



# Connecticut Department of Energy and Environmental Protection



# National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE Rule)



**40 CFR 63 Subpart ZZZZ**  
**Major Source Existing Compression Ignition Engine**  
**>500 Horsepower**



Connecticut Department of Energy and Environmental Protection

# What emission standards apply?

- Either limit the concentration of CO in the engine exhaust to  $\leq 23$  ppm at 15% O<sub>2</sub> or reduce CO emissions by 70% or more.
  - Compliance with the limit is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures.
- In order to achieve this standard, your unit will probably require an emissions control retrofit. For CI engines, this is an **oxidation catalyst**.
  - Estimated capital cost of catalyst:  $\$27.4 * HP - \$939$
  - Estimated annual cost of catalyst:  $\$4.99 * HP + \$480$   
(HP = engine horsepower)
- Comply with emission and operating limits at all times
- At all times you must operate/maintain all equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved.



# What fuel requirements must I meet?

## Use ultra low sulfur diesel (ULSD)

- If engine displacement <30 l/cyl, you must use diesel fuel that meets the following per-gallon standards:
  - Sulfur content: 15 ppm maximum
  - Cetane index or aromatic content:
    - A minimum cetane index of 40; or
    - A maximum aromatic content of 35 volume percent.



Photo credit: EPA



# What are my operating limits?

- For each RICE **using an oxidation catalyst:**

- Maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2" of water from the pressure drop across the catalyst that was measured during the initial performance test; and

- Maintain the temperature of the engine exhaust so that the catalyst inlet temperature is  $\geq 450^{\circ}\text{F}$  and  $\leq 1350^{\circ}\text{F}$ .\*

Note: Pressure drop and temperature limits do not have to be met during startup.

**OR**

- For each RICE **not using an oxidation catalyst:**

- Comply with any operating limitations approved by EPA.

\*Sources can petition EPA, pursuant to the requirements of 40 CFR 63.8(g), for a different temperature range.



# What tests must I perform?

You must perform:

- An initial emission performance test within 180 days after May 3, 2013

- You may not be required to conduct an initial test on units for which a test has been previously conducted, but the test must meet the following:

- Test must have been conducted using the same methods specified in the rule, and the methods must have been followed correctly.
- Test must not be older than 2 years.
- Test must be reviewed and accepted by EPA.
- Either no process or equipment changes must have been made since the test was performed, or you must be able to demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.
- Test must be conducted at a load condition within  $\pm 10\%$  of 100% load.



# What tests must I perform?

## Subsequent performance testing:

- If you are **not** using a continuous emission monitoring system (CEMS), conduct subsequent performance tests every 8,760 hours or 3 years, whichever comes first.

### \*If your RICE is currently non-operational:

- Do not startup the engine solely to conduct the performance test; conduct the test when the engine is started up again.



# What are my testing requirements?

COMPLYING WITH THE REQUIREMENT TO...	YOU MUST...	USING...	ACCORDING TO THE FOLLOWING REQUIREMENTS...
Reduce CO emissions	Measure the O <sub>2</sub> at the inlet and outlet of the control device; and	Method 3 or 3A or 3B of 40 CFR part 60, appendix A, or ASTM Method D6522-00 (Re-approved 2005) <sup>a</sup>	Measurements to determine O <sub>2</sub> must be made at the same time as the measurements for CO concentration.
	Measure the CO at the inlet and the outlet of the control device	ASTM D6522-00 (Re-approved 2005) <sup>a,b</sup> or Method 10 of 40 CFR part 60, appendix A	The CO concentration must be at 15% O <sub>2</sub> , dry basis.
Limit the concentration of CO in the engine exhaust	Select the sampling port location and the number of traverse points; and	Method 1 or 1A of 40 CFR part 60, appendix A 63.7(d)(1)(i)	If using a control device, the sampling site must be located at the outlet of the control device.
	Determine the O <sub>2</sub> concentration of the engine exhaust at the sampling port location; and	Method 3 or 3A or 3B of 40 CFR part 60, appendix A, or ASTM Method D6522-00 (Re-approved 2005) <sup>a</sup>	Measurements to determine O <sub>2</sub> concentration must be made at the same time and location as the measurements for CO concentration.
	Measure moisture content of the engine exhaust at the sampling port location; and	Method 4 of 40 CFR part 60, appendix A, or Test Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348-03 <sup>a</sup>	Measurements to determine moisture content must be made at the same time and location as the measurements for CO concentration.
	Measure CO at the exhaust of the engine	Method 10 of 40 CFR part 60, appendix A, ASTM Method D6522-00 (2005), <sup>a</sup> Method 320 of 40 CFR part 63, Appendix A, or ASTM D6348-03 <sup>a</sup>	CO concentration must be at 15% O <sub>2</sub> , dry basis. Results of this test consist of the average of the three 1-hour or longer runs.

