

Area Source Boiler Rule Online Training

Module: New Large Industrial, Commercial, or Institutional Boilers

NESHAP 40 CFR Part 63 Subpart JJJJJ, henceforth referred to as the “rule”

Slide # 2

Welcome to the training module for new, large oil and biomass-fired boilers greater than or equal to 10 million BTU per hour! This training program will provide you with an overview of requirements tailored to your specific boiler category. As stated in the introduction, the information provided is based on the most recent version of the rule.

Slide #3

If you have a new boiler, you need to notify someone that your boiler is an affected source. The rule requires that all owners or operators of a boiler submit an Initial Notification of Applicability to the delegated authority. Currently, the U.S. Environmental Protection Agency, or EPA, is the delegated authority for Connecticut sources; therefore, all Initial Notifications need to be submitted to EPA Region 1. If the boiler is located at a Title V operating permit source then the initial notification should also be submitted to the Connecticut Department of Energy and Environmental Protection. The Initial Notification is a one-time submittal which should include:

- The name and address of the owner or operator
- The address at which the affected source is located
- Identification of the relevant standard, or other requirement, that is the basis of the notification
- Anticipated compliance date with the standard
- A brief description of the nature, size, design and method of operation of the source, and an identification of the types of emission points within the affected source subject to the standard and types of hazardous air pollutants emitted
- A statement that the affected source is an area source.

Slide #4

What standards do you need to meet to demonstrate compliance with the rule?

Owners and/or operators of new large boilers are required to meet numeric emission limits, comply with applicable work practice standards, emission reduction measures, and management practices.

You may also be required to comply with operating limits if your boiler is equipped with air pollution control equipment.

Lastly, at all times the boiler, including associated air pollution control equipment and monitoring equipment, must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions.

Slide #5

As the owner of a new large boiler, you are subject to emission limits for particulate matter. Emission standards are different depending on whether your boiler is biomass-fired or oil-fired. Biomass-fired boilers are boilers that burn at least 15 percent biomass on an annual heat input basis. Oil-fired boilers are any boilers that combust liquid fuel

and are not covered in the biomass category. Gas-fired units that burn liquid fuel during gas curtailment, supply emergencies, startups, or testing for 48 hours or less per year are not included.

For biomass-fired boilers, the particulate matter emission limit is 0.03 pounds per million Btu for a boiler with a heat input capacity of 30 million Btu per hour or greater. The particulate matter emission limit is 0.07 pounds per million Btu for a boiler with a heat input capacity greater than or equal to 10 million Btu per hour and less than 30 million Btu per hour.

For oil-fired boilers, the emission limit for particulate matter is 0.03 pounds per million Btu. You are required to comply with the applicable limit at all times. However, combustion of ultra low sulfur oil by an oil-fired boiler is considered an alternative method of meeting the particulate matter emission standard. Thus, units that combust ultra low sulfur oil are not required to meet the particulate matter emission limit.

These limits apply at all times the boiler is operating, except during periods of startup and shutdown. Sources must make an effort to minimize the boiler's startup and shutdown periods and conduct startups and shutdowns according to manufacturer-recommended procedures.

If your boiler qualifies as a seasonal or limited-use boiler, then the particulate matter limits are not applicable. We will define seasonal and limited-use boilers later.

Slide #6

In addition to complying with emission standards for particulate matter, new large boilers are also required to meet work performance standards by performing biennial tune-ups on the boiler. For a new or reconstructed large boiler, the first biennial tune-up must be performed no later than 25 months after the initial startup. Subsequent tune-ups must be conducted no more than 25 months after the previous tune-up.

Slide #7

There is the possibility that you may only need to tune-up your boiler every five years if it meets one of the following criteria:

- The boiler qualifies as a seasonal or limited use boiler
- The boiler is equipped with an oxygen trim system that maintains an optimum air-to-fuel ratio

Your boiler qualifies as a seasonal boiler if it undergoes a shutdown period of at least seven consecutive months (or 210 consecutive days) each 12-month period due to seasonal conditions.

Your boiler qualifies as a limited-use boiler if it burns any amount of solid or liquid fuels and has a federally enforceable average annual capacity factor of no more than 10 percent.

