

National Emission Standards for Hazardous Air Pollutants for Area Source Boilers - Subpart JJJJJ

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Background on EPA's Air Toxics Program

- 1990 Clean Air Act Amendments
 - 187 Hazardous Air Pollutants (HAP) Listed
 - Air toxics or **chemicals known or suspected to cause cancer or other serious health effects** such as birth defects
 - Maximum Achievable Control Technology (MACT) Regulations Required for Major Sources of HAP
 - EPA has completed over 90 MACT regulations covering over 170 industry categories for major sources

Background on EPA's Air Toxics Program

- **July 19, 1999 Urban Air Toxics Strategy**
 - EPA required to list 30 Hazardous Air Pollutants (HAPs) from area sources which pose the greatest potential public health threat in urban areas
 - EPA must regulate area sources categories accounting for 90 percent of the emissions of 30 listed HAPs
 - EPA developed rules for 68 area source categories
 - Including a rule for Industrial, Commercial, and Institutional Boilers

What is affected by Subpart JJJJJ

- **Boilers at small (“area”) sources of HAP**
 - *National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Area Sources: Industrial, Commercial, and Institutional Boilers (Subpart JJJJJJ of Part 63) (“Boiler Area Source Rule”)*

Reduces Toxic Emissions and Protects Human Health

- Burning biomass, coal, and oil results in emissions of mercury, dioxin, furans, formaldehyde, lead, and hydrochloric acid.
- The technologies to reduce toxic air pollution have largely been available and in use for decades.
- Health effects are significant:
 - Mercury can cause adverse effects on children's developing brains, including effects on IQ, learning and memory.
 - Air toxics can cause cancer and other serious health effects in adults and children.
 - Controlling air toxics will also reduce fine particle pollution and carbon monoxide.
 - Fine particles are linked to serious cardiovascular and respiratory effects, even premature death.
 - Carbon monoxide reduces oxygen delivery to heart and brain, can cause angina and other problems for people with heart disease.

Area Sources – What are they?

- Small stationary sources of air toxics
- Any Source that emits some hazardous air pollutant (HAP) but is not a major source of HAP
- “Has a potential to emit less than 10 tpy for a single HAP or less than 25 tpy for combined HAP”

Definitions:

Boiler means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. Waste heat boilers are excluded from this definition.

Definitions

- A gas-fired boiler
 - Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.
- A hot water heater as defined
 - Hot water heater means a closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous or liquid fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, ... and ... water temperatures exceeding 210°F.

Area Source Subcategories

- **Oil subcategory**
 - Any boiler that burns any liquid fuel and is not in biomass or coal subcategories. Gas-fired boilers that burn liquid fuel during periods of gas curtailment, gas supply emergencies, or periodic testing up to 48 hours per calendar year not included
- **Coal subcategory**
 - Any boiler that burns solid fossil fuel and no more than 15 percent biomass on an annual heat input basis
- **Biomass subcategory**
 - Any boiler that burns at least 15 percent biomass on an annual heat input basis

Boiler Area Source Rule

- **Three subcategories based on design type:**
 - Coal-fired units
 - 3,700 units
 - 2% of area source boilers
 - 89% less than 10 million Btu/hr
 - Biomass-fired units
 - 11,000 units
 - 6% of area source boilers
 - 93% less than 10 million Btu/hr
 - Liquid fuel-fired units
 - 168,000 units
 - 92% of area source boilers
 - 95% less than 10 million Btu/hr

Are any boilers not subject to this subpart?

- Boilers regulated under another Part 63 Rule
- Boilers burning waste and covered under incinerator rules
 - Any boiler specifically listed as an affected source in another standard(s) established under section 129 of the Clean Air Act.
 - A boiler required to have a permit under section 3005 of the Solid Waste Disposal Act or covered by subpart EEE of this part (e.g., hazardous waste boilers).
- A boiler that is used specifically for research and development.
- Any boiler that is used as a control device to comply with another subpart of this part
 - provided that at least 50 percent of the heat input to the boiler is provided by the gas stream that is regulated under another subpart.

So your boiler is in, What will you
have to do to comply?

Area source boiler rule: Compliance requirements for existing boilers (before June 4, 2010)

- **Existing large boilers** ($\geq 10\text{mm/BTU}$) **Coal**
 - Numeric emission limits for 2 pollutants
mercury, carbon monoxide (CO)
 - 1-time energy assessment
- **Biomass, Oil**
 - Tune-up every other year
 - 1-time energy assessment
 - No numeric emission limits
- **Existing small boilers** ($< 10\text{mm/BTU}$)
 - **Coal, Biomass, Oil**
 - Tune-up every other year
 - No numeric emission limits

Area source boiler rule: Compliance requirements for new (after June 4, 2010)

- **New large boilers** (≥ 10 mm/BTU)
 - **Coal**
 - Numeric emission limits for 3 pollutants
mercury, carbon monoxide (CO), particulate matter (PM)
 - **Biomass, Oil**
 - Numeric emission limit for 1 pollutant
particulate matter (PM)
 - Tune-up every other year
- **New small boilers** (< 10 mm/BTU)
 - **Coal, Biomass, Oil**
 - Tune-up every other year
 - No numeric emission limits

