

## Emissions Regulations for Stationary Engines

### INTRODUCTION

The US EPA has developed regulations governing air emissions for stationary engines. The regulations became effective in October 2010. These are the latest in a set of five regulations that EPA has developed in the past six years for reciprocating internal combustion engines (RICE). All stationary engines are now regulated.

The various sets of regulations may overlap, are sometimes interrelated, and are difficult to understand. Some of the rules are currently in effect and some have future effective dates. The following information and associated attachments will attempt to summarize some of the regulations that affect the gas and oil production industry.

### DIVISION OF RULES - DEFINITIONS

The Clean Air Act (CAA) has two types of rules that establish standards for engines. The first is the New Source Performance Standards (NSPS). It sets emission rules for new engines. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) sets toxic emission standards for new and existing engines.

The rules divide stationary engines into various categories based on the following terminology:

Major Source - a large facility as defined by the amount of emissions that it produces, not the physical size of the facility.

Area Source - a facility that produces lower level of emissions than defined by the EPA as a major source.

Existing or New - the date listed in each regulation that applies to the manufacture date of a given engine.

Reconstruction - existing engines that are rebuilt with a cost exceeding 50% of a new engine. These are regulated in the same manner as a new engine.

### OTHER DEFINITIONS & TERMINOLOGY

RICE MACT - reciprocating internal combustion engine, maximum achievable control technology.

Spark Ignition (SI) Engines - typically engines fueled by gasoline, natural gas, or LPG.

Rich Burn (RB) Engine - air injected is limited to that needed for combustion.

Lean Burn (LB) - extra air is injected to increase efficiency and reduce pollutants.

Compression Ignition (CI) Engines - a diesel engine.



### RULES CURRENTLY IN EFFECT

RICE MACT, NESHAP, Subpart ZZZZ - RICE MACT (governs engines exceeding 500 hp at major sources). It required catalytic controls on engines. The NESHAP rules have onerous testing, monitoring, and reporting requirements.

CI - NSPS Subpart IIII - Requires new compression ignition (diesel) engines to have manufacturer certified engines for emission compliance. The operator is responsible for maintenance recordkeeping for large engines.

Consolidated Engine Rule - Requires new spark ignition engines to comply with NSPS and NESHAP requirements for engines. All new spark ignition engines less than 25 hp must have manufacturer's certifications. For all other engines, the operator must provide testing and records indicating compliance with emission limitations. Engines between 250 and 500 hp at major sources have additional toxic emission limitations under NESHAP, Subpart ZZZZ. It also required that new spark ignition engines that were regulated by RICE MACT must comply with provisions of NSPS and NESHAP.

## FUTURE RULES

**CI - Existing Engine NESHAP Amendments to Subpart ZZZZ** - Requires catalyts on existing diesel engines greater than 300 hp built before June 12, 2006 and limits emissions from 100 to 300 hp diesel engines at major sources. Maintenance practices will be required for diesel engines less than 100 hp at major sources and less than 300 hp at area sources. The compliance date for engines covered by this rule is May 3, 2013.

**SI - Existing Engine NESHAP Amendments to Subpart ZZZZ** - Requires engines to meet emission limits or installation of catalyts for all existing SI engines greater than 500 hp at area sources and SI engines between 100 and 500 hp at major sources. Maintenance practices are required for all engines that do not require catalyts. Existing engines must comply by October 19, 2013. Also requires continuous parameter monitoring systems (CPMS) and strict recordkeeping for all area source engines greater than 500 hp. The CPMS standards also apply to RICE MACT engines by October 19, 2013.

The following tables summarize rule applicability and have been adapted from information developed by the Gas/Electric Partnership for stationary engines.

Major Sources										
Engine Size (hp)	Existing Engines				New /ReconEngines					
	CI	RB	4SLB	2SLB	CI		RB		LB	
>1350	Cat	Cat	None	None	Cat	Cat	Cat	Cat	Cat	Cat
500 - 1350	Cat	Cat	None	None	Cat	Cat	Cat	Cat	Cat	Cat
300-500	Cat	Cat	Cat	Cat	MC		EL		EL	
250-300	EL	Cat	Cat	Cat	MC		EL		EL	
100-250	EL	Cat	Cat	Cat	MC		EL		EL	
50-100	MP	MP	MP	MP	MC		EL		EL	
25-50	MP	MP	MP	MP	MC		EL		EL	
<25	MP	MP	MP	MP	MC		MC		MC	

### Abbreviations:

CI – compression ignition (diesel)  
 RB – rich burn  
 MP – maintenance practices  
 MC – manufacturer certification  
 Cat – catalyst  
 EL – emission limit  
 LB – lean burn

### Applicable Rule Color Coding:

RICE MACT – NESHAP, Subpart ZZZZ

CI – NSPS, Subpart IIII

Consolidated Engine Rule – SI – NSPS, Subpart JJJJ and Revisions to NESHAP, Subpart ZZZZ

CI – Existing Engine NESHAP, Amendments to Subpart ZZZZ

SI – Existing Engine NESHAP, Amendments to Subpart ZZZZ

Area Sources								
Engine Size (hp)	Existing Engines				New /Recon Engines			
	CI	RB	4SLB	2SLB	CI	RB	LB	
>1350	Cat	Cat	Cat	MP	MC	EL	EL	
500 - 1350	Cat	Cat	Cat	MP	MC	EL	EL	
300-500	Cat	MP	MP	MP	Cat	EL	EL	
250-300	MP	MP	MP	MP	Cat	EL	EL	
100-250	MP	MP	MP	MP	Cat	EL	EL	
50-100	MP	MP	MP	MP	Cat	EL	EL	
25-50	MP	MP	MP	MP	Cat	EL	EL	
<25	MP	MP	MP	MP	Cat	MC	MC	

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**Gosling Czubak**  
 engineering sciences, inc.

**Gosling Czubak**  
 1280  
 Business Park Dr.  
 Traverse City, MI  
 49686-8607

Telephone:  
 231-946-9191  
 1-800-968-1062

Fax:  
 231-941-4603

Website:  
[goslingczubak.com](http://goslingczubak.com)

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**1-800-968-1062 www.goslingczubak.com**