

THE EMISSIONS CORNER



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NESHAP RICE UNCOVERED!

Last time we discussed the EPA's NSPS Rules for new diesel and natural gas engines. In this edition of the Emissions Corner, we address an EPA rule known as the **National Emissions Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines**, or more commonly known as **NESHAP RICE**, or just **NESHAPS**. The NESHAP Rule targets emissions from diesel and natural gas engines known as a Hazardous Air Pollutants (or "HAP"), defined by the EPA to be 180 or so chemical compounds such as formaldehyde, acrolein, and acetaldehyde. Even though engines emit these pollutants in small quantities, they have a very negative effect on health and the environment.

Before we get into the specifics of the rule, we need to define a few terms: Major and Area Sources – since the emission standards are different. These definitions are shown in the sidebar below. A "Source" can be a number of things: a single engine, several engines located in a building or facility, or several engines located in several facilities located at a site.

How do you know if you're a Major Source or not? During the permit application process you must quantify emissions from all the engines at the site, and if they add up to 10 tons or 25 tons per year, then you are defined as a Major Source. Otherwise you are an Area Source.

Major Source: a stationary source, facility or site that:

- (1) emits 10 tons per year of any single HAP, or
- (2) emits 25 tons per year of any combination of HAP

Area Source: any source, facility or site that isn't big enough to be a major source.

The other aspect of the rule is that it applies to both **New and Existing Diesel and Natural Gas engines** – unlike the NSPS rule which applies only to new engines. This means the engine owner has some responsibility to ensure the engine is compliant, in addition to the manufacturer responsibility.

The Emission Standards for Diesel & Natural Gas

The actual emission standards depend on engine size (in hp), whether it is new or existing, type of fuel used (diesel or natural gas), and whether the engine is used for emergency applications or not (e.g., a standby generator used only during power outages). A sample of some standards are shown below. It's more complicated than this, so check out the rule in 40 CFR Part 60 Subpart ZZZZ, otherwise known as "Quad Z", where you'll find all the details.

Existing Diesel Engines	Emission Standard
Greater Than 300 Hp At Major Sources	70% reduction in CO
Greater Than 300hp At Area Sources	70% reduction in CO
Emergency Engines	Maintenance Practices Only
New Lean Burn Natural Gas Engines	
Greater Than 250hp At Major Sources	93% reduction in CO
New & Existing Rich-Burn Natural Gas Engines	
Greater than 500hp at Major Sources	Limit formaldehyde to 350ppb

For the most part the emission standards limit either CO or formaldehyde. While CO isn't actually a HAP, it is a good indicator of them – if you have a lot of CO you likely have a lot of HAP. More importantly, technologies such as oxidation catalysts that reduce CO also reduce HAP (indeed, installing oxidation catalysts is one of the EPA's objectives). And finally, it is a lot

easier to measure CO than say, acrolein, so you can determine whether you are compliant relatively inexpensively.

Existing Emergency diesel engines get a bit of a break. Since by definition they don't operate very often, they rarely emit many HAP emissions. Therefore existing emergency engines only need to be properly maintained according to an EPA protocol: oil changed every so often, air filters changed on a regular basis – all fairly routine.

We have finally come to the end of our "Regulatory" discussion. We've covered the non-road rules with what is coming for Tier 4, and the stationary engine rules for both new and existing engines. Time now to begin discussing the technologies that will keep us compliant. So for the next several editions of the Emissions Corner, we'll detail engine technologies such as EGR, and aftertreatment such as "Actively Regenerated DPFs". See you then.