Regulatory Announcement

Regulations Requiring Onboard Diagnostic Systems on 2010 and Later Heavy-Duty Engines Used in Highway Applications Over 14,000 Pounds; Revisions to Onboard Diagnostic Requirements for Diesel Highway Heavy-Duty Applications Under 14,000 Pounds

The U.S. Environmental Protection Agency (EPA) is proposing regulations that would require the emissions control systems of large highway diesel and gasoline trucks to be monitored for malfunctions via an onboard diagnostic system (OBD), similar to those systems that have been required on passenger cars since the mid-1990s. We are seeking comment on possible future regulations that would require OBD systems on heavy-duty diesel engines used in nonroad equipment (e.g., construction, industrial, agricultural). This proposal also makes changes to certain existing OBD requirements for smaller highway heavy-duty diesel trucks.

Background

- On January 18, 2001, EPA established a comprehensive national control program—the Clean Diesel Truck and Bus Program—to regulate heavy-duty vehicles and diesel fuel as a single system (66 FR 5002). As part of this program, new emission standards for heavy-duty engines and vehicles take effect in model years 2007 through 2010 and will apply to heavy-duty highway engines and vehicles. These standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies. Because these devices are damaged by sulfur, the program also reduces the level of sulfur in highway diesel fuel by 97

EPA United States Environmental Protection Agency

Office of Transportation and Air Quality

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percent. The emissions reductions associated with this program are estimated to result in over $70 billion in public health and welfare benefits through reduced hospitalizations and lost work days. The proposed OBD requirements will help to ensure that these benefits are realized.

- On February 19, 1993, EPA published a final rule requiring manufacturers of passenger vehicles to install OBD systems on vehicles beginning with the 1994 model year (58 FR 9468). The OBD systems must monitor emission control components for any malfunction or deterioration that could cause exceedance of certain emission thresholds. The regulation also required driver notification of any need for repair via a dashboard light, or malfunction indicator light (MIL), when the diagnostic system detected a problem. This is commonly referred to as the "Check Engine" light.

- On August 9, 1995, EPA published a rulemaking that set forth automotive service information requirements for light-duty vehicles and light-duty trucks (60 FR 40474). These regulations, in part, required each Original Equipment Manufacturer (OEM) to list all emission-related service and repair information on a Web site and explain how to obtain that information and at what cost. The intent of this provision is to ensure that aftermarket service and repair facilities have access to the same emission-related service information, in the same or similar manner, as that provided by OEMs to their franchised dealerships. These service information availability requirements have been revised since the 1995 rule in response to changing technology (68 FR 38428).

- In October 2000, EPA published a rule requiring OBD systems on heavy-duty vehicles and engines up to 14,000 pounds gross vehicle weight rating (GVWR) (65 FR 59896). In that rule, EPA expressed its intention to develop in a future rule OBD requirements for vehicles and engines used in vehicles over 14,000 pounds. EPA again expressed this same intention in its Clean Diesel Truck and Bus rule (66 FR 5002) which established new heavy-duty highway emissions standards for 2007 and later model year engines.

- In June 2003, EPA published a rule extending service information availability requirements to heavy-duty vehicles and engines weighing up to 14,000 pounds GVWR. EPA did not extend these requirements to engines above 14,000 pounds GVWR, deciding to wait until such engines were subject to OBD requirements.

Overview of Proposal

The proposal requires manufacturers to install OBD systems that monitor the function of emission control components and alert the vehicle operator to any detected need for emission related repair. In addition, when a malfunction occurs, diagnostic information must be stored in the engine's computer to assist in diagnosis and repair of the malfunction. Also proposed are requirements that would make available to the service

and repair industry information necessary to perform repair and maintenance service on OBD systems and other emission related engine components. These proposed requirements will help to ensure that the significant benefits of EPA's Clean Diesel Program exhaust emission standards will be realized in-use. Specifically:

- For 2010 and later model year heavy-duty diesel and gasoline engines used in trucks and buses over 14,000 pounds, we are proposing that all major emissions control systems be monitored and malfunctions be detected prior to emissions exceeding a set of emissions thresholds. Most notably, we are requiring that the aftertreatment devices—e.g., the diesel particulate filters and oxides of nitrogen (NOx) reducing catalysts—that will be used on highway diesel engines to comply with the 2010 emissions standards will be monitored and their failure will be detected and noted to the driver. We are also proposing that all emission-related electronic sensors and actuators be monitored for proper operation.

