Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE Rule) Training Module 40 CFR 63 Subpart ZZZZ Script- Area Source Existing Non-Emergency Compression Ignition Engine 300<Horsepower≤500

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 determined that your engine is an existing non-emergency compression ignition engine at an area source with a site rating greater than 300 and less than or equal to 500 horsepower.

Let's begin by discussing your applicable emission standards.

- If your engine was certified to meet the Tier 3 emission standards, which are listed in Table 1 of 40 CFR 89.112, you need only comply with the New Source Performance Standards for compression ignition engines, 40 CFR 60 Subpart IIII. In this case, documentation of engine certification and adherence to the manufacturer's specifications for the engine is required.

[Slide 4:]

- Tier 1 and Tier 2 certified RICE that are subject to state and local requirements that call for replacement of the engine can meet management practices until January 1st, 2015, or 12 years after the engine installation date, whichever is later, but not later than June 1st, 2018, after which time the carbon monoxide emission standards specified in this module apply.
    - Management practices are described in Table 2d section 1 of the rule, and include the items listed here.
    - If you plan to fulfill management practices rather than meeting emission limits, you must submit a notification by the date specified indicating your intent to exercise this provision and identifying the state or local regulation that the engine is subject to.

[Slide 5:]
If your engine exceeds 300 horsepower *and* is located on an offshore drilling vessel on the Outer Continental Shelf, you are subject to the management practices shown here.

[Slide 6:]
If you are subject to the management practices for engines exceeding 300 horsepower located on an offshore drilling vessel on the Outer Continental Shelf, you must develop a maintenance plan stating how the management practices will be fulfilled and you must keep supporting documentation and records.

[Slide 7:]
If your engine was not certified and required to be replaced, and is not located on an offshore drilling vessel, you must limit the concentration of carbon monoxide in the engine exhaust to 49 parts per million at 15% oxygen **or** reduce carbon monoxide emissions by 70% or more. Compliance with this limit must be determined based on the results of testing the average of three 1-hour runs.
Engines located in remote areas of Alaska are not required to meet the limits; however, they must meet management practices.

Engines subject to the emission limits will probably require an emissions control retrofit in order to achieve the standard. For compression ignition engines, this is an oxidation catalyst. You can use the equations listed here to estimate the capital and annual cost of a catalyst.

Your engine must comply with the emission limits and operating limits at all times. Furthermore, you must operate and maintain all equipment safely, and in accordance with good air pollution control practices for minimizing emissions. If you have already achieved the limits required by this rule, you need not make any additional efforts to lessen emissions.

[Slide 8:]
Next, we will be exploring your fuel requirements. If your engine has a displacement of less than 30 liters per cylinder, you are required to use ultra low sulfur diesel that meets the following criteria:

- Sulfur content cannot exceed 15 parts per million
- The fuel must have a minimum Cetane index of 40 or a maximum aromatic content of 35 volume percent.
- Take note that engines located in Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, areas of Alaska that are not accessible by the Federal Aid Highway System, remote areas of Alaska, or on offshore vessels are exempt from the requirements of this section.

[Slide 9:]
Here are your testing requirements. You are required to conduct an initial performance test no later than 180 days after the compliance date. You do not need to conduct an initial test if a test has previously been conducted on the unit; however, the test *must* meet the conditions listed here:

- The test must have been conducted less than two years ago
- The test must have been performed using the required test methods, and these methods must have been followed correctly
- The test must be evaluated and accepted by EPA
- Either no process or equipment changes must have been made since the test was conducted, **or** you must be able to demonstrate that the results of the test, with or without adjustments reliably show compliance regardless of process or equipment changes.

If your engine is currently not in operation, do not start-up the engine for the sole purpose of completing the performance test. You may conduct the test when the unit is started up again.

[Slide 10:]
Once you have fulfilled the initial testing requirement, you are not required to perform any subsequent tests.

[Slide 11:]

Please review this table to determine your testing requirements, which will differ depending on whether you are complying with the requirement to reduce carbon monoxide emissions or limit the concentration of carbon monoxide in the engine exhaust.

[Slide 12:]
Now we will be discussing the required testing procedures. You must conduct three separate test runs for each performance test required. Each run will last at least 1 hour.

Use the equation listed here to determine compliance with the percent reduction requirement.

[Slide 13:]
You will need to normalize the carbon monoxide concentrations at the inlet and outlet of the control device to a dry basis and to 15% oxygen, or an equivalent percent carbon dioxide. If pollutant concentrations are to be corrected to 15% oxygen and carbon dioxide concentration is measured in lieu of oxygen concentration measurement, a carbon dioxide correction factor is needed. Calculate the carbon dioxide correction factor as described here.

[Slide 14:]
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 written report must include the following information: engine model number, manufacturer, year of purchase, brake horsepower, 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. If measurement instruments such as flow meters, kilowatt meters, beta analyzers, or stain gauges are utilized, the model number of the device and an estimate of its accuracy must be provided.

