

# For the Trenches

TIPS & NEWS FOR EQUIPMENT OWNERS AND OPERATORS

## Emission Regulations – What You Should Know



**Wayne Clark**  
Emissions Business Manager  
Milton CAT

The purpose of this article is to give you an overview of how Clean Air Act requirements will affect your operation. This is a complex matter and by summarizing it, we run the risk of leaving behind information. We urge you to ask your equipment vendor for help; they should be ready to answer your questions regarding how to comply with emissions regulations, today, and how to be prepared to meet them, tomorrow.

There are four topics that we want to make sure we address:

- **What do you need to know about emissions?**
- **How can you stay in compliance?**
- **How can you plan your future?**
- **How can your equipment vendor help you?**

### What do you need to know about emissions?

The short answer is, enough to stay in compliance. The longer answer is, having a background on the issue gives you a better understanding of the reasons behind the increasingly tight emissions regulations, and, helps you get a handle on preparations for the future! If one thing is sure about clean air regulations, it's that what we put in place today will not be enough to meet tomorrow's requirements.

For the purposes of this article, when we refer to "emissions" we're talking about primary diesel engine emissions, nitrogen oxide or NOx and particulate matter or PM. If your company participates now or is planning to participate in government bids, whether state, interstate, municipal or county, someone in the company must be up to date on emission regulations. The reason is simple; you may not be permitted to work unless you can demonstrate compliance; if you have already started the work and you're found in non-compliance, you can be asked to stop, and possibly fined.

### The regulatory background – a primer

There are six common air pollutants; particulate matter, ground-level ozone, carbon monoxide, sulfur oxide, nitrogen oxide and lead; particle pollution and ground-level ozone are the most widespread. They can harm our health, spoil the environment and cause property damage. In the 1970 Clean Air Act amendment, the

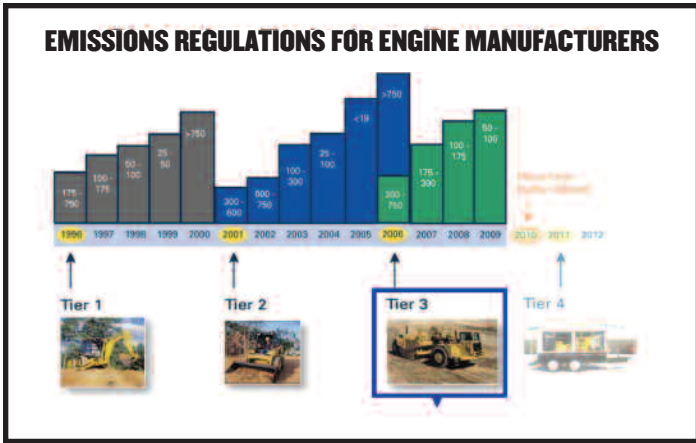
Environmental Protection Agency or EPA was assigned two tasks; to establish emission limits on all new engines sold in the USA, and to set and enforce National Ambient Air Quality Standards.

- The EPA set emissions levels or Tiers to which engine manufacturers must comply. Off-road standards for emissions limits were finalized in another Clean Air Act amendment in 1990. The different Tiers are determined by horsepower and calendar dates, and an "engine certification" label on your engine attests to the manufacturer's compliance to the EPA's standards.

- The EPA's national ambient air quality standards set air quality limits and require every state to sample air, report nonconformance and establish plans called State Implementation Plans, or SIPs, for cleaning the air within its borders. A geographic area with air quality that's cleaner than the primary standard is called an "attainment area"; areas that do not meet the primary standards are called "non-attainment areas". The EPA can approve a state's plans for cleaning the air in a non-attainment area, or approve it with stipulations; for example, highway funds for the state may be subject to compliance. If the state's plans are not met, there can be new taxes; mandates to regulate emissions even on existing engines, compulsory retrofit programs and interruption of federal assistance such as highway funds.