- For 2010 and later highway vehicles over 14,000 pounds, we are proposing that one engine family per manufacturer be certified to the proposed OBD requirements in the 2010 through 2012 model years. Beginning in 2013, all highway engines for all manufacturers would have to be certified to the proposed OBD requirements. This phase-in is designed to spread over a number of years the development effort required by industry and to provide industry with a learning period prior to implementing the OBD requirements on 100 percent of their highway product line.

- For vehicles over 14,000 pounds, the service information availability requirements would apply for those engines certified to the OBD requirements.

- For 2010 and later model year highway heavy-duty diesel vehicles under 14,000 pounds, we are proposing a new emissions threshold for monitoring of the diesel particulate filter. The existing requirement for these applications is to detect a catastrophic failure of the device. We believe now that a more stringent requirement is appropriate and feasible. The proposed emissions threshold is consistent, both in stringency and in timing, with the proposed particulate matter (PM) thresholds for over 14,000 pound applications.

- For 2007 and later model year highway heavy-duty diesel vehicles under 14,000 pounds, we are proposing a change to the existing emissions thresholds for NOx emissions. The existing thresholds, typically 1.5 times the applicable NOx standard, were established when the engine's NOx standard was much higher than today's very low level. We believe these OBD thresholds are not technologically feasible in the context of EPA's very stringent NOx emission standards, and this proposal addresses that issue.

For heavy-duty diesel engines used in nonroad equipment, we are seeking comment on possible future regulations that would require OBD systems. Diesel engines used

in nonroad equipment are, like highway engines, a major source of NOx and PM emissions, and the diesel engines used in nonroad equipment are essentially the same as those used in heavy-duty highway trucks. Further, new regulations applicable to nonroad diesel engines will result in the introduction of advanced emissions control systems like those expected for highway diesel engines. (69 FR 38958) Therefore, having OBD systems and OBD regulations for nonroad engines seems to be a natural progression from the proposed requirements for heavy-duty highway engines.

Health and Environmental Effects

- In our 2007 Clean Diesel Truck and Bus rule, we estimated that the new 2007 emission standards will result in substantial benefits to the public health and welfare through significant annual reductions in emissions of NOx, PM, nonmethane hydrocarbons (NMHC), carbon monoxide, sulfur dioxide, and air toxics. These emission reductions will prevent 8,300 premature deaths, more than 9,500 hospitalizations, and 1.5 million work days lost. This OBD proposal will help to ensure that these projected benefits will be realized.

- As a result of this program, each new truck and bus will be more than 90 percent cleaner than current models. We project a 2.6 million ton reduction of NOx emissions in 2030 when the current heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with the 2007 program's emission standards. By 2030, the program will reduce annual emissions of NMHC by 115,000 tons and PM by 109,000 tons.

- Ozone causes a range of health problems related to breathing, including chest pain, coughing, and shortness of breath. PM is deposited deep in the lungs and causes premature death, increased emergency room visits, and increased respiratory symptoms and disease. With both ozone and PM, children and the elderly are most at risk. In addition, ozone, NOx, and PM adversely affect the environment in various ways, including crop damage, acid rain, and visibility impairment.

- We have not estimated new emissions reductions associated with this proposal. We consider OBD to be a critical element to an overall emissions control program. As such, OBD requirements and their associated benefits were assumed in our estimated emissions reductions associated with the 2007 Clean Diesel Truck and Bus Program.

Cost Effects

We project that the proposed OBD requirements will result in an increased cost of roughly $50 per diesel engine and $60 per gasoline engine used in applications over 14,000 pounds. We project that the proposed new requirements for diesel heavy-duty applications under 14,000 pounds will cost roughly $5 per engine or vehicle.

Public Participation Opportunities

We welcome your comments on this proposed rule. Comments will be accepted for 60 days beginning when this proposal is published in the *Federal Register.* All comments should be identified by Docket ID No. EPA-HQ-OAR-2005-0047 and submitted by one of the following methods:

- Internet: www.regulations.gov
- E-mail: A-and-R-Docket@epa.gov
- Mail:
  Environmental Protection Agency
  EPA Docket Center (EPA/DC)
  Air and Radiation Docket and Information Center
  1700 Pennsylvania Avenue NW
  Washington, DC 20460
- Hand delivery:
  EPA Docket Center
  EPA West Building
  Room 3340
  1301 Constitution Avenue NW
  Washington, DC

For More Information

You can access the proposed rule and related documents on EPA's Office of Transportation and Air Quality (OTAQ) Web site at:

www.epa.gov/obd/regtech/heavy.htm

For additional information specific to OBD, please contact:

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