a. Incorporated by reference, see 40 CFR 63.14. You may also obtain copies from University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106.  
 b. You may also use Method 320 of 40 CFR part 63, Appendix A, or ASTM D6348-03.



# Testing Procedures

- Conduct 3 separate test runs for each performance test required in this section. Each run must last at least 1 hour.

- You must use the following equation to determine compliance with the percent reduction requirement:

$$(C_i - C_o) / C_i \times 100 = R$$

$C_i$  = concentration of CO at the control device inlet

$C_o$  = concentration of CO at the control device outlet

R = percent reduction of CO emissions



# Testing Procedures

•You must normalize the CO concentrations at the inlet and outlet of the control device to a dry basis and to 15% O<sub>2</sub>, or an equivalent percent CO<sub>2</sub>. If pollutant concentrations are to be corrected to 15% O<sub>2</sub> and CO<sub>2</sub> concentration is measured in lieu of O<sub>2</sub> concentration measurement, a CO<sub>2</sub> correction factor is needed. Calculate the CO<sub>2</sub> correction factor as described in paragraphs (i) through (iii):

(i) Calculate the fuel-specific F<sub>o</sub> value for the fuel burned during the test using values obtained from Method 19, section 5.2, and the equation:  $F_o = (0.209F_d) / F_c$

F<sub>o</sub> = Fuel factor based on the ratio of O<sub>2</sub> volume to the ultimate CO<sub>2</sub> volume produced by the fuel at 0% excess air.

0.209 = Fraction of air that is O<sub>2</sub>, percent/100.

F<sub>d</sub> = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/10<sup>6</sup> Btu).

F<sub>c</sub> = Ratio of the volume of CO<sub>2</sub> produced to the gross calorific value of the fuel from Method 19, dsm<sup>3</sup>/J (dscf/10<sup>6</sup> Btu).

(ii) Calculate the CO<sub>2</sub> correction factor for correcting measurement data to 15% O<sub>2</sub>, as follows:  $X_{CO_2} = 5.9 / F_o$

X<sub>CO<sub>2</sub></sub> = CO<sub>2</sub> correction factor, percent.

5.9 = 20.9% O<sub>2</sub> - 15% O<sub>2</sub>, the defined O<sub>2</sub> correction value, percent.

(iii) Calculate the CO gas concentrations adjusted to 15% O<sub>2</sub> using CO<sub>2</sub> as follows:  $C_{adj} = C_d (X_{CO_2} / \%CO_2)$

C<sub>adj</sub> = Calculated concentration of CO adjusted to 15% O<sub>2</sub>.

C<sub>d</sub> = Measured concentration of CO, uncorrected.

%CO<sub>2</sub> = Measured CO<sub>2</sub> concentration measured, dry basis, percent.



# Testing Procedures

- If you comply with the emission limitation to reduce CO and you are not using an oxidation catalyst, you must petition EPA for operating limitations to be established during the initial performance test and continuously monitored thereafter; or for approval of no operating limitations. **You cannot conduct the initial performance test until the petition has been approved by EPA.**

- **If you petition EPA for approval of operating limitations**, your petition must include the following information:

- (1) Parameters you propose to use as operating limitations;
- (2) Relationship between these parameters and HAP emissions, identifying how HAP emissions change with changes in these parameters, and how limits on these parameters will serve to limit HAP emissions;
- (3) 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) 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/instruments; and
- (5) The frequency and methods for recalibrating the instruments you will use for monitoring these parameters.



# Testing Procedures

- **If you petition EPA for approval of no operating limitations**, your petition must include the following information:
  - (1) Parameters associated with operation of the engine 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) Any relationship between changes in the parameters and changes in HAP emissions;
  - (3) For 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 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) Why you feel it is infeasible or unreasonable to adopt the parameters as operating limitations.
  
