruction based on prior State review.	Yes.	
§ 63.6(a)	Applicability	Yes.	
§ 63.6(b)(1)–(2)	Compliance dates for new and reconstructed sources.	Yes.	
§ 63.6(b)(3)	Compliance dates for sources constructed or reconstructed before effective date.	No	Compliance is required by startup or effective date.
§ 63.6(b)(4)	Compliance dates for sources also subject to § 112(f) standards.	Yes.	
§ 63.6(b)(5)	Notification	Yes.	
§ 63.6(b)(6)	[Reserved].		
§ 63.6(b)(7)	Compliance dates for new and reconstructed area sources that become major.	Yes.	
§ 63.6(c)(1)–(2)	Compliance dates for existing sources	Yes.	
§ 63.6(c)(3)–(4)	[Reserved].		
§ 63.6(c)(5)	Compliance dates for existing area sources that become major.	Yes.	
§ 63.6(d)	[Reserved].		
§ 63.6(e)(1)–(2)	Operation and maintenance	Yes	Except that you are not required to have a startup, shutdown, and malfunction plan (SSMP).
§ 63.6(e)(3)	SSMP	No.	
§ 63.6(f)(1)	Applicability of standards except during startup, shutdown, or malfunction (SSM).	Yes.	
§ 63.6(f)(2)	Methods for determining compliance	Yes.	
§ 63.6(f)(3)	Finding of compliance	Yes.	
§ 63.6(g)(1)–(3)	Use of alternative standard	Yes.	
§ 63.6(h)	Opacity and visible emission standards	No	Subpart YYYY does not contain opacity or visible emission standards.
§ 63.6(i)	Compliance extension procedures and criteria	Yes.	
§ 63.6(j)	Presidential compliance exemption	Yes.	

TABLE 8 OF SUBPART YYYY OF PART 63.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART YYYY—Continued

Citation	Subject	Applies to subpart YYYY	Explanation
§ 63.7(a)(1)–(2)	Performance test dates	Yes	Subpart YYYY contains performance test dates at § 63.6110.
§ 63.7(a)(3)	Section 114 authority	Yes.	
§ 63.7(b)(1)	Notification of performance test	Yes.	
§ 63.7(b)(2)	Notification of rescheduling	Yes.	
§ 63.7(c)	Quality assurance/test plan	Yes.	
§ 63.7(d)	Testing facilities	Yes.	
§ 63.7(e)(1)	Conditions for conducting performance tests	Yes.	
§ 63.7(e)(2)	Conduct of performance tests and reduction of data.	Yes	Subpart YYYY specifies test methods at § 63.6120.
§ 63.7(e)(3)	Test run duration	Yes.	
§ 63.7(e)(4)	Administrator may require other testing under section 114 of the CAA.	Yes.	
§ 63.7(f)	Alternative test method provisions	Yes.	
§ 63.7(g)	Performance test data analysis, recordkeeping, and reporting.	Yes.	
§ 63.7(h)	Waiver of tests	Yes.	
§ 63.8(a)(1)	Applicability of monitoring requirements	Yes	Subpart YYYY contains specific requirements for monitoring at § 63.6125.
§ 63.8(a)(2)	Performance specifications	Yes.	
§ 63.8(a)(3)	[Reserved].		
§ 63.8(a)(4)	Monitoring with flares	No.	
§ 63.8(b)(1)	Monitoring	Yes.	
§ 63.8(b)(2)–(3)	Multiple effluents and multiple monitoring systems.	Yes.	
§ 63.8(c)(1)	Monitoring system operation and maintenance.		
§ 63.8(c)(1)(i)	Routine and predictable SSM	No	Subpart YYYY does not require SSMP.
§ 63.8(c)(1)(ii)	SSM not in SSMP	No	Subpart YYYY does not require SSMP.
§ 63.8(c)(1)(iii)	Compliance with operation and maintenance requirements.	Yes.	
§ 63.8(c)(2)–(3)	Monitoring system installation	Yes.	
§ 63.8(c)(4)	Continuous monitoring system (CMS) requirements.	Yes	Except that subpart YYYY does not require continuous opacity monitoring systems (COMS).
§ 63.8(c)(5)	COMS minimum procedures	No.	
§ 63.8(c)(6)–(8)	CMS requirements	Yes	Except that subpart YYYY does not require COMS.
§ 63.8(d)	CMS quality control	Yes.	
§ 63.8(e)	CMS performance evaluation	Yes	Except for § 63.8(e)(5)(ii), which applies to COMS.
§ 63.8(f)(1)–(5)	Alternative monitoring method	Yes.	

