



### NESHAP JJJJJ - Area Source Boiler Rule

Air pollution from boilers includes sulfur dioxide (SO<sub>2</sub>), nitrogen oxide (NO<sub>x</sub>), particulate matter (PM), carbon monoxide (CO), hazardous air pollutants (HAPs), hydrochloric acid, mercury and trace amounts of other heavy metals.

On February 1, 2013, the Environmental Protection Agency (EPA) revised the National Emission Standard for Hazardous Air Pollutants (NESHAP) for existing and new industrial, commercial, and institutional boilers located at area source facilities. [40 CFR Part 63, NESHAP, Subpart JJJJJ] This document provides a summary of the area source boiler NESHAP as of summer 2015. EPA will implement and enforce this rule until it is determined whether the State of Colorado will adopt and enforce it. EPA may end up revising parts of this rule as a result of receiving petitions for reconsideration with respect to the following components of the regulation:

- The definitions of startup and shutdown periods;
- Alternative PM standard for new oil-fired boilers that combust low-sulfur oil;
- Establishment of a subcategory for limited-use boilers and the applicable standards;
- Provision that eliminates further performance testing for PM for boilers whose initial compliance test shows that its particulate matter emissions are equal to or less than half of the PM emission limit; and
- Provision that eliminates fuel sampling at coal-fired boilers that demonstrate compliance with the mercury emission limit by fuel analysis based on the results of the boiler's initial compliance demonstration.

*Note:* There are several federal boiler rules that apply to industrial, commercial, and institutional boilers. Many of the federal rules, specifically the New Source Performance Standards (NSPS), limit air emissions such as SO<sub>2</sub> and NO<sub>x</sub> from new boilers, where each rule defines “new.” There are separate guidance documents for the boiler NSPS Subpart D, Subpart Da, Subpart Db, and Subpart Dc that can be found at:

[www.colorado.gov/pacific/cdphe/business-specific-guidance-a-to-g](http://www.colorado.gov/pacific/cdphe/business-specific-guidance-a-to-g)

**This guidance only summarizes NESHAP Subpart JJJJJ.**

EPA also has a comprehensive website ([www.epa.gov/boilercompliance/](http://www.epa.gov/boilercompliance/)) addressing the specifics of the Area Source Boiler Rule. EPA has four YouTube videos that summarize the rule (Introduction, Energy Assessments, Tune-ups, and Reporting and recordkeeping) available at: <http://www.youtube.com/playlist?list=PLb2Kwxa2qbNPbSEKsF7jWZP3OkEsc2JoY>.

**This Fact Sheet is For Summary Purposes Only - See Final Rule for Specific Requirements.**

## ➤ APPLICABILITY

The area source boiler NESHAP ***applies to*** existing (constructed or reconstructed on or before June 4, 2010), reconstructed, and new (constructed or reconstructed after June 4, 2010) industrial, institutional, and commercial boilers located at area sources of hazardous air pollutants (emit less than 10 tons per year of a HAP or less than 25 tons per year of combined HAPs). This includes:

- ❖ Industrial boilers used in manufacturing, processing, mining, refining, or other industry
- ❖ Commercial boilers used in commercial establishments such as stores/malls, laundries, apartments, restaurants, and hotels/motels
- ❖ Institutional boilers used in institutional establishments such as medical centers (hospitals, clinics, nursing homes), educational and religious facilities (schools, universities, churches), and municipal buildings (courthouses, prisons)

Note: For guidance on calculating HAPs and other emissions, refer to the Division's "A Simple Guide to Calculating and Reporting Your Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs)" available at: [www.colorado.gov/pacific/cdphe/apen-and-permitting-guidance](http://www.colorado.gov/pacific/cdphe/apen-and-permitting-guidance).

Subcategories of small boilers include coal, biomass, oil, seasonal, boilers with an oxygen trim system, and limited-use.

An existing dual-fuel fired boiler meeting the definition of gas-fired boiler that becomes subject to NESHAP JJJJJJ after June 4, 2010, due to a fuel switch is an existing affected source as long as the boiler was designed to accommodate the alternate fuel.