If your new large boiler meets one of these criteria, then the first tune-up must be performed no later than 61 months after the initial startup. Subsequent tune-ups must be conducted no more than 61 months after the previous tune-up.

Slide #8

In order to meet the work practice requirements of the rule, the individual performing the tune-up must perform or complete the following:

- Inspect, clean and/or replace any burner components as needed. This inspection may be delayed until your next scheduled boiler shutdown, but you must inspect each burner at least once every 36 months for boilers subject to biennial tune-ups and at least once every 72 months for boilers subject to 5-year tune-ups.
- Inspect and adjust the burner to optimize the flame pattern, if necessary. Adjustments should be consistent with the manufacturer's specifications, if available.
- Inspect and calibrate, if necessary, the system controlling the air-to-fuel ratio to ensure that it is correctly calibrated and functioning properly. This inspection can also be delayed until your next scheduled boiler shutdown as long as it is inspected at least once every 36 or 72 months depending upon your tune-up frequency.
- Optimize the total emissions of carbon monoxide consistent with the manufacturer's specifications and any nitrogen oxide requirements.
- Measure the carbon monoxide and oxygen concentrations in the effluent stream before and after the tune adjustments are made. Measurements may be taken using a portable carbon monoxide analyzer and be reported in parts per million for carbon monoxide and percent by volume for oxygen.

If the unit is not operating on the required tune-up date, the tune-up should be conducted within 30 days of startup.

Additionally, the tune-up must be conducted while burning the type of fuel that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.

If you'd like more information regarding tune-up procedures, please refer to EPA's **Boiler Compliance at Area Sources** webpage for guidance on tune-up procedures.

Keep in mind that all boiler adjustments and modifications should be completed by qualified, experienced technicians, whether employed by you or a third party.

Slide #9

Once the tune-up is complete, documentation of the tune-up must be retained on site. A report for the tune-up must include the following:

- The concentrations of carbon monoxide and oxygen, measured at high fire or typical operating load, for before and after the tune-up.
- A description of any corrective actions taken as part of the tune-up
- The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period.

Units sharing a fuel meter may estimate the fuel use by each unit.

Slide #10

If you need to demonstrate compliance with the particulate matter emission limits then you must do the following:

- Minimize the boiler's startup and shutdown periods
- Develop and follow a site-specific testing plan

- Develop and follow a site-specific monitoring plan
- Conduct an initial performance test for particulate matter
- Establish operating limits during the initial performance test
- After the initial performance test, monitor and collect data to demonstrate compliance with operating limits established during the initial test
- Conduct performance evaluations on the continuous monitoring system as specified in the site-specific monitoring plan
- Conduct a subsequent performance test every three years or at least every thirty-seven months

Slide #11

If your boiler is subject to an emission limit, you must conduct startups and shutdowns according to the boiler manufacturer's procedures. If the manufacturer's recommended procedures are not available, you must follow any available recommended procedures for a boiler of similar design. To the best of your ability, you must try to minimize the number of startup and shutdown periods.

Slide #12

Prior to conducting your initial performance test, you are required to develop a site-specific test plan. The plan must include a test program summary, a test schedule, data quality objectives (such as precision, accuracy and completeness) and an internal and external quality assurance program.

The site-specific plan does not have to be submitted to EPA or the delegated authority unless it is requested. If requested, it will need to be submitted at least 60 days before the performance test. In New England, EPA Region I requests the site-specific plan to be submitted.

In Connecticut, compliance tests are required to be conducted in accordance with procedures prescribed by or acceptable to the Department of Energy and Environmental Protection. An Intent-to-Test Transmittal Form (available on the Department of Energy and Environmental Protection's website) and Test Protocol must be completed by the tester and received by the Source Emission Monitoring unit no less than thirty days prior to the test or as specified by the applicable regulation, permit or enforcement order. A mutually acceptable test date will be determined during the test protocol approval process.

If the testing requirements are not incorporated into a Connecticut permit or order, then this provision does not apply.