TABLE 8 OF SUBPART YYYY OF PART 63.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART YYYY—Continued

Citation	Subject	Applies to subpart YYYY	Explanation
§ 63.8(f)(6)	Alternative to relative accuracy test	Yes.	
§ 63.8(g)	Data reduction	Yes	Except that provisions for COMS are not applicable. Averaging periods for demonstrating compliance are specified at §§ 63.6135 and 63.6140.
§ 63.9(a)	Applicability and State delegation of notification requirements.	Yes.	
§ 63.9(b)(1)–(5)	Initial notifications	Yes.	
§ 63.9(c)	Request for compliance extension	No	Compliance extensions do not apply to new or reconstructed sources.
§ 63.9(d)	Notification of special compliance requirements for new sources.	Yes.	
§ 63.9(e)	Notification of performance test	Yes.	
§ 63.9(f)	Notification of visible emissions/opacity test	No.	
§ 63.9(g)(1)	Notification of performance evaluation	Yes.	
§ 63.9(g)(2)	Notification of use of COMS data	No	Subpart YYYY does not contain opacity or VE standards.
§ 63.9(g)(3)	Notification that criterion for alternative to relative accuracy test audit (RATA) is exceeded.	Yes	If alternative is in use.
§ 63.9(h)(1)–(6)	Notification of compliance status	Yes	Except that notifications for sources not conducting performance tests are due 30 days after completion of performance evaluations.
§ 63.9(i)	Adjustment of submittal deadlines	Yes.	
§ 63.9(j)	Change in previous information	Yes.	
§ 63.10(a)	Administrative provisions for recordkeeping and reporting.	Yes.	
§ 63.10(b)(1)	Record retention	Yes.	
§ 63.10(b)(2)(i)–(iii)	Records related to SSM	Yes.	
§ 63.10(b)(2)(iv)–(v)	Records related to actions during SSM	No	Subpart YYYY does not require SSMP so requirements to demonstrate conformance or nonconformance with SSMP are not applicable.
§ 63.10(b)(2)(vi)–(xi)	CMS records	Yes.	
§ 63.10(b)(2)(xii)	Record when under waiver	Yes.	
§ 63.10(b)(2)(xiii)	Records when using alternative to RATA	Yes	For CO standard if using RATA alternative.
§ 63.10(b)(2)(xiv)	Records of supporting documentation	Yes.	
§ 63.10(b)(3)	Records of applicability determination	Yes.	
§ 63.10(c)(1)	Additional records for sources using CEMS	Yes.	
§ 63.10(d)(1)	General reporting requirements	Yes.	
§ 63.10(d)(2)	Report of performance test results	Yes.	
§ 63.10(d)(3)	Reporting opacity or VE observations	No	Subpart YYYY does not contain opacity or VE standards.

TABLE 8 OF SUBPART YYYY OF PART 63.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART YYYY—Continued

Citation	Subject	Applies to subpart YYYY	Explanation
§ 63.10(d)(4)	Progress reports	No	Compliance extensions do not apply to new or reconstructed sources.
§ 63.10(d)(5)	Startup, shutdown, and malfunction reports	No	Subpart YYYY does not require reporting of startup, shutdowns, or malfunctions.
§ 63.10(e)(1) and (2)(i)	Additional CMS reports	Yes.	
§ 63.10(e)(2)(ii)	COMS-related report	No	Subpart YYYY does not require COMS.
§ 63.10(e)(3)	Excess emissions and parameter exceedances reports.	Yes.	
§ 63.10(e)(4)	Reporting COMS data	No	Subpart YYYY does not require COMS.
§ 63.10(f)	Waiver for recordkeeping and reporting	Yes.	
§ 63.11	Flares	No.	
§ 63.12	State authority and delegations	Yes.	
§ 63.13	Addresses	Yes.	
§ 63.14	Incorporation by reference	Yes.	
§ 63.15	Availability of information	Yes.	

3. Appendix A to Part 63 is proposed to be amended by adding, in numerical order, Method 323 to read as follows:

Appendix A to Part 63—Test Methods

* * * * *

Method 323—Measurement of Formaldehyde Emissions from Natural Gas-Fired Stationary Sources—Acetyl Acetone Derivitization Method

1.0 Introduction

This method describes the sampling and analysis procedures of the acetyl acetone colorimetric method for measuring formaldehyde emissions in the exhaust of natural gas-fired, stationary combustion sources. This method, which was prepared by the Gas Research Institute (GRI), is based on the Chilled Impinger Train Method for Methanol, Acetone, Acetaldehyde, Methyl Ethyl Ketone, and Formaldehyde (Technical Bulletin No. 684) developed and published by the National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI).[1] However, this method has been prepared specifically for formaldehyde and does not include specifications (*e.g.*, equipment and supplies) and procedures (*e.g.*, sampling and analytical) for methanol, acetone, acetaldehyde, and methyl ethyl ketone. To obtain reliable results, persons using this method should have a thorough knowledge of at least Methods 1, 2, 3, and 4 of 40 CFR part 60, appendix A.