The final rule ***does NOT apply*** to:

- ❖ Gas-fired boilers (burns gaseous fuels not combined with other solid fuels)
- ❖ Temporary boilers (*gaseous or liquid fuel boilers* designed to and capable of moving from one location to another and remains less than 12 months, unless an extension is approved)
- ❖ Residential boilers (provides heat and/or hot water to a dwelling containing four or fewer families or single unit residence dwelling converted or subdivided into condominiums or apartments)
- ❖ Hot water heaters (closed vessel with a capacity no more than 120 gallons, including tankless units that provide hot water on demand)
- ❖ Boilers subject to 40 CFR Part 60 Subparts CCCC or DDDD
- ❖ Electric boilers (electric heating system serves as source of heat)
- ❖ Electric utility steam generating units subject to 40 CFR Part 63 Subpart UUUUU
- ❖ Boilers used as control devices to comply with other NESHAP or NSPS standards
- ❖ Boilers subject to other NESHAP or CAA Section 129 standards
- ❖ Hazardous waste boilers - unless the unit does not combust hazardous waste
- ❖ Boilers used for research and development
- ❖ Process heaters (e.g. hot oil heaters, cooling tower water heaters, and natural gas dehydration unit reboilers)

Important Dates:

- ❖ Initial Applicability notification by January 20, 2014, or within 120 days of becoming subject to NESHAP JJJJJJ
- ❖ Existing boiler emission limits, initial tune up, and Energy Assessments (for boilers >10 MMBtu/hr) comply by March 21, 2014

- ❖ New boilers that start up on or before May 20, 2011, comply by May 20, 2011
- ❖ New boilers that start up after May 20, 2011, comply upon startup
- ❖ Notification of Compliance Status (NOCS) by July 19, 2014, unless you must conduct a performance test and then the NOCS must be sent in 60 days after the test

➤ **RULE REQUIREMENTS**

Area source boilers are regulated under NESHAP JJJJJJ based on three components: new or existing status (see above), type of fuel burned, and size.

Boilers regulated under NESHAP JJJJJJ burn coal, oil, or biomass.

Existing large area source boilers have a heat input capacity  $\geq 10$  MMBtu/hr and small have a heat input capacity  $< 10$  MMBtu/hr. To determine the size of your boiler, check the nameplate on the boiler. The nameplate often lists the rated design heat input capacity on the unit. Boiler size is measured in million British thermal units per hour, or MMBtu/hr.

❖ **COMPLIANCE REQUIREMENTS**

You must operate and maintain the boiler, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.

You must also demonstrate compliance with applicable emission limits, work practice standards, emission reduction measures, management practices, energy assessments, operating limits, notification, recordkeeping, and reporting requirements.

**Table 1. Summary of Area Source Boiler Requirements - For EXISTING Boilers**  
(i.e., commenced construction or reconstruction of the boiler on or before June 4, 2010)

Boiler Size	Fuel Type	Requirements For <u>EXISTING</u> Boilers	
<b>Large</b> ( $\geq 10$ MMBtu/hr)	Coal	- Mercury (Hg) and carbon monoxide (CO) emission limits - One-time energy assessment - Minimize startup/shutdown periods	
	Biomass and Oil	- Initial tune-up and biennial tune-ups - One-time energy assessment	
	Seasonal, Limited-use, and Oxygen trim system boilers	- Initial tune-up and tune-up every 5 years	
<b>Small</b> ( $< 10$ MMBtu/hr)	Oil	$\leq 5$ MMBtu/hr	- Initial tune-up and tune-up every 5 years
		$> 5$ MMBtu/hr	- Initial tune-up and biennial tune-ups
	Coal and Biomass		- Initial tune-up and biennial tune-ups
	Seasonal, Limited-use, and Oxygen trim system boilers		- Initial tune-up and tune-up every 5 years

**Table 2. Summary of Area Source Boiler Requirements - For NEW Boilers<sup>1</sup>**  
*(i.e., commenced construction or reconstruction of the boiler after June 4, 2010)*

Boiler Fuel and Heat Capacity	Requirements For <b>NEW</b> Boilers
<b>COAL, BIOMASS AND OIL</b>	
> 10 MMBtu/hr	Minimize startup and shutdown periods and conduct according to manufacturer. Comply with applicable emission limits
<b>COAL</b>	
< 10 MMBtu/hr	Biennial tune-up
<b>BIOMASS</b>	
Any heat capacity	Biennial tune-up. Comply with applicable emission limits
<b>OIL</b>	
> 5 MMBtu/hr	Biennial tune-up. Comply with applicable emission limits
< 5 MMBtu/hr	Tune-up every five years
<b>SEASONAL, LIMITED USE, AND BOILERS USING AN OXYGEN TRIM SYSTEM THAT MAINTAINS AN OPTIMUM AIR-TO-FUEL RATIO</b>	
Any heat capacity	Tune-up every five years

