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## **New Diesel Engine Emission Regulations Come Again**

By Erik Gaspar, Enterprise Fleet Management

Diesel engine emission regulations continue to be affected by new Environmental Protection Agency (EPA) requirements to meet the most recent Clean Air Act specifications. As a result, truck buyers need to make sure they have the latest information.

From a historical perspective, the EPA's 2002/2004 set of diesel emission regulations targeted nitrogen oxides (NOx). In 2007, the EPA focused on particulate matter emissions, which is why all on-highway trucks now come with a diesel particulate filter (DPF) and exhaust gas recirculation (EGR) valves. Recently, attention returned to NOx. As of January 2010, a new set of regulations requires a 90 percent reduction in NOx emission levels from pre-2004 levels.

For most fleet managers, the DPF issues are of greatest concern. Basically, a DPF traps and removes particulate matter (soot) from diesel exhaust. When exhaust gases pass through the DPF, as much as 90 percent of the solid particulate matter is trapped. Although DPFs are designed for long life, they do require some driver involvement for proper operation. It is also essential that filters, such as fuel and air, be properly maintained.

The critical part of maintaining a DPF is the cleaning process. Referred to as regeneration, the process involves cleaning the filter by burning off the collected soot at a prescribed time, leaving behind a harmless ash residue. This is usually done by driving the vehicle at a prescribed speed for a certain amount of time (see the owner's manual for details). Most 2007 compliant engines feature passive and active types of regeneration, both of which require little driver interaction.

In a recent article in *Light & Medium Truck*, author Phil Romba writes, "At this time, it appears that most diesel engine makers and truck manufacturers will add selective catalytic reduction (SCR) systems to their 2007 base platforms to meet 2010 emissions."

For 2010 vehicles equipped with SCR technology, Diesel Exhaust Fluid (DEF), a solution made up of purified water and automotive-grade urea, is used to break down NOx emissions into nitrogen and water vapor. Generally, DEF is designed to last approximately 7,500 miles between fill ups, coinciding with the oil and filter change interval. However, depending on customer use, replenishment may need to occur more frequently.

In his article, Romba quotes Roger Gault, technical director of the Equipment Manufacturers Association: "There currently are 'no definitive answers' yet about expected tradeoffs in fuel economy and other operations effects of the new diesels...the principal advantage of EGR is its 'long track record while it continues to be refined.' The principal advantage of SCR is its ability to improve overall fuel economy...The disadvantages of SCR, according to Gault, are that it is new to U.S. truck fleets and adds complexity because it is another system to install and maintain," writes Romba.

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