1.1 Scope and Application

1.1.1 *Analytes.* The only analyte measured by this method is formaldehyde (CAS Number 50–00–0).

1.1.2 *Applicability.* This method is for analyzing formaldehyde emissions from uncontrolled and controlled natural gas-fired, stationary combustion sources.

1.1.3 *Data Quality Objectives.* If you adhere to the quality control and quality assurance requirements of this method, then you and future users of your data will be able to assess the quality of the data you obtain and estimate the uncertainty in the measurements.

2.0 Summary of Method

An emission sample from the combustion exhaust is drawn through a midget impinger train containing chilled reagent water to absorb formaldehyde. The formaldehyde concentration in the impinger is determined by reaction with acetyl acetone to form a colored derivative which is measured colorimetrically.

3.0 Definitions

[Reserved]

4.0 Interferences

The presence of acetaldehyde, amines, polymers of formaldehyde, periodate, and sulfites can cause interferences with the acetyl acetone procedure which is used to determine the formaldehyde concentration. However, based on experience gained from extensive testing of natural gas-fired combustion sources using FTIR to measure a variety of compounds, GRI expects only acetaldehyde to be potentially present when combusting natural gas. Acetaldehyde has been reported to be a significant interferent only when present at concentrations above 50 ppm.[4] However, GRI reports that the concentration of acetaldehyde from gas-fired sources is very low (typically below the FTIR detection limit of around 0.5 ppmv); therefore, the potential positive bias due to acetaldehyde interference is expected to be negligible.

5.0 Safety

5.1 Prior to applying the method in the field, a site-specific Health and Safety Plan should be prepared. General safety precautions include the use of steel-toed boots, safety glasses, hard hats, and work gloves. In certain cases, facility policy may require the use of fire-resistant clothing while on-site. Since the method involves testing at high-temperature sampling locations, precautions must be taken to limit the potential for exposure to high-temperature gases and surfaces while inserting or removing the sample probe. In warm locations, precautions must also be taken to avoid dehydration.

5.2 Potential chemical hazards associated with sampling include formaldehyde, nitrogen oxides (NO_X), and carbon monoxide (CO). Formalin solution, used for field spiking, is an aqueous solution containing formaldehyde and methanol. Formaldehyde is a skin, eye, and respiratory irritant and a carcinogen, and should be handled accordingly. Eye and skin contact and inhalation of formaldehyde vapors should be avoided.

Natural gas-fired combustion sources can potentially emit CO at toxic concentrations. Care should be taken to minimize exposure to the sample gas while inserting or removing the sample probe. If the work area is enclosed, personal CO monitors should be used to insure that the concentration of CO in the work area is maintained at safe levels.

5.3 Potential chemical hazards associated with the analytical procedures include acetyl acetone and glacial acetic acid. Acetyl acetone is an irritant to the skin and respiratory system, as well as being moderately toxic. Glacial acetic acid is highly corrosive and is an irritant to the skin, eyes, and respiratory system. Eye and skin contact and inhalation of vapors should be avoided. Acetyl acetone and glacial acetic acid have flash points of 41°C (105.8°F) and 43°C (109.4°F), respectively. Exposure to heat or flame should be avoided.

6.0 Equipment and Supplies

6.1 *Sampling Probe.* Quartz glass probe with stainless steel sheath or stainless steel probe.

6.2 *Teflon Tubing.* Teflon tubing to connect the sample probe to the impinger train. A heated sample line is not needed since the sample transfer system is rinsed to recover condensed formaldehyde and the rinsate combined with the impinger contents prior to sample analysis.

6.3 *Midget Impingers.* Three midget impingers are required for sample collection. The first impinger serves as a moisture knockout, the second impinger contains 20 mL of reagent water, and the third impinger contains silica gel to remove residual moisture from the sample prior to the dry gas meter.

6.4 *Vacuum Pump.* Vacuum pump capable of delivering a controlled extraction flow rate between 0.2 and 0.4 L/min.

6.5 *Flow Measurement Device.* A rotameter or other flow measurement device to indicate consistent sample flow.

6.6 *Dry Gas Meter.* A dry gas meter is used to measure the total sample volume collected. The dry gas meter must be sufficiently accurate to measure the sample volume to within 2 percent, calibrated at the selected flow rate and conditions actually encountered during sampling, and equipped with a temperature sensor (dial thermometer, or equivalent) capable of measuring temperature accurately to within 3 °C (5.4 °F).

6.7 *Spectrophotometer.* A spectrophotometer is required for formaldehyde analysis, and must be capable of measuring absorbance at 412 nm.