**Table 3: Emission Limits for Area Source Boilers**

Subcategory	Hg, lb/MMBtu	CO, ppm @3%O <sub>2</sub>	PM, lb/MMBtu
New ≥30 MMBtu/hr coal	0.000022	420	0.03
New >10 and <30 MMBtu/hr coal	0.000022	420	0.42
New ≥30 MMBtu/hr biomass	--	--	0.03
New >10 and <30 MMBtu biomass	--	--	0.07
New ≥10 MMBtu/hr oil <sup>1</sup>	--	--	0.03
Existing ≥10/MMBtu/hr coal	0.000022	420	--

<sup>1</sup> New oil-fired boilers that combust only oil that contains no more than 0.50 weight percent sulfur or a mixture of 0.50 weight percent sulfur oil with other fuels not subject to a PM emission limit under this subpart and that do not use a post-combustion technology (except a wet scrubber) to reduce PM or sulfur dioxide emissions are not subject to the PM emission limit.

The emission limits apply at all times, except during startup and shutdown, during which time you need to minimize startups and shutdowns according to the manufacturer’s recommended procedures. If manufacturer’s recommended procedures are not available, use recommended procedures for a unit of similar design.

You must also comply with operating limits, as applicable, for: fabric filter control, electrostatic precipitator control, wet scrubber control, dry sorbent or activated carbon injection control, other add-on air pollution controls, fuel analysis, performance stack testing (boiler operating load), and oxygen analyzer system.

All large existing boilers, excluding limited-use boilers, must conduct a one-time energy assessment performed by a qualified energy assessor.

- The energy assessment includes:
  1. A visual inspection of the boiler system (e.g. cracks, corrosion, leaks).
  2. An evaluation of operating characteristics of the affected boiler systems, specifications of energy use systems, operating and maintenance procedures, and unusual operating constraints.
  3. An inventory of major energy use systems consuming energy from affected boiler(s) and which are under control of the boiler owner or operator.

4. A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage.
5. A list of major energy conservation measures that are within the facility's control.
6. A list of the energy savings potential of the energy conservation measures identified.
7. A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.

EPA has a document that summarizes the energy assessment requirements that is available at:

<http://www.epa.gov/ttn/atw/boiler/imptools/SummaryEnergyAssessmentsAreaSourceBoilersFinal.pdf>

## ❖ DEMONSTRATING COMPLIANCE

### ◆ Demonstrating Initial Compliance

You must demonstrate initial compliance with each applicable emission limit by conducting performance tests, continuous monitoring systems (CMS), or, alternatively for Hg, conducting fuel analyses.

For existing boilers, you must demonstrate initial compliance with applicable emission limits no later than 180 days after March 21, 2014, and compliance with work practice standards, management practices, or emission reduction measure by March 21, 2014.

For new or reconstructed boilers, you must demonstrate initial compliance with applicable emission limits no later than 180 days after May 20, 2011, or within 180 days after startup. You are not required to complete the initial performance tune-up for new and reconstructed boilers but must complete the applicable biennial or five-year tune-up no later than 25 or 61 months, respectively.

For existing or new biomass or oil-fired boilers, you must conduct a performance tune-up and submit a Notification of Compliance Status report.

For large existing boilers, you must submit the Notification of Compliance Status verifying the energy assessment and energy use system. EPA summarizes the energy assessment requirements at:

<http://www.epa.gov/ttn/atw/boiler/imptools/SummaryEnergyAssessmentsAreaSourceBoilersFinal.pdf>

- Note: While the energy assessment is required, the energy conservation measures identified during the assessment are *not* required by the rule to be implemented. It is hoped that owners or operators will voluntarily chose to implement those measures that are most beneficial to the facility.

### ◆ Performance Tests

For boilers subject to an emission limit, you must conduct performance tests and develop a site-specific test plan prior to conducting the performance test. The site-specific test plan must include a test program summary, test schedule, data quality objects, and both internal and external quality assessment programs.

For large boilers, you must conduct applicable performance tests on a triennial basis.

If the boiler's initial performance test for PM shows PM emissions equal to or less than half of the PM emission limit, you do not need to conduct further performance tests for PM. You must continue to comply with applicable operating limits and monitoring requirements.

If you demonstrate compliance with the Hg emission limit based on fuel analysis rather than performance testing, you must conduct a fuel analysis for each type of fuel burned. When demonstrating initial compliance, you do not need to conduct further fuel analysis samples if the Hg constituents in the fuel or fuel mixture are equal to or less than half of the Hg emission limit. You must continue to comply with applicable operating limits and monitoring requirements. If the fuel analysis indicates that Hg emissions are more than half of the Hg emission limit you need to conduct fuel analyses quarterly.