[Slide 15:]
Next, we will discuss how to demonstrate initial compliance with the emission limits and operating limits. If you are complying with the requirement to limit the concentration of carbon monoxide in the engine exhaust, 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.

If you are complying with the requirement to reduce CO emissions, you have demonstrated initial compliance if the average reduction of carbon monoxide emissions, determined from the initial performance test, achieves the required carbon monoxide percent reduction.

[Slide 16:]
You must submit a Notification of Compliance Status detailing the results of the initial compliance demonstration. A sample Notification of Compliance Status, shown at right, can be found on the EPA RICE Compliance Page. The web address for this site will be provided at the end of this module.

[Slide 17:]
Your monitoring requirements are listed here. If your engine is not equipped with a closed crankcase ventilation system, you must either install a closed crankcase ventilation system *or* install an open crankcase filtration emission control system. You must adhere to the manufacturer's instructions for operating and maintaining the crankcase ventilation systems and replacing the filters, or you can request that EPA approve alternate maintenance practices that

are equally as protective as the manufacturer's requirements. Please note that if your engine is located in a remote area of Alaska, you do not need to install a crankcase system.

You must 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 30 minutes, the emission standards applicable to all times other than startup will apply.

[Slide 18:]
In order to demonstrate continuous compliance, you must comply with the emission standards at all times.

[Slide 19:]
Next, let's discuss the records you are required to keep.

- You must keep records of each notification and report that you submit, and all supporting documents for these notifications and reports
- You must keep records of the occurrence and duration of each malfunction
- You must keep records of performance testing and evaluations
- You must keep records of the required maintenance conducted on air pollution control and monitoring equipment.
- You must keep records of actions taken during malfunctions to minimize emissions and all corrective actions taken

All records must be kept for 5 years from the date of creation.

[Slide 20:]
Here is a summary of the notifications you are required to submit:

- You must submit a Notification of Applicability or Construction/Reconstruction 120 days after the effective date of this rule.
- Submit a Notification of Intent to Conduct a Performance Test 60 days prior to the test.
- Submit a Notification of Compliance Status within 60 days after compliance has been demonstrated.

[Slide 21-22:]
In addition to the notifications, you must submit Semi-Annual Compliance Reports on January 31st and July 31st of every year. If the engine is for limited use, operating less than 100 hours per year, you may submit these reports on an annual basis.

The semi-annual report will cover the period from January 1st through June 30th or July 1st through December 31st. Please review the information on the next two screens to determine what information your Compliance Reports must contain.

[Slide 23:]
Your semi-annual compliance report must indicate each instance in which you did not meet each emission limit or operating limit.

Additionally, you must report each instance in which you did not meet the requirements of any of the General Provisions.

[Slide 24:]
All notifications and reports should be sent to EPA Region 1 at the address shown here.

[Slide 25:]
You must comply with all requirements of this rule by the date shown on the screen.

[Slide 26:]
If you would like more information about the RICE rule, please visit the EPA RICE Compliance web page at the address shown. 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 27:]
Let's summarize the requirements for your existing non-emergency compression ignition engine at an area source with a site rating greater than 300 and less than or equal to 500 horsepower.

- If your engine was certified to meet Tier 3 emission standards, or Tier 2 emission standards for engines greater than 560 kilowatts, your engine is considered to be in compliance with the rule. You need only to maintain documentation of engine certification and to follow the manufacturer's specifications.
- Tier 1 and Tier 2 certified engines subject to state and local requirements that call for replacement of the engine can meet management practices until January 1st, 2015, or 12 years after the installation date, whichever is later, but not later than June 1st, 2018, after which time the carbon monoxide emission limits apply.
- If your engine is greater than 300 horsepower *and* located on an offshore drilling vessel on the Outer Continental Shelf, you must follow the specified management practices.
- All other engines must limit the concentration of carbon monoxide in the engine exhaust to 49 parts per million at 15% oxygen *or* reduce carbon monoxide emissions by 70% or more
- Most engines will require an oxidation catalyst to meet these emission standards.
- Engines with a displacement less than 30 liters per cylinder are required to use ultra low sulfur diesel.
- Your engine is required to undergo initial emission performance testing within 180 days after the date specified.

[Slide 28:]
- You must operate and maintain the engine according to the manufacturer's written instructions or develop your own site-specific maintenance plan.
- You must keep records of all notifications submitted, testing and maintenance performed, malfunction and corrective actions taken, etc.
- You must retain all records for 5 years.
- Submit Notifications of Applicability, Intent to Conduct Performance Test, and Compliance Status
- If your engine is Tier 1 or Tier 2 certified, submit Notification of Intent to Use Management Practices, including the applicable state/local regulation
- You must submit a Semi-Annual Compliance Report, or Annual Compliance Report if the engine is for limited use.
- You must be in compliance with all requirements of the rule by the date shown on screen.