7.0 Reagents and Standards

7.1 Sampling Reagents

7.1.1 *Reagent water.* Deionized, distilled, organic-free water. This water is used as the capture solution, for rinsing the sample probe, sample line, and impingers at the completion of the sampling run, in reagent dilutions, and in blanks.

7.1.2 *Ice.* Ice is necessary to pack around the impingers during sampling in order to keep the impingers cold. Ice is also needed for sample transport and storage.

7.2 Analysis

7.2.1 *Acetyl acetone Reagent.* Prepare the acetyl acetone reagent by dissolving 15.4 g of ammonium acetate in 50 mL of reagent water in a 100-mL volumetric flask. To this solution, add 0.20 mL of acetyl acetone and 0.30 mL of glacial acetic acid. Mix the solution thoroughly, then dilute to 100 mL with reagent water. The solution can be stored in a brown glass bottle in the refrigerator, and is stable for at least two weeks.

7.2.2 *Formaldehyde.* Reagent grade.

7.2.3 *Ammonium Acetate.*

7.2.4 *Glacial Acetic Acid.*

8.0 Sample Collection, Preservation, Storage, and Transport

8.1 Pre-test

8.1.1 Collect information about the site characteristics such as exhaust pipe diameter, gas flow rates, port location, access to ports, and safety requirements during a pre-test site survey. You should then decide the sample collection period per run and the target sample flow rate based on your best estimate of the formaldehyde concentration likely to be present. You want to assure that sufficient formaldehyde is captured in the impinger solution so that it can be measured precisely by the spectrophotometer. You may use Equation 323–1 to design your test program. As a guideline for optimum performance, if you can, design your test so that the liquid concentration (C_l)is approximately 10 times the assumed spectrophotometer detection limit of 0.2 ppmw. However, since actual detection limits are instrument specific, we also suggest that you confirm that the laboratory equipment can meet or exceed this detection limit.

8.1.2 Prepare and then weigh the midget impingers prior to configuring the sampling train. The first impinger is initially dry. The second impinger contains 20 mL of reagent water, and the third impinger contains silica gel that is added before weighing the impinger. Each prepared impinger is weighed and the pre-sampling weight is recorded to the nearest 0.5 gm.

8.1.3 Assemble the sampling train (see Figure 1). Ice is packed around the impingers in order to keep them cold during sample collection. A small amount of water may be added to the ice to improve thermal transfer.

8.1.4 Perform a sampling system leak-check (from the probe tip to the pump outlet) as follows: Connect a rotameter to the outlet of the pump. Close off the inlet to the probe and observe the leak rate. The leak rate must be less than 2 percent of the planned sampling rate of 0.2 or 0.4 L/min.

8.1.5 Source gas temperature and static pressure should also be considered prior to field sampling to ensure adequate safety precautions during sampling.

8.2 Sample Collection

8.2.1 Set the sample flow rate between 0.2—0.4 L/min, depending upon the anticipated concentration of formaldehyde in the engine exhaust. (You may have to refer to published data [5 6] for anticipated concentration levels.) If no information is available for the anticipated levels of formaldehyde, use the higher sampling rate of 0.4 L/min.

8.2.2 Record the sampling flow rate every 5–10 minutes during the sample collection period.

8.2.3 Monitor the amount of ice surrounding the impingers and add ice as necessary to maintain the proper impinger temperature. Remove excess water as needed to maintain an adequate amount of ice.

8.2.4 Record measured leak rate, beginning and ending times and dry gas meter readings for each sampling run, impinger weights before and after sampling, and sampling flow rates and dry gas meter exhaust temperature every 5–10 minutes during the run, in a signed and dated notebook.

8.2.5 If possible, monitor and record the fuel flow rate to the engine and the exhaust oxygen concentration during the sampling period. This data can be used to estimate the engine exhaust flow rate based on the Method 19 approach. This approach, if accurate fuel flow rates can be determined, is preferred for reciprocating IC engine exhaust flow rate estimation due to the pulsating nature of the engine exhaust. The F-Factor procedures described in Method 19 may be used based on measurement of fuel flow rate and exhaust oxygen concentration. One example equation is Equation 323–2.