- The engine percent load during a performance test must be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A written report of the average percent load determination must be included in the Notification of Compliance Status. The following information must be included in the written report: the engine model number, engine manufacturer, year of purchase, manufacturer's site-rated brake HP, ambient temperature, pressure, and humidity during the performance test, and all assumptions that were made to estimate or calculate percent load during the performance test must be clearly explained. If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device, and an estimate of its accurate in percentage of true value must be provided.



# How do I demonstrate initial compliance with the emission limits and operating limits?

## Complying with the requirement to reduce CO emissions and using oxidation catalyst, and using a continuous parameter monitoring system (CPMS):

- You have demonstrated initial compliance if:
  - The average reduction of CO emissions determined from the initial performance test achieves the required CO percent reduction; and
  - You have installed a CPMS to monitor catalyst inlet temperature according to the monitoring requirements in this module; and
  - You have recorded the catalyst pressure drop and catalyst inlet temperature during the initial performance test.

## Complying with the requirement to limit the concentration of CO, using oxidation catalyst, and using a CPMS:

- You have demonstrated initial compliance if:
  - The average CO concentration determined from the initial performance test is  $\leq$  CO emission limit; and
  - You have installed a CPMS to monitor catalyst inlet temperature according to the monitoring requirements in this module; and
  - You have recorded the catalyst pressure drop and catalyst inlet temperature during the initial performance test.

## Complying with the requirement to reduce CO emissions and **NOT** using an oxidation catalyst:

- You have demonstrated initial compliance if:
  - The average reduction of emissions of CO determined from the initial performance test achieves the required CO percent reduction; and
  - You have installed a CPMS to monitor operating parameters approved by EPA (if any) according to the monitoring requirements in this module; and
  - You have recorded the approved operating parameters (if any) during the initial performance test.



# How do I demonstrate initial compliance with the emission limits and operating limits?

## Complying with the requirement to limit the concentration of CO and **NOT** using an oxidation catalyst:

- You have demonstrated initial compliance if:
  - The average CO concentration determined from the initial performance test is  $\leq$ CO emission limit and
  - You have installed a CPMS to monitor operating parameters approved by EPA (if any) according to the monitoring requirements in this module; and
  - You have recorded the approved operating parameters (if any) during the initial performance test.

## Complying with the requirement to reduce CO emissions and using a CEMS:

- You have demonstrated initial compliance if:
  - You have installed a CEMS to monitor CO and either O<sub>2</sub> or CO<sub>2</sub> at the inlet and outlet of the oxidation catalyst according to the requirements in this module; and
  - You have conducted a performance evaluation of your CEMS using PS 3 and 4A of 40 CFR part 60, Appendix B; and
  - The average reduction of CO calculated using 63.6620 equals or exceeds the required percent reduction. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average percent reduction achieved during the 4-hour period.

## Complying with the requirement to limit the concentration of CO and using a CEMS:

- You have demonstrated initial compliance if:
  - You have installed a CEMS to monitor CO and either O<sub>2</sub> or CO<sub>2</sub> at the outlet of the oxidation catalyst according to the requirements in this module; and
  - You have conducted a performance evaluation of your CEMS using PS 3 and 4A of 40 CFR part 60, Appendix B; and
  - The average concentration of CO calculated using 63.6620 is  $\leq$ CO emission limit. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average concentration measured during the 4-hour period.



# How do I demonstrate initial compliance with the emission limits and operating limits?

During the initial performance test, you must establish one of the following operating limits:

- Reduce CO emissions by 70% or more
- OR
- Limit concentration of CO in the engine exhaust to  $\leq 23$  ppm at 15% O<sub>2</sub>

Submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements of 63.6645.

**Example Notification of Compliance Status Report<sup>a</sup>**  
 National Emission Standards for Hazardous Air Pollutants:  
 Stationary Reciprocating Internal Combustion Engines  
 40 CFR part 63, subpart ZZZZ

**Note:** The information to be provided in the Notification of Compliance Status Report will vary depending on the engine type. Affected sources should refer to 40 CFR part 63, subpart ZZZZ for engine-specific compliance requirements. The sample responses provided in this report are for existing stationary sparkignition (SI) 4-stroke rich burn (4SRB) engines above 500 horsepower (HP) located at an area source.