Slide #13

A site-specific monitoring plan must be developed if you choose to demonstrate compliance through performance stack testing and subsequent compliance with operating limits. There are three types of continuous monitoring systems, also referred to as CMS, that may be utilized. They are continuous emission monitoring systems, continuous opacity monitoring systems or continuous parameter monitoring systems. No matter which type you use, a monitoring plan is required.

The plan should address the installation location, performance and equipment specifications, performance evaluation procedures and acceptance criteria, ongoing operation and maintenance procedures, ongoing data

quality assurance procedures, and recordkeeping and reporting procedures. You are required to operate and maintain the CMS according to this site-specific monitoring plan.

The site-specific monitoring plan does not have to be submitted to EPA or the delegated authority unless it is requested. If requested, it will need to be submitted at least 60 days before the initial CMS performance evaluation.

Connecticut requires the submittal of a monitoring plan in accordance with Section 22a-174-4 of the Regulations of Connecticut State Agencies if a continuous emission monitoring system or continuous opacity monitoring system is installed at the site.

Slide #14

To demonstrate initial compliance with the particulate matter standard, you are required to conduct an initial performance test. During this test you will also be establishing operating parameters that you will be required to follow until the next performance test. You must conduct all performance tests according to Table 4 of the rule, which specifies the test methods to be used to measure particulate matter emissions.

Demonstration of compliance with the limits is required 180 days after unit startup.

Combustion of ultra low sulfur oil by an oil-fired boiler is considered an alternative method of meeting the particulate matter emission standard. Thus, units that combust ultra low sulfur oil are not required to meet the particulate matter emission limit.

Slide #15

Perform the stack test under representative operating conditions while combusting the type of fuel that has the highest emissions potential.

Perform all tests in accordance with the requirements set forth in the rule and site-specific test plan.

Be sure to conduct at least three separate test runs for each performance stack test.

To determine compliance with the limits, convert measured particulate matter concentrations from the initial test to pounds per million Btu.

In most cases, Department of Energy and Environmental Protection personnel will be on-site to witness the performance test.

Slide #16

For ongoing compliance you will need to conduct subsequent performance tests every third year (meaning at least every 37 months). However, if your boiler's initial performance test results show that your emissions are less than or equal to half of the limit, you need to conduct further performance tests for particulate matter every five years but must comply with all operating limits and monitoring requirements.

If you have switched fuels, a performance test is due sixty days after you switched fuels.

In between tests, you are required to monitor and collect data for operating parameters established during the initial performance test.

Slide #17

During the initial three-run performance stack tests, you must establish operating limits for your particulate matter air pollution control devices, if applicable. Table 6 of the rule specifies how to establish operating parameters for wet scrubbers, electrostatic precipitators, fabric filter bag leak detection systems and operating load.

If your boiler uses a fabric filter, then install, maintain, calibrate, and operate a bag leak detection system or a continuous opacity monitoring system as specified by the rule.

If your boiler uses an electrostatic precipitator, then install, operate, certify, and maintain a continuous opacity monitoring system, referred to as COMS, or establish operating limits for the minimum total secondary electric power as specified by the rule. During the test you must collect secondary electric power data every 15 minutes.

If your boiler employs a wet scrubber, establish operating limits for minimum scrubber pressure drop and minimum scrubber liquid flow rate. During the test you must collect pressure drop and liquid flow rate data every 15 minutes.

If your boiler is demonstrating compliance by a performance stack test, then establish a unit-specific limit for maximum operating load according to the rule. During the test, you must collect operating load data such as fuel feed rate or steam generation data every 15 minutes.

Slide #18

If you demonstrate compliance with the particulate matter limit using a fabric filter, you are required to maintain opacity to less than or equal to 10 percent opacity based on a daily block average, **or** install and operate a bag leak detection system according to the rule and operate the fabric filter such that the bag leak detection system alarm does not sound more than 5 percent of the operating time during each six-month period.

If you demonstrate compliance with the particulate matter limit using an electrostatic precipitator, you are required to maintain opacity to less than or equal to 10 percent opacity based on a daily block average **OR** maintain a 30-day rolling average for total secondary electric power of the electrostatic precipitator at or above the operating level established during the most recent performance test demonstrating compliance with the particulate matter limits.