8.3 *Post-test.* Perform a sampling system leak-check (from the probe tip to pump outlet). Connect a rotameter to the outlet of the pump. Close off the inlet to the probe and observe the leak rate. The leak rate must be less than 2 percent of the sampling rate. Weigh and record each impinger immediately after sampling to determine the moisture weight gain. The impinger weights are measured before transferring the impinger contents, and before rinsing the sample probe and sample line. The moisture content of the exhaust gas is determined by measuring the weight gain of the impinger solutions and volume of gas sampled as described in Method 4. Rinse the sample probe and sample line with reagent water. Transfer the impinger catch to an amber 40-mL VOA bottle with a Teflon-lined cap. If there is a small amount of liquid in the dropout impinger (<10 mL), the impinger catches can be combined in one 40 mL VOA bottle. If there is a larger amount of liquid in the dropout impinger, use a larger VOA bottle to combine the impinger catches. Rinse the impingers and combine the rinsate from the sample probe, sample line, and impingers with the impinger catch. In general, combined rinse volumes should not exceed 10 mL. The volume of the rinses during sample recovery should not be excessive as this may result in your having to use a larger VOA bottle. This in turn would raise the detection limit of the method since after combining the rinses with the impinger catches in the VOA bottle, the bottle should be filled with reagent water to eliminate the headspace in the sample vial. Keep the sample bottles over ice until analyzed on-site or received at the laboratory. Samples should be analyzed as soon as possible to minimize possible sample degradation. Based on a limited number of previous analyses, samples held in refrigerated conditions showed some sample degradation over time.

8.4 Quality Control Samples

8.4.1 *Field Duplicates.* During at least one run, a pair of samples should be collected concurrently and analyzed as separate samples. Results of the field duplicate samples should be identified and reported with the sample results. The percent difference in exhaust (stack) concentration indicated by field duplicates should be within 20 percent of their mean concentration. Data are to be flagged as suspect if the duplicates do not meet the acceptance criteria.

8.4.2 *Spiked Samples.* An aliquot of one sample from each source sample set should be spiked at 2 to 3 times the formaldehyde level found in the unspiked sample. It is also recommended that a second aliquot of the same sample be spiked at around half the level of the first spike; however, the second spike is not mandatory. The results are acceptable if the measured spike recovery is 80 to 120 percent. Use Equation 323–4. Data are to be flagged as suspect if the spike recovery do not meet the acceptance criteria.

8.4.3 Field Blank. A field blank consisting of reagent water placed in a clean impinger train, taken to the test site but not sampled, then recovered and analyzed in the same manner as the other samples, should be collected with each set of source samples. The field blank results should be less than 50 percent of the lowest calibration standard used in the sample analysis. If this criteria is not met, the data should be flagged as suspect.

9.0 Quality Control

QA/QC Specification	Acceptance criteria	Frequency	Corrective action
Leak-check—Sections 8.1.4, 8.3	<2% of Sampling rate	Pre- and Post-sampling	Pre-sampling: Repair leak and re-check Post-sampling: Flag data and repeat run if for regulatory compliance.
Sample flow rate	Between 0.2 and 0.4 L/min	Throughout sampling	Adjust.
VOA vial headspace	No headspace	After sample recovery	Flag data.
Sample preservation	Maintain on ice	After sample recovery	Flag data.
Sample hold time	14 day maximum	After sample recovery	Flag data.
Field Duplicates—Section 8.4.1	Within 20% of mean of original and duplicate sample.	One duplicate per source sample set.	Flag data.
Spiked Sample—Section 8.4.2	Recovery between 80 and 120%	One spike per source sample set	Flag data.
Field Blank—Section 8.4.3	<50% of the lowest calibration standard.	One blank per source sample set	Flag data.
Calibration Linearity—Section 10.1	Correlation coefficient of 0.99 or higher.	Per source sample set	Repeat calibration procedures.
Calibration Check Standard—Section 10.3.	Within 10% of theoretical value	One calibration check per source sample set.	Repeat check, remake standard and repeat, repeat calibration.
Lab Duplicates—Section 11.2.1	Within 10% of mean of original and duplicate sample analysis.	One duplicate per 10 samples	Flag data.
Analytical Blanks—Section 11.2.2	<50% of the lowest calibration standard.	One blank per source sample set	Clean glassware/analytical equipment and repeat.

10.0 Calibration and Standardization

10.1 *Spectrophotometer Calibration.* Prepare a stock solution of 10 ppm formaldehyde. Prepare a series of calibration standards from the stock solution by adding 0, 0.1, 0.3, 0.7, 1.0, and 1.5 mL of stock solution (corresponding to 0, 1.0, 3.0, 7.0, 10.0, and 15.0 µg formaldehyde, respectively) to screw-capped vials. Adjust each vial's volume to 2.0 mL with reagent water. Add 2.0 mL of acetyl acetone reagent, thoroughly mix the solution, and place the vials in a water bath (or heating block) at 60 °C for 10 minutes. Remove the vials and allow to cool to room temperature. Transfer each solution to a cuvette and measure the absorbance at 412 nm using the spectrophotometer. Develop a calibration curve from the analytical results of these standards. The acceptance criteria for the spectrophotometer calibration is a correlation coefficient of 0.99 or higher. If this criteria is not met, the calibration procedures should be repeated.