It's crucial to understand that in non-attainment areas, SIP regulations will need to be tighter in order to obtain the EPA's approval, and they could therefore even involve sources not regularly affected by the Clean Air Act. We



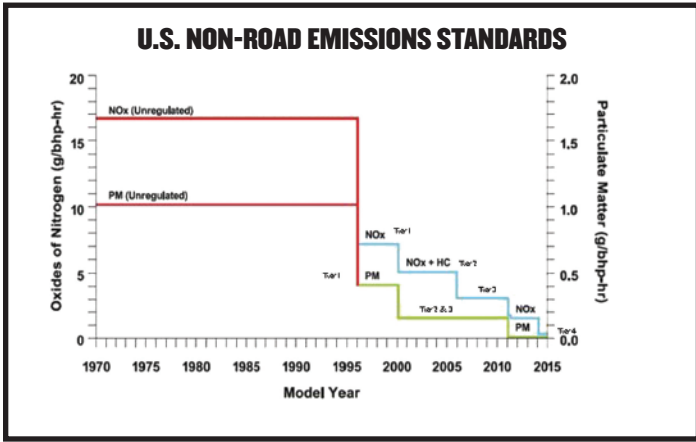


involved in bringing your fleet to compliance, whether you are planning to participate in state or municipal bids or not. If you want to participate in a municipal or state bid, we also especially remind you to carefully examine the bid, to make sure you are ready for it.

**How can you stay in compliance?**

Your equipment vendor should be able to keep you abreast of the changes, and offer you the most appropriate method for emissions reduction.

The path to emissions reductions offers options, including aftertreatment or exhaust-retrofits; upgrading old engines, and repowering. Regardless of which one you choose, retrofitting, upgrading or repowering the diesel engines in your existing equipment provides immediate benefits. Let's look more closely at each option.

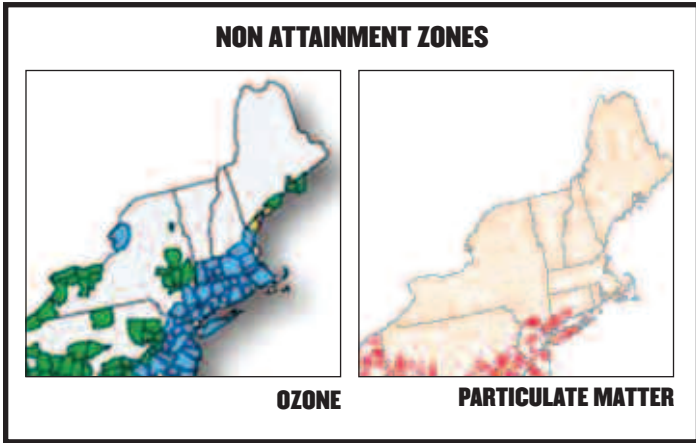


**Aftertreatment**

There are two types of exhaust devices or aftertreatment options; one is diesel oxidation catalysts (DOCs) or catalyzed converter mufflers (CCMs); the other, DPFs or diesel particulate filters.

The basic CCM requires no maintenance and features a ceramic or metallic flow-through substrate and a catalyst that alters the rate of reaction. In addition to those general characteristics, many CCMs feature drop-in design and help maintain engine life and performance. Both diesel oxidation catalysts (DOCs) and catalyzed converter mufflers (CCMs) provide 20% to 25% particulate matter reduction and up to 40% reduction of carbon monoxide (CO) and hydrocarbon (HC).

Diesel particulate filters or DPFs are aftertreatment devices that physically capture diesel particulates to prevent them from being released to the atmosphere. They only work with ultra-low sulfur diesel and require the use of a monitoring system as well as regular ash cleaning.



[www.epa.gov/air/data/](http://www.epa.gov/air/data/)

have seen that happen in cities like Boston, where non-attainment has resulted in companies that are not involved in municipal or state work and would ordinarily not be affected yet by the regulations, finding themselves in need of meeting stringent emissions requirements on certain jobs.

That's why we urge our readers to get a fleet audit. Find out from your equipment vendor what would be

DPFs are usually EPA and California Air Research Board or CARB-certified; they offer 85% reduction of particulate matter, hydrocarbons (HC) and carbon monoxide (CO).