If you demonstrate compliance with the particulate matter limit using a wet scrubber, you must maintain the 30-day rolling average for pressure drop and liquid flow rate at or above the operating limit measured during the most recent performance test demonstrating compliance with the particulate matter limit.

You are also required to maintain the operating load of each boiler such that it does not exceed 110 percent of the average operating load recorded during the most recent performance test.

Slide #19

You must comply with the CMS requirements in the rule, including the following:

If you choose to comply with an opacity limit instead of operating parameters for an electrostatic precipitator or fabric filter, you must install, operate, certify, and maintain the COMS.

If you use a fabric filter to comply with an emission limit, then you must install, calibrate, maintain, and continuously operate the bag leak detection system, unless you choose to use an opacity limit.

If you have an operating limit that requires a CMS, you must install, operate, and maintain the CMS.

Slide #20

If you are using an opacity operating limit: install, operate, certify and maintain each continuous opacity monitoring system according to the following by the compliance date:

- Install, operate, and maintain according to Performance Specification 1 of 40 CFR part 60, appendix B.
- Conduct a performance evaluation of each COMS according to 63.8 and according to Performance Specification 1 of 40 CFR part 60, appendix B.
- Each COMS must complete a minimum of 1 cycle of sampling and analyzing for each 10-second period and 1 cycle of data recording for each 6-minute period.
- Reduce COMS data
- Include in your monitoring plan procedures and acceptance criteria for operating/maintaining each COMS according to the requirements in 63.8(d). At a minimum, the plan must include a daily calibration drift assessment, a quarterly performance audit, and an annual zero alignment audit of each COMS.
- Operate and maintain each COMS according to the requirements of the monitoring plan and the requirements of 63.8(e). Identify out-of-control periods.
- Record all the 1-hour block averages collected for periods during which the COMS is not out of control.

Slide #21

- If using a fabric filter bag leak detection system:
 - Install and operate a bag leak detection system for each stack of the fabric filter.
 - Install, operate, calibrate, and maintain in a manner consistent with the manufacturer's specifications and in accordance with EPA's *Fabric Filter Bag Leak Detection Guidance*.
 - The system must be certified as capable of detecting particulate matter emissions at concentrations less than or equal to 10 milligrams per meter cubed.
 - The sensor must provide output of relative or absolute particulate matter loadings.
 - It must have a device to continuously record the sensor output signal.
 - It must have an alarm to trigger when an increase in particulate matter emissions over a preset level occurs.
 - For positive pressure systems that do not duct all compartments to a common stack, a bag leak detection system must be installed in each baghouse compartment or cell.
 - Where multiple bag leak detectors are required, the instrumentation and alarm may be shared among detectors.

Slide #22

Operate the monitoring system and collect data *at all times while the boiler is operating*. Use all the data collected in assessing the operation of the control device and associated control system. However, **you may not use data collected during the following periods** to demonstrate compliance:

- Monitoring system malfunctions or out-of control periods
- Repairs associated with monitoring system malfunctions or out-of-control periods
- Required monitoring system quality assurance or quality control activities, including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in your site-specific monitoring plan.

Slide #23

Besides the records of the boiler tune-up, what other records do you need to keep on site? You are required to keep copies of the following:

- Monthly fuel use for each boiler subject to a particulate matter emission limit
- Each notification and report, and all supporting documentation
- Records to document conformance with the required work practices
- Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control and monitoring equipment
- Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the boiler, air pollution control, or monitoring equipment to its normal manner of operation
- For each boiler that meets the seasonal boiler definition, records of days of operation per year
- For each boiler that meets the limited-used boiler definition, a copy of the federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and records of fuel use for the days the boiler operated.