**SECTION I: GENERAL INFORMATION**

A. If you have been issued a Title V permit, do not complete this form. Submit your NOCS in accordance with your Title V permit. [§63.9(h)(3)]

B. If you have not been issued a Title V permit, complete the remaining portions of this section and also complete Sections II-IX. [§63.9(h)(2)(i)]

C. Print or type the following information for each facility for which you are making notification of compliance status:

Permit Number (OPTIONAL)		Facility I.D. Number (OPTIONAL)	
Responsible Official's Name/Title			
Street Address			
City	State	ZIP Code	
Facility Name (if different from Responsible Official's Name)			
Facility Street Address (if different than Responsible Official's Street Address)			
Facility Local Contact Name		Title	Phone (OPTIONAL)
City	State	ZIP Code	

D. Indicate the relevant standard or other requirement that is the basis for this notification and the source's compliance date: (§63.9(b)(2)(ii))

<sup>a</sup> This is an example of the type of information that must be submitted to fulfill the Notification of Compliance Status requirement of 40 CFR 63.6645, subpart ZZZZ. This Notification of Compliance Status is being made in accordance with 40 CFR 63.9(i).

1



# What are my monitoring requirements?

**-If you install a CEMS, you must install, operate, and maintain a CEMS to monitor CO and either O<sub>2</sub> or CO<sub>2</sub> at both the inlet and the outlet\* of the control device according to the following requirements:**

(1) Each CEMS must be installed, operated, and maintained according to the applicable performance specifications of 40 CFR part 60, appendix B.

(2) You must conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) of each CEMS according to the requirements in §63.8 and according to the applicable performance specifications of 40 CFR part 60, appendix B as well as daily and periodic data quality checks in accordance with 40 CFR part 60, appendix F, procedure 1.

(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 successive 15-minute period. You must have at least two data points, with each representing a different 15-minute period, to have a valid hour of data.

(4) CEMS data must be reduced as specified in §63.8(g)(2) and recorded in ppm at 15% O<sub>2</sub> or the equivalent CO<sub>2</sub> concentration.

\*CEMS is required at outlet only if complying with the requirement to limit the concentration of CO



# What are my monitoring requirements?

-If required to install a CPMS, you must install, operate, and maintain each CPMS according to the following:

(1) Prepare a monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in paragraphs (1)(i) through (v) of this section and in §63.8(d). You may request approval of monitoring system quality assurance and quality control procedures alternative to those specified in paragraphs (b)(1) through (6) of this section in your site-specific monitoring plan.

*(i) The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations;*

*(ii) Sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements;*

*(iii) Equipment performance evaluations, system accuracy audits, or other audit procedures;*

*(iv) Ongoing operation and maintenance procedures in accordance with provisions in §63.8(c)(1)(ii) and (c)(3); and*

*(v) Ongoing reporting/recordkeeping procedures in accordance with provisions in §63.10(c), (e)(1), and (e)(2)(i).*

(2) Install, operate, and maintain each CPMS in continuous operation according to the procedures in your monitoring plan.

(3) CPMS must collect data at least once every 15 minutes.

(4) For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8°C (5°F) or 1% of the measurement range, whichever is larger.

(5) Conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in your monitoring plan at least annually.

(6) Conduct a performance evaluation of each CPMS in accordance with your monitoring plan.



# Monitoring requirements, continued

- **If your engine is not equipped with a closed crankcase ventilation system, comply with either paragraph (1) or (2) of this section.** Follow the manufacturer's maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or you can request that EPA approve different maintenance requirements that are as protective as manufacturer requirements.

(1) Install a closed crankcase ventilation system or

(2) Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil, mist particulates and metals.

-Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup apply.



# Continuous Compliance Requirements

- Except for monitor malfunctions, associated repairs, required performance evaluations and required quality assurance or control activities, you must monitor continuously at all times that the engine is operating. Monitoring failures caused in part by poor maintenance or careless operation are not malfunctions.
- You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. You must, however, use all the valid data collected during all other periods.



# Continuous Compliance Requirements

## How do I demonstrate continuous compliance with emission and operating limits?

***Complying with the requirement to reduce CO emissions or limit the concentration of CO in the exhaust and using a CEMS, demonstrate continuous compliance by:***

- Collecting the monitoring data according to the requirements in this module, reducing the measurements to 1-hour averages, calculating the percent reduction or concentration of CO emissions according to 63.6620; and
- Demonstrating that the catalyst achieves the required percent reduction of CO emissions over the 4-hour averaging period, or that emissions remain at or below the CO concentration limit; and
- Conducting an annual RATA of your CEMS using PS 3 and 4a of 40 CFR part 60, Appendix B, as well as daily and periodic data quality checks in accordance with 40 CFR part 60, Appendix F, procedure 1.

