

How to Comply with EPA Regulations for Stationary Reciprocating Internal Combustion Engines (“RICE”)



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Compliance Requirements & Challenges

- Initial notification required. Reporting dates have passed – August 31, 2010 (CI) & February 16, 2011 (SI)
- Only about 100 notifications received in New England – who is missing?
- Some assistance to date by EPA Headquarters & states
- Some good resources available
- Several industrial/commercial sectors use RICE engines – how to reach them all?
- Compliance dates for existing engines: May 2013 (CI) and October 2013 (SI) – coming up soon
- Requirements complex – opportunities to clarify
- Coordination with existing state requirements
- Some sources will find compliance difficult

Compliance Requirements & Challenges – contd.

- Need to clarify - “what is an emergency engine?”
- Demand response use of engines encouraged – only Independent System Operator (ISO) knows
- Use engine too much (time limits) – sources may become subject to RICE NESHAP non-emergency engine requirements!

RICE Powering Crusher at Sand & Gravel Plant



Source: New Hampshire Dept. of
Environmental Services

When May Sources Find it Costly or Difficult to Comply?

- Scenario 1 – a stone mining & crushing facility far from the grid that uses large RICE engine to run crusher & may operate only seasonally – high cost to retrofit and test
- Scenario 2 – a small facility with a large, older diesel engine – if manufacturer can't supply an oxidation catalyst at manageable cost
- Scenario 3 – Sources that want to use engines for infrequent non-emergency use that have not set aside funds to retrofit (municipalities?)

Preparing for a Performance Test

- Submit Notification of Performance Test at least 60 days in advance of test date
- EPA Region 1 requires test protocol for all performance tests (submit with notification); may observe test; procedures vary by region
- EPA Guidance Documents 042 and 043 for Test Protocols and Test Reports
 - <http://www.epa.gov/ttn/emc/guidInd.html>

Parameters to be Measured

IIII	JJJJ	<i>ZZZZ</i>
NO _x	NO _x	CO
Q _s gas flow	CO	formaldehyde
moisture	Q _s gas flow	Q _s gas flow
O ₂	Moisture	moisture
CO ₂	O ₂	O ₂
PM	CO ₂	CO ₂
Brake horsepower	VOC	Brake horsepower
kwe production	Brake horsepower	kwe production
	kwe production	

Required parameters vary by engine type; listed parameters may need to be measured. Test conducted at outlet duct for compliance with not-to-exceed concentration limit, or at both inlet and outlet ducts for compliance with % reduction requirement. Source: TRC Environmental Corporation

Where to Locate Performance Test Requirements

- IIII- 60.4212, 60.4213 and Table 7
- JJJJ- 60.4244 and Table 2
- ZZZZ- 63.6620 and Table 4
- These provisions enumerate parameters to be measured and sampling methods to be used.

Table 4 to Subpart ZZZZ of Part 63— Requirements for Performance Tests

As stated in §§63.6610, 63.6611, 63.6612, 63.6620, and 63.6640, you must comply with the following requirements for performance tests for stationary RICE:

For each . . .	Complying with the requirement to . . .	You must . . .	Using . . .	According to the following requirements . . .
1. 2SLB, 4SLB, and CI stationary RICE	a. Reduce CO emissions	i. Measure the O ₂ at the inlet and outlet of the control device; and	(1) Portable CO and O ₂ analyzer	(a) Using ASTM D6522-00 (2005) ^a (incorporated by reference, see §63.14). Measurements to determine O ₂ must be made at the same time as the measurements for CO concentration.
		ii. Measure the CO at the inlet and the outlet of the control device	(1) Portable CO and O ₂ analyzer	(a) Using ASTM D6522-00 (2005) ^{ab} (incorporated by reference, see §63.14) or Method 10 of 40 CFR appendix A. The CO concentration

Test Program Sequence of Events

1. Select an emissions testing company

Criteria: experience and recommendations

2. Testing company conducts a site visit

- a. determines if stack duct extensions needed and delineates where to place the sampling ports in the inlet and outlet ducts on the control device.
- b. electrical power for sampling equipment
- c. how the power out is determined and recording of same.

Test Program Sequence of Events

- d. safety requirements
 - e. requirements for safe access to ports - e.g. scaffold or lift
 - f. fuel flow measurements
- 3. Testing company prepares site-specific test plan according to Guideline Document GD-042**
- a. delineates parameters to be measured
 - b. delineates sampling and analytical methods

Test Program Sequence of Events

- c. delineates number of test runs, duration of test runs and minimum sample volumes for each method.
- d. describes facility engine type, max load, fuel type, load to be used during test; other operational parameters.
- e. delineates sampling locations,
- f. calculations,
- g. calibrations.