Slide #24

- ▶ All inspection/monitoring data required by 63.11221 and 63.11222 and:
 - ▶ Date, place and time of the monitoring event
 - ▶ Person conducting monitoring
 - ▶ Method used
 - ▶ Operating conditions during the activity
 - ▶ Results of the period from the time the monitoring indicated a problem to the time that monitoring indicated proper operation
 - ▶ Maintenance or corrective action (if applicable)
- ▶ You must maintain records of the following if you use a bag leak detection system:
 - ▶ System output
 - ▶ System adjustments
 - ▶ System alarms and associated corrective actions

Slide #25

Your records must be readily available for review. All records must be kept for five years after the date of the recorded action. Each record must be on site or accessible from a central location by computer or other means of instant access at the site for two years after the recorded action. For the remaining three years, the records may be kept off-site.

Slide #26

Besides the initial notification, there are some additional notifications and reports that you may need to prepare and submit to stay in compliance. You may need to prepare and/or submit the following:

A notification of compliance status (or NOCS), which is due sixty days after conducting your initial particulate matter performance test.

A Compliance Certification Report that must be prepared by March 1st of the year after startup then by March 1st each subsequent calendar year. If the report includes deviations from the emission limits, then the report must be submitted no later than March 15th. For boilers that are required only to conduct a biennial or 5-year tune-up and are not subject to emission or operating limits, you may prepare only a biennial or 5-year Compliance Certification Report. Reports should be prepared by March 1st of the year after the calendar year during which a tune-up is completed.

A notification of intent to conduct a performance test is due sixty days before the test is scheduled.

Slide #27

If you intend to commence or recommence combustion of solid waste, you must provide 30 days prior notice of the date upon which you will commence or recommence combustion of solid waste.

If you are seeking an alternative monitoring method or are subject to special compliance requirements you are required to submit information to support your request.

If you have switched fuels or made a physical change to the boiler and the fuel switch or change resulted in the applicability of a different subcategory within the rule, in the boiler becoming subject to the rule, or in the boiler switching out of the rule due to a change to 100 percent natural gas, or you have taken a permit limit that resulted in you being subject to the rule, you must provide notice of the date upon which you switched fuels, made the physical change, or took a permit limit within 30 days of the change.

Each notification requires specific information about the changes being made. Please refer to the rule for more details.

Slide #28

The Compliance Certification must contain:

The company name and address.

A Statement by a responsible official, with the official's name, title, phone number, email address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of the rule. The notification must include a certification of compliance statement for each applicable requirement, signed by a responsible official. The report must also contain the total fuel use for each boiler subject to an emission limit, for each calendar month.

This report is not required to be submitted, but can be requested by the delegated authority.

Slide #29

For boilers subject to a particulate matter emission limit, a notice certifying your compliance with the rule requirements is required. This report is called a notification of compliance status report, or NOCS. The NOCS is due September 17th, 2011 or 120 days after startup, whichever is later. For boilers subject to a particulate matter emission limit, the NOCS is due 60 days after test completion.

The Notification of Compliance Status is a one-time submittal which should include:

- Methods used to determine compliance
- Test results, emission observations, CMS performance evaluations, or other methods conducted
- Hazardous air pollutants emitted
- Control equipment information for each hazardous air pollutant for each emission point, along with control efficiency
- A statement of compliance with applicable requirements
- Certification that a tune-up was completed
- Certification that startups and shutdowns were conducted according to the manufacturer's procedures; and
- Certification that a bag leak detection system monitoring plan is being followed.
- If you are using data from a previously conducted test to serve as documentation of conformance with the standards, submit this data in place of the initial test results.

A new boiler is not subject to an initial tune-up requirement and therefore EPA's intent is that new large boilers that are required only to conduct a tune-up and are not subject to emission or operating limits would not be required to submit a NOCS.

Slide #30

The rule requires electronic submission of the NOCS reports using the Compliance and Emissions Data Reporting Interface (or CEDRI) through EPA's Central Data Exchange (at www.epa.gov/cdx).

Slide #31

The rule also requires the electronic submittal of your stack tests results. Within 60 days of completing each performance test, you must submit the results to EPA's Webfire database by using the compliance and emission data reporting interface that can be accessed through EPA's central data exchange. The test data must be submitted in the file format generated through the use of EPA's electronic reporting tool (or ERT). For more information go to EPA's ERT website at:

www.epa.gov/ttn/chief/ert

Your test contractor should be familiar with EPA's electronic reporting tool and the applicable requirements.