***Complying with the requirement to reduce CO emissions, or limit the concentration of CO in the exhaust, and using oxidation catalyst:***

- Conduct performance tests every 8,760 hours or 3 years, whichever comes first, to demonstrate that the required percent reduction is achieved or that your emissions remain at or below the limit; and
- Collect the catalyst inlet temperature data according to the requirements in this module; and
- Reduce these data to 4-hour rolling averages; and
- Maintain the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature; and
- Measure the pressure drop across the catalyst once per month and demonstrate that the pressure drop across the catalyst is within the operating limitation established during the performance test.



# Continuous Compliance Requirements

How do I demonstrate continuous compliance with emission and operating limits?

***Complying with the requirement to reduce CO emissions, or limit the concentration of CO in the exhaust, and NOT using oxidation catalyst:***

- Conduct performance tests every 8,760 hours or 3 years, whichever comes first, to show that the required percent reduction is achieved or that your emissions remain at or below the limit; and
- Collect the approved operating parameter (if any) data according to the requirements in this module; and
- Reduce these data to 4-hour rolling averages; and
- Maintain the 4-hour rolling averages within the operating limitations for the operating parameters established during the performance test.



# What records must I keep?

You must keep records of:

- Each notification and report that you submit and all supporting documentation
- Occurrence and duration of each malfunction
- Performance tests and evaluations
- Required maintenance performed on air pollution control and monitoring equipment
- Actions taken during malfunctions to minimize emissions and corrective actions
- Maintenance conducted on the engine to demonstrate that it was operated and maintained according to the maintenance plan



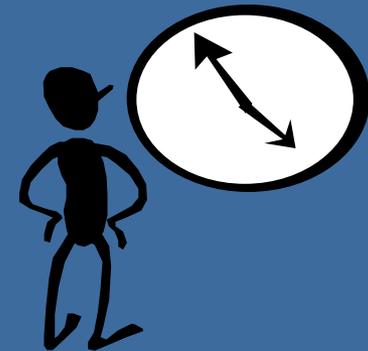
# What records must I keep?

For each CEMS or CPMS, keep the following:

- Records:

- Each period during which a CMS is malfunctioning/inoperative/out-of-control
- All required measurements needed to demonstrate compliance with a relevant standard
- All CMS performance test results and evaluations
- All measurements as may be necessary to determine the conditions of performance tests/evaluations
- All CMS calibration checks
- All adjustments and maintenance performed on the CMS
- Previous versions of the performance evaluation plan
- Requests for alternatives to the RATA

- Keep all records for 5 years from the date of creation.



# What notifications should I submit?

## Notification of:

- Applicability (120 days after effective date) or Construction/Reconstruction – due 12/13/04
- Intent to Conduct Performance Test (60 days prior to test)
- Compliance Status (60 days after compliance demonstrated)



# What reports should I submit?

## Semi-Annual Compliance Report (annual if limited use)

### •Due January 31<sup>st</sup> and July 31<sup>st</sup> each year:

–First compliance report must cover the period beginning on May 3, 2013 and end on June 30, 2013, and must be postmarked or delivered by July 31, 2013.

–Covers the period from January 1-June 30 or July 1-December 31

–Report must contain:

- Statement by responsible official certifying the accuracy of the report
- If any malfunctions occurred during the reporting period, including the number, duration, and a brief description for each type of malfunction which occurred and which caused or may have caused any limits to be exceeded. Also include actions taken during malfunction to minimize emissions and correct malfunctions.
- If no deviations occurred, a statement indicating so.
- If there were no periods during which the CMS was out-of-control, a statement indicating so.

### •For each deviation that occurs where you are not using a CMS the report must contain:

- Statement by responsible official certifying the accuracy of the report
- If any malfunctions occurred during the reporting period, including the number, duration, and a brief description for each type of malfunction which occurred and which caused or may have caused any limits to be exceeded. Also include actions taken during malfunction to minimize emissions and correct malfunctions.
- Total operating time of the engine at which the deviation occurred
- Information on the number duration, and cause of deviations, and the corrective action taken.



