

**National Emission Standards for Hazardous Air Pollutants for  
Reciprocating Internal Combustion Engines (RICE Rule) Training Module  
40 CFR 63 Subpart ZZZZ  
Script- Major Source Existing Non-Emergency Compression Ignition  
Engine, 100-500 Horsepower**

**NARRATOR:**

[Slide 2:]

Welcome to the Connecticut Department of Energy & Environmental Protection's Online Training for the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, also known as the RICE Rule!

This tool is designed to help owners and operators of reciprocating internal combustion engines, also known as RICE, determine their requirements under 40 CFR Section 63, subpart ZZZZ. By answering the successive questions, your specific requirements have been estimated. Please note that they may not be complete, and refer any questions to your local authority.

[Slide 3:]

We have established that you own or operate an existing non-emergency compression ignition engine greater than or equal to 100 and less than or equal to 500 horsepower, at a major source. Now, let's discuss your requirements.

If your engine is less than or equal to 300 horsepower, you must limit the concentration of carbon monoxide in your engine's exhaust to less than or equal to 230 parts per million corrected to 15% oxygen. If your engine is greater than 300 horsepower, you must limit the concentration of carbon monoxide in the exhaust to less than or equal to 49 parts per million corrected to 15% oxygen or reduce carbon monoxide emissions by 70% or more. The test results shall be based on the average of three 1-hour runs using specified requirements and procedures.

Engines greater than 300 horsepower will probably require an oxidation catalyst to achieve the emission limits. A formula for the estimated capital and annual costs to retrofit your engine based on its horsepower rating is provided here.

You must comply with the emission and operating limits at all times and operate and 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.

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If your engine is greater than 300 horsepower with a displacement less than 30 liters per cylinder, you must use ultra-low sulfur diesel with a maximum sulfur content of 15 ppm and either a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

Engines located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or remote areas of Alaska, or engines rated at less than or equal to 300 horsepower are exempt from these fuel requirements.

Engines less than or equal to 300 horsepower have no fuel requirements.

[Slide 5:]

An initial performance test is required within 180 days of the compliance date. 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:

- The test must have been conducted following the required methods.
- The test must have been performed within the last two years and been reviewed and accepted by EPA.
- The test must have been conducted at any load condition within plus or minus ten percent of 100 percent load.
- There have been no process or equipment changes 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.

If your engine is currently non-operational you may conduct the test when the engine is started up again.

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You are not required to perform subsequent testing.

[Slide 7:]

You must reduce the emissions of carbon monoxide or limit the concentration of carbon monoxide in the engine exhaust using the procedures and approved methods indicated here. If using a control device to reduce the emissions of carbon monoxide, then the sampling must be performed at the inlet and outlet of the control device. All measurements to determine oxygen concentration and moisture content must be made at the same time and location as the measurements for carbon monoxide concentration.

[Slide 8:]

You must conduct three separate test runs for each performance test required. Each run must last at least one hour. Use the formula here to determine compliance with the percent reduction requirement.

[Slide 9:]

You must normalize the carbon monoxide concentrations at the inlet and outlet of the control device to a dry basis corrected to 15% oxygen or an equivalent percent carbon dioxide. If the measurements are corrected to 15% oxygen and carbon dioxide concentration is measured in lieu of oxygen, a correction factor is needed. Determine the carbon dioxide correction factor using the formulas shown here.

[Slide 10:]

Engine testing must be performed at a specific load as determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. The following information shall be included in the Notification of Compliance Status: the engine model number, manufacturer, year of purchase, site brake horsepower, and ambient conditions encountered during the test. An explanation of all assumptions that were made to estimate or calculate percent load during the performance test and the model number and estimated accuracy of any measurement devices used to determine percent load shall also be included in the Notification of Compliance Status.

[Slide 11:]

You have demonstrated initial compliance if the average carbon monoxide concentration determined from the initial performance test is less than or equal to the carbon monoxide emission limit, or if the average reduction of carbon monoxide emissions determined from the initial performance test achieves the required carbon monoxide percent reduction.

[Slide 12:]

To demonstrate initial compliance, you must submit a Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements of 40 CFR 63.9(h).

Before a Title V permit has been issued, you must include the methods used to determine compliance, the results of any performance test, monitoring procedures or methods that were conducted and methods that will be used for determining continuing compliance. You must also include the type and quantity of hazardous air pollutants emitted by the source, the description of air pollution control equipment (or method) for each emission point, and a statement by the owner or operator as to whether the source has complied with the relevant requirements. The notification must be sent before the close of business on the 60<sup>th</sup> day following the completion of the initial compliance demonstration.

