

Know Your RICE Requirements NESHAP Subpart ZZZZ

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June 8, 2011

Paid for, in part, by the Kansas Department of Health and Environment

Slides 7-23 are directly or modified from a presentation by
Melanie King, U.S. EPA Office of Air Quality Planning & Standards, at the
SBO/SBEAP State Partner Training on May 4, 2011.

Kansas SBEAP?

Kansas State University

- College of Engineering
 - Engineering Extension
 - Pollution Prevention Institute (PPI)
 - **Small Business Environmental Assistance Program (SBEAP)**

Small Business Environmental Assistance Program

- ▶ Environmental compliance assistance
- ▶ Multimedia [air (mostly), waste, water, energy, GHG inventory and reporting, and EMS]
- ▶ Free to small- and medium-sized businesses (KDHE funded)
- ▶ Confidential
- ▶ Staff located throughout the state
- ▶ Contact information
 - Web site: www.sbeap.org
 - Hotline: 800-578-8898
 - E-mail: sbeap@ksu.edu



RICE NESHAP – Overview

- ▶ National Emission Standards for Hazardous Air Pollutants
- ▶ 40 CFR part 63 subpart ZZZZ
- ▶ Regulates emissions from stationary reciprocating internal combustion engines (RICE) at both major and area sources of hazardous air pollutants
- ▶ Regulatory requirements
- ▶ Implementation tools

Area vs Major Sources

- ▶ National Emission Standards for Hazardous Air Pollutants (NESHAP) – Subpart ZZZZ applies to
 - **major** source – facility emits or has PTE at least 10 tons/yr single HAP or 25 tons/yr combinations of HAPs
 - **area** source – not a **major** source
 - www.epa.gov/ttn/atw/area/arearules.html
- ▶ CAA requires EPA to ID 30 most toxic HAPs in urban areas
- ▶ CAA requires EPA to ID **area** source categories representing 90% of emitters of these
“Urban Dirty Thirty”

Terms

- ▶ HAP: hazardous air pollutant
- ▶ Major source: 10/25 tons per year
- ▶ Area source: any non-major source
- ▶ CI: compression ignition (diesel)
- ▶ SI: spark ignition (gas [natural gas, landfill gas, gasoline, propane, etc.])
 - 2SLB: 2-stroke lean burn
 - 4SLB: 4-stroke lean burn
 - 4SRB: 4-stroke rich burn
 - LFG/DG: landfill gas/digester gas

Stationary vs. Nonroad

- ▶ Stationary means not used in a motor vehicle and not a nonroad engine
 - Nonroad engines are:
 - Self-propelled (tractors, bulldozers)
 - Propelled while performing their function (lawnmowers)
 - Portable or transportable (has wheels, skids, carrying handles, dolly, trailer, or platform)
 - Portable nonroad becomes stationary if it stays in one location for more than 12 months



VS.



New or Existing Source?

MAJOR SOURCES

AREA SOURCES

≤ 500 HP	EXISTING < June 12, 2006	NEW ≥ June 12, 2006	EXISTING < June 12, 2006	NEW ≥ June 12, 2006
	EXISTING < Dec 19, 2002	NEW ≥ Dec 19, 2002	EXISTING < June 12, 2006	NEW ≥ June 12, 2006
> 500 HP				

RICE NESHAP: 2004

MAJOR SOURCES

AREA SOURCES

	EXISTING	NEW	EXISTING	NEW
≤ 500 HP				
> 500 HP	EXISTING 2004 rule	NEW 2004 rule	EXISTING	NEW

Covered engines > 500 HP located at major sources

RICE NESHAP: 2008

		MAJOR SOURCES		AREA SOURCES	
≤ 500 HP	EXISTING	NEW	EXISTING	NEW	
		2008 rule	2008 rule		
> 500 HP	EXISTING	NEW	EXISTING	NEW	
	2004 rule	2004 rule		2008 rule	

Added new engines ≤ 500 HP located at major sources, plus all new engines at area sources

RICE NESHAP: 2010

MAJOR SOURCES

AREA SOURCES

	MAJOR SOURCES		AREA SOURCES	
	EXISTING	NEW	EXISTING	NEW
≤ 500 HP	2010 rules	2008 rule	2010 rules	2008 rule
> 500 HP	2004 rule 2010 rule (non-emergency CI)	2004 rule	2010 rules	2008 rule

Added existing engines ≤ 500 HP located at major sources, all existing engines at area sources, and existing non-emergency CI engines >500 HP at major sources

2010 Amendments to RICE NESHAP

- ▶ March 3, 2010: amendments for existing stationary CI engines
- ▶ August 20, 2010: amendments for existing stationary SI engines
- ▶ Amendments apply to engines that are:
 - ≤ 500 HP, located at major source of HAP, and constructed before June 12, 2006
 - All HP, located at area source of HAP, and constructed before June 12, 2006
 - non-emergency CI engines > 500 HP, located at major source of HAP, and constructed before December 19, 2002
- ▶ Existing residential, institutional, or commercial emergency engines at area sources are not covered