# What reports should I submit?

## Semi-Annual Compliance Report

- For each deviation from an emission or operating limitation occurring for an engine where you are using a CMS to comply with the limits, you must include:
  - Statement by responsible official certifying the accuracy of the report
  - If any malfunctions occurred during the reporting period, including the number, duration, and a brief description for each type of malfunction which occurred and which caused or may have caused any limits to be exceeded. Also include actions taken during malfunction to minimize emissions and correct malfunctions.
  - Date and time each malfunction started and stopped.
  - Date, time, and duration that each CMS was inoperative, except for zero (low-level) and high-level checks.
  - Date, time, and duration that each CMS was out-of-control, using the information in 63.8(c)(8).
  - Date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period.
  - Summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period.
  - 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.
  - Summary of the total duration of CMS downtime during the reporting period, and the total duration of CMS downtime as a percent of the total operating time of the engine at which the CMS downtime occurred during that reporting period.
  - Identification of each parameter and pollutant (CO) that was monitored at the engine.
  - Brief description of the engine and CMS.
  - Date of the latest CMS certification or audit.
  - Description of any changes in CMS, processes, or controls since the last reporting period.



# What reports should I submit?

## Semi-Annual Compliance Report

- Report each instance in which you did not meet each emission limit or operating limit. If you change your catalyst, you must reestablish the values of the operating parameters measured during the initial performance test. When you reestablish the values of your operating parameters, you must also conduct a performance test to demonstrate that you are meeting the required emission limit applicable to your engine.
- Report each instance in which you did not meet the requirements of any of the General Provisions
- If your source has a Title V Operating Permit, you must report all deviations in the Title V Semi-Annual Monitoring Report.



# Where do I send notifications and reports?



EPA REGION 1:

US Environmental Protection Agency  
5 Post Office Square, Suite 100, Mail code: OES04-2  
Boston, MA 02109-3912  
Attention: Air Clerk