For existing boilers that have not operated since the previous compliance demonstration that was more than three years ago, you must complete a compliance demonstration no later than 180 days after the re-start of the boiler.

#### ◆ **Demonstrating Continuous Compliance**

For boilers subject to an emission limit, you must demonstrate continuous compliance with each applicable emission limit and operating limit beginning after the initial compliance demonstration.

For boilers with Hg or PM emission limits, you must keep records of the type and amount of all fuels burned during the reporting period to demonstrate that the fuels burned would result in lower emissions of Hg than the applicable emission limit (if demonstrating compliance through fuel analysis) or result in lower fuel input of Hg than the maximum values calculated during the last performance test (if demonstrating compliance through stack testing). If you have an applicable Hg emission limit and you plan to burn a new type of fuel, you must determine the mercury concentration for any new fuel type in units of pounds per million Btu, using the procedures in Equation 1 of §63.11211 based on supplier data or your own fuel analysis.

For boilers controlled with a fabric filter and demonstrating continuous compliance using a bag leak detection system, you must maintain records of the date, time, and duration of each leak detection system alarm; the correction action initiated and completed; the corrective action taken; and the percent of operating time during each six-month period that the alarm sounds.

The intent of the tune-up is for the owners or operators of the boiler to operate the unit as efficiently as possible to reduce fuel usage. You must conduct the tune-up while burning the type of fuel (or fuels for boilers that routinely burn two fuels at the same time) that provided the majority of the heat input for the 12 months before the tune-up. Boiler tune-ups require:

- Inspecting the burner and cleaning or replace components, as necessary;
- Inspecting flame pattern and adjusting the burner, as necessary, to optimize the pattern;
- Inspecting the system controlling the air-to-fuel ratio, as applicable, to ensure it is correctly calibrated and functioning properly;
- Optimizing total emission of CO;
- Measuring concentrations in the effluent stream of CO in parts per million by volume and oxygen in volume percent before and after adjustments are made; and
- Maintaining on-site a report containing: the concentrations of CO in parts per million by volume and oxygen in volume percent; descriptions of any corrective actions taken as part of the tune-up; and the type and amount of fuel used over the twelve months prior to the tune-up if the unit was capable of combusting more than one type of fuel.

You must conduct biennial tune-ups no later than 25 months after the previous tune-up or initial startup of a new or reconstructed boiler. You must conduct five-year tune-ups no later than 61 months after the previous tune-up or initial startup of a new or reconstructed boiler. You must conduct the tune-up within thirty days of startup if the boiler is not operating on the required date for the tune-up.

#### ◆ **Monitoring Requirements**

For boilers subject to CO emission limits, you must install, operate, and maintain a continuous emission monitoring system (CEMS) for CO and oxygen or install, calibrate, operate, and maintain an oxygen analyzer system. Boilers using a CEMS are exempt from the initial CO performance test.

For boilers using a control device to comply with the emission limits, you must maintain each operating limit applicable to the boiler.

For boilers demonstrating compliance with an applicable emission limit through stack testing and subsequent compliance with operating limits, you must develop a site-specific monitoring plan, which addresses:

- Installation of the CMS sampling probe;
- Performance and equipment specifications;
- Performance evaluation procedures and acceptance criteria;
- Ongoing operation and maintenance procedures;
- Ongoing data quality assurance procedures; and
- Ongoing recordkeeping and reporting procedures.

For boilers with an operating limit that requires the use of a CMS, you must install, operate, and maintain each continuous parameter monitoring system (CPMS).

For boilers with an opacity operating limit, you must install, operate, certify, and maintain the continuous opacity monitoring system (COMS).

For boilers using a fabric filter bag leak detection system, you must install, calibrate, maintain, and continuously operate the bag leak detection system.

For sources that continuously monitor, the data must be used to calculate 30 day rolling averages for compliance determinations.

### ➤ **NOTIFICATION, REPORTING, AND RECORDKEEPING REQUIREMENTS**

#### ◆ **Notifications**

You must submit the following notifications, as applicable:

- Notification of intent to conduct a performance test at least 60 days before the performance test is initially scheduled to begin
- Notification of performance evaluation at least 60 days prior the date the performance evaluation is scheduled to begin
- Request to use alternative monitoring procedures, at least 60 days before the performance evaluation is scheduled to begin if the alternative will serve as the performance test method used to demonstrate compliance
- Request for extension of compliance
- Notification that source is subject to special compliance requirements
- CMS related notifications (the date the CMS performance evaluation is scheduled to begin, notification that COMS data results will be used to determine compliance with applicable opacity emission standards, notification that the criterion necessary to continue use of an alternative to RATA has been exceeded)
- Initial Notification no later than January 20, 2014, or within 120 days after the boiler becomes subject to NESHAP JJJJJ
- Notification of Intent to conduct a performance test at least 60 days before the test
- Notification of Compliance Status no later than 120 days after the applicable compliance date or within 60 days of completing a required performance test

Existing sources should have already submitted an Initial Notification. If your boiler is subject to NESHAP JJJJJJ and you have not submitted an Initial Notification, do so as soon as possible.