2010 Amendments – Impacts

- ▶ Estimated 1.2 million engines affected
 - ~800,000 are located at area sources
 - ~74% are CI (of which ~80% are emergency engines)
- ▶ Estimated emission reductions:
 - 7,000 tons/year HAP
 - 123,000 tons/year CO
 - 96,000 tons/year NOx
 - 58,000 tons/year VOC
 - 2,800 tons/year PM
- ▶ Monetized human health benefits of \$1.5–3.5 billion

Emission Standards – Existing RICE Located at Major Sources

HP	Engine Subcategory					
	Non-emergency					Emergency or Black start
	CI	SI 2SLB	SI 4SLB	SI 4SRB	SI LFG/DG	
<100	Work practice standards					Work practice standards
100–300	230 ppm CO	225 ppm CO	47 ppm CO	10.3 ppm CH ₂ O	177 ppm CO	
300–500	49 ppm CO or 70% CO reduction					
>500	23 ppm CO or 70% CO reduction	No standards (2004 rule)	No standards (2004 rule)	350 ppb CH ₂ O or 76% CH ₂ O reduction (2004 rule)	No standards (2004 rule)	No standards (2004 rule)

Emission Standards – Existing RICE Located at Area Sources

HP	Engine Subcategory					
	Non-emergency					Emergency or Black start
	CI	SI 2SLB	SI 4SLB	SI 4SRB	SI LFG/DG	
≤300	Mgmt practice standards	Mgmt practice standards	Mgmt practice standards	Mgmt practice standards	Mgmt practice standards	Mgmt practice standards
300–500	49 ppm CO or 70% CO reduction*					
>500	23 ppm CO or 70% CO reduction*					

*Except engines in rural Alaska

**If engine used >24 hrs/yr

Why do some engines at area sources have more stringent requirements than similar engines at major sources?



Emergency Engine Requirements

- ▶ No limits on hours of operation for emergency service
- ▶ Maintenance checks & readiness testing limited to 100 hrs/yr
- ▶ 50 hrs/yr allowed for non-emergencies
 - Counts as part of the 100 hr/yr maintenance & testing limit
- ▶ Engine cannot be used for peak shaving or as part of financial arrangement with another entity, except 15 of the 50 non-emergency hrs/yr can be used for demand response in emergency situations (e.g., imminent blackout)

Compliance Requirements

Engine Subcategory	Compliance Requirements
<ul style="list-style-type: none">•Non-emergency ≥ 100 HP at major source•Non-emergency CI > 300 HP at area source•Non-emergency SI > 500 HP at area source that are 4SLB or 4SRB and are used > 24 hours/year	<ul style="list-style-type: none">•Initial emission performance test•Subsequent performance testing every 8,760 hours of operation or 3 years for engines > 500 HP (5 years if limited use)•Operating limitations – catalyst pressure drop and inlet temperature for engines > 500 HP•Notifications•Semiannual compliance reports (annual if limited use) <p>CI > 300 HP:</p> <ul style="list-style-type: none">•Ultra low sulfur diesel (except rural Alaska)•Crankcase emission control requirements

Compliance Requirements

Engine Subcategory	Compliance Requirements
<ul style="list-style-type: none"> • <100 HP at major source • Emergency/black start (major and area) • Non-emergency CI ≤ 300 HP at area source • Non-emergency SI ≤ 500 HP at area source • Non-emergency SI 2SLB > 500 HP at area source • Non-emergency SI LFG/DG > 500 HP at area source • Non-emergency SI > 500 HP at area source that are 4SLB or 4SRB and are used ≤ 24 hours/year 	<ul style="list-style-type: none"> • Change oil/filter, inspect air cleaner or spark plugs, hoses/belts on prescribed schedule • Operate/maintain engine & control device per manufacturer's instructions or owner-developed maintenance plan • May use oil analysis program instead of prescribed oil change frequency • Emergency engines must have hour meter and record hours of operation • Keep records of maintenance • Notifications not required

Startup, Shutdown, Malfunction: Response to Court Decision

- ▶ Emission standards apply during shutdowns and malfunctions
- ▶ Startup and idling time must be kept to 30 minutes or less, after which, normal standards apply
- ▶ Also applies to engines covered by 2004 and 2008 RICE NESHAP

Key Dates

- ▶ Initial Notifications were due by:
 - August 31, 2010 for existing CI engines
 - February 16, 2011 for existing SI engines

- ▶ Compliance date:
 - May 3, 2013 for existing CI engines
 - October 19, 2013 for existing SI engines

Next Steps

- ▶ Petitions for reconsideration and review
 - 15 hours for emergency demand response
 - Requirements for existing non-emergency SI engines >500 HP at area sources
 - Emission limits for existing non-emergency SI engines ≤ 500 HP at major sources

Resources

www.epa.gov/ttn/atw/rice/ricepg.html

<http://tinyurl.com/40CFR63-subpartZZZZ>

www.deq.state.ne.us/AirToxic.nsf/pages/ZZZZ

www.sbeap.org

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