Test Program Sequence of Events

4. Source submits test plan to EPA and state agency at least 60 days prior to test date.
5. EPA/state agency reviews the test plan, either accepts as is or requests revisions.
6. If needed the test company revises the test plan and the source resubmits to agency.

Test Program Sequence of Events

7. Agency accepts the test plan.
8. Agency may request an onsite pretest meeting.
9. Testing company conducts the test program.
 - a. For each parameter 3 test runs are conducted over a test period of 1 or more hours.
 - b. Test run is conducted at either a load of 100+/- 10% of peak load or highest achievable load.

Test Program Sequence of Events

10. Test company prepares an emissions test report according to Guideline Document GD-043, and submits to source.
11. Source submits report to agency within 45-60 days of completion of test.
12. EPA reviews the report and either accepts it or requests clarifications, revisions etc.
13. Test company addresses comments & submits final document to source, which then submits final document to agency.

RICE NESHAP - Issues with Operating Emergency Engines

- Owners of all affected emergency RICE need to install non-resettable hour meters & record hours of operation
- Bottom line – now you have to track & manage your engine use to avoid exceeding usage limits under the definition of emergency
- If you run your engine in excess of allowable non-emergency hours/year – you have to comply with RICE NESHAP requirements for non-emergency engines

Considering Engine Retrofit or Replacement

- Explore availability of new technologies
- Get several quotes – they may vary widely
- Compare efficiency of current & new engines & fuel costs
- Carefully assess capital and operating cost tradeoffs – use business math techniques like calculating Net Present Value of investment & rate of return

Tools for Complying with RICE Rules

- Powerpoints from past webinar
- Applicability flowchart
- RICE Summary Table of Requirements (good – but hard to print)
- Regulation Navigation Tool
- Example Forms for Initial Notification & Notification of Compliance Status – EPA Region 1 RICE webpage, EPA Technology Transfer Network (TTN) air toxics RICE webpage

Some Useful Compliance Tools

- **EPA Region 1 RICE Webpage – www.epa.gov/region1/rice - “plain language” summary of RICE NESHAP & NSPS, sample Initial Notification and Notification of Compliance Status, events, state contacts, link to Electronic Code of Federal Regulations for RICE NESHAP and NSPS, other tools**
- **EPA Technology Transfer Network Air Toxics website RICE page - www.epa.gov/ttn/atw/rice/ricepg/html#IMP - proposed and final rules, docket index, technical information, fact sheets, training materials**
- **EPA Combustion Portal – www.combustionportal.org - source for EPA combustion-related air quality regulations including RICE & Boiler NESHAP and RICE NSPS; “calculator” for CI RICE NESHAP; detailed summary of RICE NSPS standards**

Suggested Procedure for RICE NESHAP & NSPS Compliance

- Inventory your RICE – type, date of manufacture/installation, HP
- Track RICE use – past & present non-emergency , maintenance/testing, demand management hours/yr
- Determine applicable EPA & state requirements & compliance dates (try EPA R. 1 RICE webpage & Combustion Portal RICE NESHAP Tool – calculator for CI engines)
- Submit any required initial notifications to EPA – if past due, send in as soon as possible
- Note thresholds that define emergency engine & stay within them
- If emergency engine subject to RICE rule, install hour meters
- Get help understanding compliance requirements – web pages, EPA & state assistance staff, consultants

Suggested Procedure for RICE NESHAP & NSPS Compliance - contd.

- Consider pollution prevention & energy efficiency as compliance strategies - e.g. reduce RICE use by changing operations, connect to grid, combined heat & power, more efficient new engine
- If your RICE have emission limits & may need retrofit, get engineering help from manufacturer, control firms, consultants
- Explore help w. energy efficiency assessment & \$ for efficiency improvements from utility industrial energy conservation programs
- If performance test required, locate qualified firm, send in Notification of Performance Test, complete test; allow extra time!
- Submit NESHAP Notification of Compliance Status to EPA – 2013 compliance date for existing CI & SI engines

Need More Help or Info?

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**Regional RICE Contacts
for EPA Regions –**

<http://www.epa.gov/ttn/atw/rice/EPARegionalRICEcontacts.pdf>

EPA Regions