Connecticut Department of Energy and Environmental Protection

# By when must I comply with the rule?

Your compliance date is: **May 3, 2013**



Photo credit: EPA

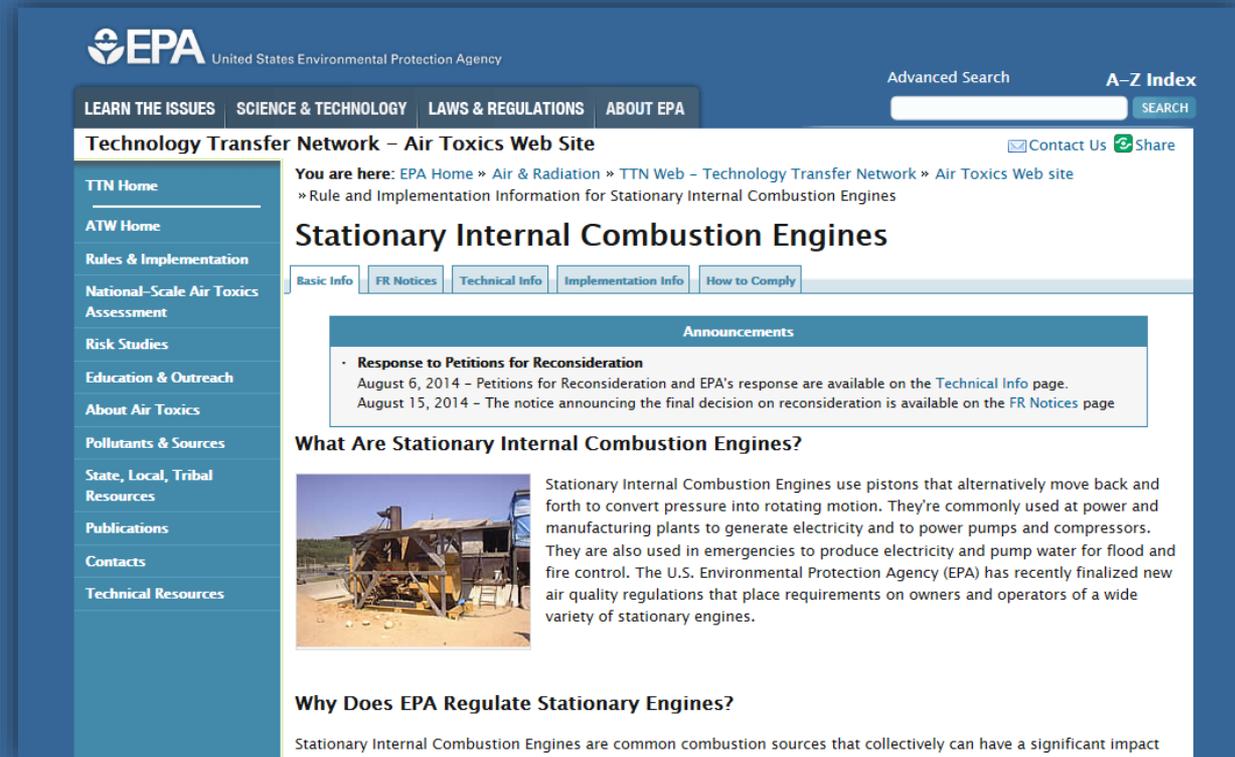


Connecticut Department of Energy and Environmental Protection

# Visit the EPA RICE Compliance Page

[www.epa.gov/ttn/atw/icengines](http://www.epa.gov/ttn/atw/icengines)

- ▶ Fact sheets
- ▶ Regulations
- ▶ Example notifications
- ▶ Announcements
- ▶ Q & A documents
- ▶ Testing advice
- ▶ Recorded webinars
- ▶ ...and more!



The screenshot shows the EPA website's navigation and content for Stationary Internal Combustion Engines. The top navigation bar includes 'LEARN THE ISSUES', 'SCIENCE & TECHNOLOGY', 'LAWS & REGULATIONS', and 'ABOUT EPA'. A search bar and 'Advanced Search' link are on the right. The main header reads 'Technology Transfer Network – Air Toxics Web Site'. A left sidebar lists various resources like 'TTN Home', 'ATW Home', 'Rules & Implementation', 'National-Scale Air Toxics Assessment', 'Risk Studies', 'Education & Outreach', 'About Air Toxics', 'Pollutants & Sources', 'State, Local, Tribal Resources', 'Publications', 'Contacts', and 'Technical Resources'. The main content area features a breadcrumb trail: 'You are here: EPA Home » Air & Radiation » TTN Web – Technology Transfer Network » Air Toxics Web site » Rule and Implementation Information for Stationary Internal Combustion Engines'. Below this is the title 'Stationary Internal Combustion Engines' and a sub-navigation bar with 'Basic Info', 'FR Notices', 'Technical Info', 'Implementation Info', and 'How to Comply'. An 'Announcements' section highlights a 'Response to Petitions for Reconsideration' with dates and links to 'Technical Info' and 'FR Notices' pages. A section titled 'What Are Stationary Internal Combustion Engines?' includes a photo of a large industrial engine and a text description: 'Stationary Internal Combustion Engines use pistons that alternatively move back and forth to convert pressure into rotating motion. They're commonly used at power and manufacturing plants to generate electricity and to power pumps and compressors. They are also used in emergencies to produce electricity and pump water for flood and fire control. The U.S. Environmental Protection Agency (EPA) has recently finalized new air quality regulations that place requirements on owners and operators of a wide variety of stationary engines.' A final section, 'Why Does EPA Regulate Stationary Engines?', states: 'Stationary Internal Combustion Engines are common combustion sources that collectively can have a significant impact'.



Connecticut Department of Energy and Environmental Protection

# Take Aways

## Engine Type:

- An existing non-emergency compression ignition engine at a major source with a site rating of greater than 500 HP

## Limits:

- Limit the concentration of CO in the engine exhaust to  $\leq 23$  ppm at 15% O<sub>2</sub> **or** reduce CO emissions by 70% or more.
- Use an oxidation catalyst to comply with the emission limit

## Fuel Requirement:

- ULSD

## Testing:

- Perform initial emission performance test
- Perform subsequent testing if you are not using a CEMS



# Take Aways

## Monitoring/Recordkeeping:

- If not equipped with a closed crankcase ventilation system, comply with either (1) or (2) below. Follow manufacturer's requirements for operating and maintaining the crankcase ventilation systems and replacing the filters, or have EPA approve different maintenance requirements.

- (1) Install a closed crankcase ventilation system or

- (2) Install an open crankcase filtration emission control system.

- Minimize engine's time spent at idle during startup and minimize startup time, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup apply.

- Monitor continuously at all times the engine is operating

- Keep records of notifications, reports, malfunctions, testing and maintenance

- Keep records for 5 years

## Reporting:

- Submit notifications of:

- Applicability

- Intent to Conduct Performance Test

- Compliance Status

- Submit Semi-Annual Compliance Report

## Compliance Date:

- May 3, 2013