After a Title V permit has been issued, you must comply with all requirements for compliance status reports contained in the Title V permit.

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If your engine is greater than or equal to 300 horsepower and not equipped with a closed crankcase ventilation system, you must either install a closed crankcase ventilation system or 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. Follow the manufacturer's maintenance requirements for operating and maintaining the crankcase ventilation systems or request that EPA approve different maintenance requirements that are as protective as the manufacturer's requirements.

You must minimize engine idling time and limit startup time to a period needed for appropriate and safe loading of the engine. Engine startup may not exceed 30 minutes, after which time the non-startup emission limits apply.

[Slide 14:]

In order to demonstrate continuous compliance with emission and operating limits, you must comply with the emission standards at all times.

[Slide 15:]

Let's talk about your recordkeeping requirements. You are required to keep records of each notification and report submitted and all supporting documentation, the occurrence and duration of each malfunction, any performance tests and evaluations, required maintenance performed on air pollution control and monitoring equipment, and any actions taken during malfunctions to minimize emissions and corrective actions.

Keep all records for five years from the date of creation.

[Slide 16:]

A Notification of Applicability was due August 31<sup>st</sup>, 2010. You are required to submit a notification 60 days prior to performing any compliance test and 60 days after your compliance demonstration.

[Slide 17:]

Each year, you are required to submit a Semi-Annual Compliance Report by January 31<sup>st</sup>, covering the period of July 1<sup>st</sup> to December 31<sup>st</sup> of the previous year, and by July 31<sup>st</sup> for the period covering January 1<sup>st</sup> through June 30<sup>th</sup> of the current year. The first compliance report must cover the period beginning on May 3<sup>rd</sup>, 2013 and ending on June 30<sup>th</sup>, 2013.

The report must contain:

- A statement by a responsible official certifying the accuracy of the report
- 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, or 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 include the total operating time at which the deviation occurred, the number, duration, and cause of the deviations, and the corrective action taken.

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For each deviation that occurs where you *are* using a CMS the semi-annual report must include the date and time each malfunction or deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period. You must also include the date, time, and duration that each CMS was inoperative or out-of-control and a summary of the total duration of the deviation and the total duration as a percent of the total source operating time during that reporting period.

The report must also include a breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, or other known and unknown causes. Finally, the report shall include an identification of each parameter and pollutant that was monitored, a brief description of the engine and CMS, the date of the latest CMS certification or audit and a description of any changes in CMS, processes, or controls since the last reporting period.

[Slide 19:]

The Semi-Annual Compliance Report must include each instance in which you did not meet an emission limit, operating limit or any requirement of the general provisions.

If your source has a Title V Operating Permit, report all deviations in the Title V Semi-Annual Monitoring Report.

[Slide 20:]

Notifications must be sent to EPA Region 1 at the address shown.

[Slide 21:]

You must comply with the rule by May 3<sup>rd</sup>, 2013.

[Slide 22:]

If you would like more information about the RICE rule, please visit the EPA RICE Compliance web page at the address provided. This site provides resources such as Q and A documents, fact sheets, sample notification forms, and recordings of webinars, all of which are designed to help you comply with this rule.

[Slide 23:]

Let's summarize the requirements for your major source, existing non-emergency compression ignition engine greater than or equal to 100 horsepower and less than or equal to 500 horsepower under this rule.

If your engine is less than or equal to 300 horsepower, you must limit the concentration of carbon monoxide in your engine's exhaust to less than or equal to 230 parts per million corrected to 15% oxygen. If your engine is greater than

300 horsepower, you must limit the concentration of carbon monoxide in the exhaust to less than or equal to 49 parts per million corrected to 15% oxygen or reduce carbon monoxide emissions by 70% or more. Engines greater than 300 horsepower will probably require an oxidation catalyst to achieve the emission limits.

Engines greater than 300 horsepower with a displacement less than 30 liters per cylinder must use ultra-low sulfur diesel. Engines less than or equal to 300 horsepower have no fuel requirements. You must also perform an initial emission performance test.

[Slide 24:]

If your engine is greater than or equal to 300 horsepower and not equipped with a closed crankcase ventilation system then you must either install a closed crankcase ventilation system or an open crankcase filtration emission control system. You must also minimize the engine's time spent at idle during startup and minimize the startup time. Keep records of notifications, reports, malfunctions, testing and maintenance for a period of five years.

Submit Notifications of Applicability, Intent to Conduct a Performance Test and Compliance Status. Also submit a Semi-Annual Compliance Report. Your compliance date is May 3<sup>rd</sup>, 2013.