10.2 *Spectrophotometer Zero.* The spectrophotometer should be zeroed with reagent water when analyzing each set of samples.

10.3—*Calibration Checks.* Calibration checks consisting of analyzing a standard separate from the calibration standards must be performed with each set of samples. The calibration check standard should not be prepared from the calibration stock solution. The result of the check standard must be within 10 percent of the theoretical value to be acceptable. If the acceptance criteria are not met, the standard must be reanalyzed. If still unacceptable, a new calibration curve must be prepared using freshly prepared standards.

11.0 Analytical Procedure

11.1 *Sample Analysis.* A 2.0-mL aliquot of the impinger catch/rinsate is transferred to a screw-capped vial. Two mL of the acetyl acetone reagent are added and the solution is thoroughly mixed. Once mixed, the vial is placed in a water bath (or heating block) at 60 °C for 10 minutes. Remove the vial and allow to cool to room temperature. Transfer the solution to a cuvette and measure the absorbance using the spectrophotometer at 412 nm. The quantity of formaldehyde present is determined by comparing the sample response to the calibration curve. Use Equation 323–5. If the sample response is out of the calibration range, the sample must be diluted and reanalyzed. Such dilutions must be performed on another aliquot of the original sample before the addition of the acetyl acetone reagent. The full procedure is repeated with the diluted sample.

11.2 Analytical Quality Control

11.2.1 *Laboratory Duplicates.* Two aliquots of one sample from each source sample set should be prepared and analyzed (with a minimum of one pair of aliquots for every 10 samples). The percent difference between aliquot analysis should be within 10 percent of their mean. Use Equation 323–3. Data are flagged if the laboratory duplicates do not meet this criteria.

11.2.2 *Analytical blanks.* Blank samples (reagent water) should be incorporated into each sample set to evaluate the possible presence of any cross-contamination. The acceptance criteria for the analytical blank is less than 50 percent of the lowest calibration standard. If the analytical blank does not meet this criteria, the glassware/analytical equipment should be cleaned and the analytical blank repeated.

12.0 Calculations and Data Analysis

12.1 Nomenclature

A = measured absorbance of 2 mL aliquot
B = estimated sampling rate, lpm
C_l = target concentration in liquid, ppmw
D = estimated stack formaldehyde concentration (ppmv)
E = estimated liquid volume, normally 40, mL (the size of the VOA used)
c_{form} = formaldehyde concentration in gas stream, ppmvd
c_{form} @$15_{\%02}$ = formaldehyde concentration in gas stream corrected to 15% oxygen, ppmvd
C_{sm} = measured concentration of formaldehyde in the spiked aliquot
C_u = measured concentration of formaldehyde in the unspiked aliquot of the same sample
Cs = calculated concentration of formaldehyde spiking solution added to the spiked aliquot
df = dilution factor, 1 unless dilution of the sample was needed to reduce the absorbance into the calibration range
F_d = dry basis F-factor from Method 19, dscf per million btu
GCV_g = Gross calorific value (or higher heating value), btu per scf
K_c = spectrophotometer calibration factor, slope of the least square regression line (**Note:** Most spreadsheets are capable of calculating a least squares line.)
K_1 = 0.3855 °K/mm Hg for metric units, (17.65 °R/in.Hg for English units.)
MW = molecular weight, 30 g/g-mole, for formaldehyde

24.05 = mole specific volume constant, liters per g-mole
m = mass of formaldehyde in liquid sample, mg
P_{std} = Standard pressure, 760 mm Hg (29.92 in.Hg)
P_{bar} = Barometric pressure, mm Hg (in.Hg)
PD = Percent Difference
Q_e = exhaust flow rate, dscf per minute
Q_g = natural gas fuel flow rate, scf per minute
T_m = Average DGM absolute temperature, °K (°R).
T_{std} = Standard absolute temperature, 293 °K (528 °R).
t = sample time (minutes)
V_m = Dry gas volume as measured by the DGM, dcm (dcf).
$V_{m(std)}$ = Dry gas volume measured by the DGM, corrected to standard conditions, dscm (dscf).
V_t = actual total volume of impinger catch/rinsate, mL
V_a = volume (2.0) of aliquot analyzed, mL
X_1 = first value
X_2 = second value
O_{2d} = oxygen concentration measured, percent by volume, dry basis
%R = percent recovery of spike
Z_u = volume fraction of unspiked (native) sample contained in the final spiked aliquot [*e.g.*, Vu/(Vu + Vs), where Vu + Vs should = 2.0 mL]
Z_s = volume fraction of spike solution contained in the final spiked aliquot [*e.g.*, Vs/(Vu + Vs)]
R = 0.02405 dscm per g-mole, for metric units
Y = Dry Gas Meter calibration factor