The Initial Notification must contain:

- The name and address of the owner or operator;
- The address of the affected source;
- An identification of the relevant standard;
- A brief description of the nature, size, design, and method of operation of the source and an identification of the type of emission points; and
- A statement whether the affected source is a major source or area source.

The owner or operator of a new or reconstructed boiler that does not require construction approval must notify of the intent to construct or reconstruct and the actual date of startup.

Submit the Notification of Compliance Status, performance tests, and CEMS evaluations electronically through EPA's Compliance and Emissions Data Reporting Interface (CEDRI), accessed through EPA's Central Data Exchange (CDX) at [www.epa.gov/cdx](http://www.epa.gov/cdx). Relative accuracy test audit (RATA) data from each CEMS performance evaluation test is also submitted to CDX using CEDRI within 60 days after the test.

If you intend to commence or recommence combustion of solid waste, you must provide notice 30 days prior to commencing combustion.

If you switch fuels or make a physical change to the boiler such that your boiler is now subject to NESHAP JJJJJJ or a different subcategory within NESHAP JJJJJJ, you must provide notice within 30 days of the change or limit.

#### ◆ Reporting

By March 1 of each year you must prepare an annual Compliance Certification Report for the previous calendar year and submit it upon request. The report must be submitted by March 15 if there are any deviations. The compliance certification report must include:

- Company name and address;
- Responsible official certification of the truth, accuracy, and completeness;
- Description of any deviations, time periods of deviations, and corrective action taken; and
- For each boiler subject to an emission limit, the total fuel use for each calendar month within the reporting period.

For boilers that are subject to a biennial or five-year tune-up requirement but no emission limits or operating limits, you may prepare only a biennial or five-year compliance report.

#### ◆ Recordkeeping

You must maintain the following records:

- Copies of each notification and report submitted;
- Documentation of compliance with the work practices, emission reduction measures, and management practices including:
  - Identification of each boiler, date of tune-up, tune-up procedures, and manufacturer specification to which the boiler was tuned;
  - Documentation how non-hazardous secondary materials combusted, if applicable, meet each of the legitimacy criteria;
  - Copies of the energy assessment report, if applicable;
  - For boilers subject to an emission limit, records of monthly fuel use including type and amount; and
  - For limited-use boilers, a copy of the federally enforceable permit limiting capacity to  $\leq 10$  percent and records of fuel use.

- For sources demonstrating compliance through fuel analysis, copies of all calculations and supporting documentation done to demonstrate compliance with the Hg emission limit;
- Occurrence and duration of each malfunction of the boiler or associated air pollution control and monitoring equipment;
- Actions taken during periods of malfunction to minimize emissions;
- Inspection and monitoring data and:
  - Date, place, and time of monitoring event;
  - Person conducting the monitoring;
  - Technique or method used;
  - Operating conditions during the activity;
  - Results, including the date, time, and duration of the period from problem identification to proper operation; and
  - Maintenance or corrective action taken, if applicable.
- For boilers using a bag leak detection system, records:
  - Bag leak detection system output;
  - Bag leak detection system adjustments; and
  - Date and time of all bag leak detection system alarms, corrective action taken, and date corrective action was taken.

Records must be in a form suitable and readily available for expeditious review, kept for five years following the date of each recorded action, and kept on-site or instantly accessible for at least two years after the date of each recorded action.

### ➤ **SMALL BUSINESS ASSISTANCE**

The Small Business Assistance Program (SBAP) is available to answer questions you may have regarding environmental issues at your site. The SBAP can help you understand regulations, determine what your company has to do to be in compliance, help you fill out required forms, calculate your emissions, or provide information by presenting a workshop for your company or for your industry. We are here to help, and our services are always free.

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### ➤ **RESOURCES**

- ❖ Air Pollution Control Division (APCD): (303) 692-3100
- ❖ Small Business Assistance Program: (303) 692-3175 or 3148
- ❖ Small Business Ombudsman: (303) 692-2135