Energy Conservation Requirements

- EPA has established pollution prevention as one of its highest priorities. One opportunity for pollution prevention lies in simply using energy efficient technologies to minimize emissions.
- **Tune-ups**
 - Applicable to small coal-fired boilers, all biomass-fired boilers, and all oil-fired boilers.
 - Rationale – by improving combustion efficiency, fuel usage is reduced which results in decreased emissions.
- **Energy Assessment (see Part 63.11224)**
 - Applicable to existing large boilers ≥ 10 mm/BTU
 - Provides valuable information on improving energy efficiency
 - Leads to reductions in emissions through process changes and other efficiency modifications (i.e. pollution prevention)
 - Energy conservation measures identified are not required to be implemented

What are the Tune-up Requirements?

- **Tune-up Requirements:**
- (1) As applicable, **inspect the burner**, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, but you must inspect each burner at least once every 36 months).
- (2) **Inspect the flame pattern**, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
- (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.
- (4) **Optimize total emissions of carbon monoxide**. This optimization should be consistent with the manufacturer's specifications, if available.

What are the Tune-up Requirements? (cont'd)

- (5) **Measure the concentrations** in the effluent stream of **carbon monoxide** in parts per million, by volume, and **oxygen** in volume percent, **before and after the adjustments** are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made).
- (6) Maintain onsite and submit, if requested by the Administrator, biennial report containing this information:
 - (i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured before and after the tune-up of the boiler.
 - (ii) A description of any corrective actions taken as a part of the tune-up
 - (iii) The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler.
- (7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup

What do I need to do now?

- For applicable area sources, you need to submit an initial notification to the EPA/NJDEP.
- An example of this form can be found at:

<http://www.epa.gov/region8/boilers/InitialNotification-AreaBoilers.pdf>

Notifications and Reports

- **Initial Notifications due by September 17, 2011** or within 120 days after the source becomes subject to standard
- **Notification of Intent to Conduct Performance Test** due at least 60 days before the performance stack test is scheduled to begin.
- **Notification of Compliance Status (NOCS)** due no later than 120 days after the applicable compliance date, unless you must conduct a performance stack test. If you must conduct a performance stack test, you must submit the Notification of Compliance Status within 60 days of completing the performance stack test.
 - e.g., NOCS following the tune-up is due no later than July 19, 2012 for existing sources

Notifications and Reports (continued)

- **Compliance Certification Reports** must be prepared, by March 1 of each year, and submit to the delegated authority upon request for the previous calendar year.
 - must submit the report by March 15 if you had any deviations from applicable requirements.
- **Biennial Compliance Report** only required to be prepared, and submitted upon request, for boilers subject only to a requirement to conduct a biennial tune-up and not subject to emission limits or operating limits

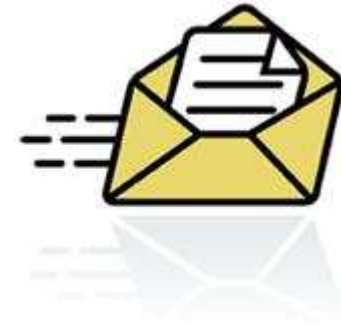
Sample Case #1– Oil fired < 10 MM/BTU boiler

- Initial notification submitted by 09/17/2011
- Complete initial tune-up by 03/21/82012

(You do not need to submit this tune-up report)

- Initial notification of compliance status by 07/19/2012

Where to Send Reports



EPA Region 2

Director, Division of Enforce & Compliance

290 Broadway

New York, NY 10007-1866

Attention: Sunila Agrawal

New Jersey –Bureau of Preconstruction Permitting

Division of Air Quality

401 E. State Street

Trenton, NJ, 08625-0027

For More Information

The following link will take you to a EPA document titled, The Small Entity Compliance Guide for Area Source Boilers. This has all the information you need to demonstrate compliance.

http://www.epa.gov/ttn/atw/boiler/imptools/area_sm_biz_compli_guide_appx.pdf

You can always contact your regional field office for assistance.

Northern: (973) 656-4444

Central: (609) 292-3187

Southern: (856) 614-3601

Appendix - Emission Limits for Area Source Boilers

Subcategory	Proposed Emission Limits			Final Emission Limits		
	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu
New Coal	3.0	310	0.03	4.8	400	0.03 (> 30 MMBtu/h) 0.42 (10 to 30 MMBtu/h)
New Biomass	-	100	0.03	-	-	0.03 (> 30 MMBtu/h) 0.07 (10 to 30 MMBtu/h)
New Oil	-	1	0.03	-	-	0.03
Existing Coal	3.0	310	-	4.8	400	-
Existing Biomass	-	160	-	-	-	-
Existing Oil	-	2	-	-	-	-

New and existing small (<10 MMBtu/hr) boiler, existing and new biomass-fired boilers, and new and existing oil-fired boilers are subject to a biennial tune-up requirement.