12.2 Pretest Design

$$C_1 = \frac{B * t * D * 30}{24.05 * E} \qquad \text{Eq. 323-1}$$

12.3 Exhaust Flow Rate

$$Q = \frac{F_d Q_g GCV_g}{10^6}\left[\frac{20.9}{20.9 - O_{2d}}\right] \qquad \text{Eq. 323-2}$$

12.4 Percent Difference.—(Applicable to Field and Lab Duplicates)

$$PD = \frac{\left(X_1 - X_2\right)}{\left(\frac{X_1 + X_2}{2}\right)} * 100 \qquad \text{Eq. 323-3}$$

12.5 Percent Recovery of Spike

$$\%R = \frac{\left(C_{sm} - Z_u C_u\right)}{Z_s C_s} * 100 \qquad \text{Eq. 323-4}$$

12.6 Mass of Formaldehyde in Liquid Sample

$$m = K_c AF\left(\frac{V_t}{V_a}\right) \qquad \text{Eq. 323-5}$$

12.7 Dry Sample Gas Volume, Corrected to Standard Conditions

$$V_{m(std)} = \frac{\left(V_m Y T_{std} P_{bar}\right)}{\left(T_m P_{std}\right)} = \frac{K_i Y V_m P_{bar}}{T_m} \qquad \text{Eq. 323-6}$$

12.8 Formaldehyde Concentration in Gas Stream

$$c_{form} = \frac{R}{MW}\left(\frac{m}{V_{m(std)}}\right)\left(\frac{1\text{ g}}{1000\text{ mg}}\right)\left(1 \times 10^6\text{ ppm}\right) \qquad \text{Eq. 323-7}$$

12.9 Formaldehyde Concentration, Corrected to 15% Oxygen

$$c_{form@15\%O_2} = c_{form} * \frac{(20.9 - 15)}{(20.9 - O_{2d})} \qquad \text{Eq. 323-8}$$

13.0 Method Performance

13.1 *Precision.* Based on a Method 301 validation using quad train arrangement with post sampling spiking study of the method at a natural gas-fired IC engine, the relative standard deviation of six pairs of unspiked samples was 11.2 percent at a mean stack gas concentration of 16.7 ppmvd.

13.2 *Bias.* No bias correction is allowed. The single Method 301 validation study of the method at a natural gas-fired IC engine, indicated a bias correction factor of 0.91 for that set of data. An earlier spiking study got similar average percent spike recovery when spiking into a blank sample. This data set is too limited to justify using a bias correction factor for future tests at other sources.

13.3 *Range.* The range of this method for formaldehyde is 0.2 to 7.5 ppmw in the liquid phase. (This corresponds to a range of 0.27 to 10 ppmv in the engine exhaust if sampling at a rate of 0.4 Lpm for 60 minutes and using a 40 mL VOA bottle.) If the liquid sample concentration is above this range, perform the appropriate dilution for accurate measurement. Any dilutions must be taken from new aliquots of the original sample before reanalysis.

13.4 *Sample Stability.* Based on a sample stability study conducted in conjunction with the method validation, sample degradation for 7 and 14-day hold times does not exceed 2.3 and 4.6 percent, respectively, based on a 95 percent level of confidence. Therefore, the recommended maximum sample holding time for the underivatized impinger catch/rinsate is 14 days, where projected sample degradation is below 5 percent.

14.0 Pollution Prevention

Sample gas from the combustion source exhaust is vented to the atmosphere after passing through the chilled impinger sampling train. Reagent solutions and samples should be collected for disposal as aqueous waste.

15.0 Waste Management

Standards of formaldehyde and the analytical reagents should be handled according to the Material Safety Data Sheets.

16.0 References

[1] National Council of the Paper Industry for Air and Stream Improvement, Inc., ''Volatile Organic Emissions from Pulp and Paper Mill Sources, Part X—Test Methods, Quality Assurance/Quality Control Procedures, and Data Analysis Protocols,'' Technical Bulletin No. 684, December 1994.

[2] National Council of the Paper Industry for Air and Stream Improvement, Inc., ''Field Validation of a Source Sampling Method for Formaldehyde, Methanol, and Phenol at Wood Products Mills,'' 1997 TAPPI International Environmental Conference.

[3] Roy F. Weston, Inc., ''Formaldehyde Sampling Method Field Evaluation and Emission Test Report for Georgia-Pacific Resins, Inc., Russellville, South Carolina,'' August 1996.

[4] Hoechst Celanese Method CL 8–4, ''Standard Test Method for Free Formaldehyde in Air Using Acetyl acetone,'' Revision 0, September 1986.