Slide #32

If you need to send a paper submission for any of the notifications or reports to EPA Region 1, please use the address listed here. If your boiler is located at a Title V source, a copy should also be submitted to the Connecticut Department of Energy and Environmental Protection at 79 Elm Street, Hartford, Connecticut, 06106.

Slide #33

You must be in compliance with all applicable requirements of this rule by the date shown on screen.

Remember new large boilers must demonstrate initial compliance with the emission limits by September 17th, 2011 or 180 days after unit startup.

Slide #34

You may find more information on EPA's **Boiler Compliance at Area Sources** webpage found at:
epa.gov/boilercompliance

Some of the information you will find includes: brochures, fact sheets, example notifications, regulations, and more. Additionally, the **Small Entity Compliance Guide for Area Source Boilers** is available on EPA's Boiler Compliance at Area Sources webpage and is a resource that will help you determine if and how your boiler is affected by the rule.

Slide #35

If you have any further questions, feel free to contact either the Air Toxics Coordinator at **EPA Region One** or the Compliance Analysis and Coordination Unit at the Connecticut Department of Energy and Environmental Protection.

Slide #36

What should you take away from this module?

- A tune-up is required every other year or every fifth year
- The limit for biomass-fired boilers is:
 - 0.03 pounds per million Btu particulate matter (if greater than or equal to 30 million Btu per hour)
 - 0.07 pounds per million Btu particulate matter (if greater than or equal to 10 and less than 30 million Btu per hour)
 - The limit for oil-fired boilers is: 0.03 pounds per million Btu particulate matter

Units that combust ultra low sulfur oil are not required to meet the particulate matter emission limit.

- Initial compliance is required to be demonstrated by September 17th, 2011, or 180 days after unit startup, whichever is later.
- To demonstrate initial compliance, conduct tests, establish operating limits, and conduct CMS performance evaluations.

Slide #37

Compliance Requirements:

If you are using a control device, maintain the operating limit

If you are demonstrating compliance through testing and subsequent compliance with operating limits, develop a site-specific monitoring plan

- If requested, submit the plan at least 60 days before the initial performance evaluation of the CMS
- Conduct a performance evaluation of each CMS according to the plan
- Operate and maintain the CMS according to the plan
- Continuously monitor the operating parameters
- If you operate fabric filter bag leak detection systems, use as specified

- Report deviations

Testing:

- Develop a test plan
- Perform an initial test
- Perform subsequent testing every 3 years

Slide #38

Monitoring:

- You are required to monitor and collect data at all times
- Use only valid data to determine compliance
- If you have an opacity monitoring limit, use the COMS as specified

Reporting: You may need to prepare and/or submit the following:

- An initial notification (September 17th, 2011 or 120 days after the unit becomes subject)
- For boilers subject to a particulate matter emission limit, Notification of Compliance Status (due 60 days after completing testing)
- A Compliance Certification (prepare and submit upon request, or prepare and submit by March 15th if deviations occurred; prepare by March 1st of every year for boilers subject to a particulate matter emission limit; prepare by March 1st of the year after the calendar year during which a tune-up is completed for boilers that are required only to conduct a biennial or 5-year tune-up and are not subject to emission or operating limits.)
- Notification of Intent to Conduct a Performance Test (60 days before test is scheduled)
- Test results (within 60 days of the test)
- Notification of switching fuel (within 30 days of switch)
- Notification of commencing firing of solid waste (30 days prior to firing solid waste)
- Notification of use of an alternate monitoring method (if applicable)
- Notification that the source is subject to special compliance requirements (if applicable)

Slide #39

Keep records of:

Fuel use, if subject to a particulate matter emission limit;

Compliance during startups and shutdowns;

Malfunctions and subsequent actions taken to minimize emissions;

Notifications and reports, with supporting documentation;

Compliance with emission and operating limits;

Compliance with tune-ups;

Inspection and monitoring data; and

System output, adjustments, alarms, and corrective actions if you use a bag leak detection system.

Records should be kept for 5 years.

Please remember, this training module is intended to provide an overview of your requirements under this rule. To ensure that all requirements are met, please read the full rule.