Do aftertreatment devices work with any make, any model? No, they don't; therefore, it's important that you check with your equipment provider to make sure they have partners that provide the technology that can be



applied to your specific machine or machines. Besides CAT, some of the other technology partners that work with Milton CAT to allow the fitting of aftertreatment devices in equipment of other makes include Johnson Matthey, Donaldson, DCL International, and Clean Air.

And the most important question – is the aftertreatment device you’re considering, actually a verified technology or “known-to-work solution,” certified by the EPA or by CARB? Ask the vendor to provide you with the appropriate documentation. It’s too important a decision to be made without absolute certainty!

### **Upgrades and repowers**

These are more involved methods that generally make sense to consider not as a stand-alone, but when your equipment dealer is also performing an engine rebuild. Engine upgrades are proven, EPA-verified solutions that enable passive DPF and offer NO<sub>x</sub>, HC and CO reduction.

Repowering involves completely replacing the existing engine with a newer engine system. It will result in NO<sub>x</sub>, PM, HC and CO reduction and enables passive DPFs reduction.

### **How can you plan your future?**

The answer to this question depends largely on your goals and objectives. If you consider participating in state and municipal work, you have to comply with today’s emissions reductions regulations, and take the steps to meet upcoming regulations too.

But even if you don’t intend to participate, you need to keep an eye on the regulatory environment. Why? Remember that the EPA not only regulates emissions, but also national ambient air quality standards. If the air quality in your state or in your region is found to be defi-

cient, anyone with emissions producing equipment will be affected by regulations aimed at improving the overall air quality – whether your equipment is working on a highway or in a backyard.

Assessing your current equipment, analyzing what would it take to make it compliant, deciding whether it’s worthwhile or not, and planning the new purchases that



**Above: A catalytic converter muffer or “CCM” installed on a backhoe loader.**



**Left: A technician installs a diesel particulate filter or “DPF”.**

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make sense given the regulatory environment are crucial moves. Asking your equipment vendor to provide you with a free fleet audit is a good first step.

Start working towards the future – it will get here. Remember that non-compliant machines are of little or no value. They do you no good and you won't be able to sell them, since other companies will not be able to use them either. In other words, as emissions regulations become more prevalent, the value of non-compliant equipment goes down.

## How can your equipment dealer help you?

Your equipment dealer can help you by staying abreast of changes and aware of new regulations, and passing the information on to you, either directly or through your parts and service sales representatives. In some cases, equipment dealers have specialists in charge of this area, totally focused on it, making emissions their full time commitment.

As we mentioned before, you can also ask your equipment dealer for assistance assessing your fleet and determining what's the best course of action to take regarding your future plans. Some equipment dealers can also guide you towards funding sources such as Diesel Collaboratives, organizations that channel funds provided by the EPA, made available to companies that are choosing to retrofit, upgrade or repower their equipment to meet emission regulations.

## In summary...

Having a basic knowledge of the existing regulations and of the plans for the next round will help you and your company remain in compliance and better manage future financial burdens. Learn the emissions lingo! It won't do you much good to read if what you're reading sounds like a foreign language to you, given the over abundance of acronyms and technical terms.

Be proactive. Get your fleet audit and start planning for the future; ask your equipment dealer for help locating incentive programs. Remember that there are other companies that have been there already and can share their experience with you. Which brings us to a last, crucial point:

Don't forget the importance of active participation in your industry associations. As a united and well-informed group you can achieve a lot more, obtain funds, negotiate terms, and in general find ways to coexist with regulations instead of being crushed by them. ■

## GLOSSARY OF EMISSION-RELATED TERMS

### EPA

Environmental Protection Agency

### CARB

California Air Research Board

### PM

Particulate matter

### CCMs

Catalyzed converter mufflers

### DOCs

Diesel oxidation catalyts

### DPFs

Diesel particulate filters

### ULSD

Ultra low sulfur diesel

### EUG

Engine upgrade group

### HC

Hydrocarbon

### CO

Carbon monoxide

### NOx

Nitrogen oxide

### DCs

Diesel Collaboratives

### SIPs

State implementation plans

### VOCs

Volatile organic compounds

**Milton** 

*This article is part of a series of articles designed to help equipment owners and operators lower owning and operating costs. Other article topics include:*

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Machine Evaluations • Certified Rebuilds • Getting the Most  
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