[5] Shareef, G.S., *et al.* ''Measurement of Air Toxic Emissions from Natural Gas-Fired Internal Combustion Engines at Natural Gas Transmission and Storage Facilities.'' Report No. GRI–96/0009.1, Gas Research Institute, Chicago, Illinois, February 1996.

[6] Gundappa, M., *et al.* ''Characteristics of Formaldehyde Emissions from Natural Gas-Fired Reciprocating Internal Combustion Engines in Gas Transmission. Volume I: Phase I Predictive Model for Estimating Formaldehyde Emissions from 2–Stroke Engines.'' Report No. GRI–97/0376.1, Gas

Research Institute, Chicago, Illinois, September 1997.

17.0 Tables, Diagrams, Flowcharts, and Validation Data

BILLING CODE 6560–50–P

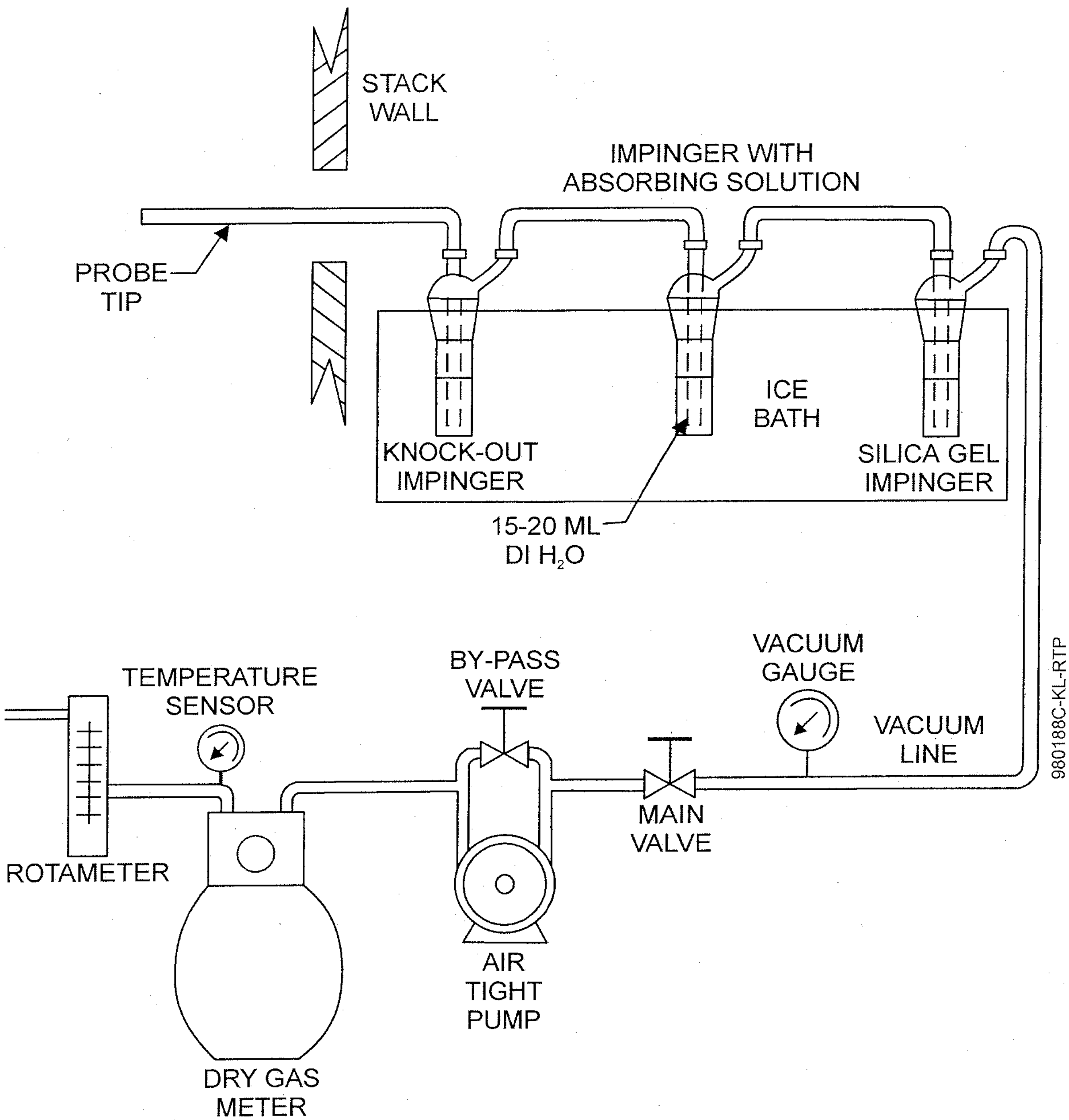

Figure 323-1. Chilled Impinger Train Sampling System

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