

To better ensure the benefits of the standards are realized in-use and throughout the useful life of these engines, we are also proposing new test procedures and related certification requirements. We believe the new supplemental transient test, Constant Speed Variable Load transient duty cycle, cold start transient test, and not-to-exceed test procedures and standards will all help achieve our goal. This is a significant and important aspect of this proposal that would bring greater confidence and certainty to the compliance program.

The proposal also includes provisions to facilitate the transition to the new engine and fuel standards and to encourage the early introduction of clean technologies. We are also including proposed adjustments to various fuel and engine testing and compliance requirements. These provisions are described further in sections III, IV, and VI.

2. Nonroad, Locomotive, and Marine Diesel Fuel Quality Standards

We are proposing that sulfur levels for nonroad diesel fuel be reduced from current uncontrolled levels ultimately to 15 ppm, though we are proposing an interim cap of 500 ppm. Beginning June 1, 2007, refiners would therefore be required to produce nonroad, locomotive, and marine diesel fuel that meets a maximum sulfur level of 500 ppm. This does not include diesel fuel for home heating, industrial boiler, or stationary power uses or diesel fuel used in aircraft. We estimate there are significant health and welfare benefits associated with this proposed reduction, including reductions in sulfate emissions and reduced engine operating expenses. Then, beginning in June 1, 2010, fuel used for nonroad diesel applications (excluding locomotive and marine engines) is proposed to meet a maximum sulfur level of 15 ppm, since all 2011 and later model year nonroad diesel-fueled engines with aftertreatment must be refueled with this new ultra low sulfur diesel fuel. This sulfur standard is based on our assessment of the impact of sulfur on advanced exhaust emission control technologies and a corresponding assessment of the feasibility of ultra low sulfur fuel production and distribution. We are also asking for comment on bringing sulfur levels for locomotive and marine fuel to 15 ppm in 2010 and note that we anticipate beginning the process of developing new engine controls for these two sources in 2004. This proposal includes a combination of provisions available to refiners, especially small refiners, to ensure a

smooth transition to ultra low sulfur nonroad diesel fuel.

In addition, this proposal includes unique provisions for implementing the ultra low sulfur diesel fuel program in the State of Alaska. We are also proposing that certain U.S. territories be excluded from both the nonroad engine standards and diesel fuel standards. Similar actions were taken as part of the 2007 highway diesel program.

The compliance provisions for ensuring diesel fuel quality are essentially consistent with those that have been in effect since 1993 for highway diesel fuel, reflecting updated requirements that were included in the 2007 highway diesel program. Additional compliance provisions are proposed for the transition years of the program concerning the interaction of the nonroad, locomotive, and marine sulfur control requirements with existing highway diesel sulfur control provisions. These provisions could also help discourage misfueling of nonroad equipment utilizing high-efficiency aftertreatment devices. The proposed compliance requirements include provisions that would prohibit equipment operators from fueling their machines with higher sulfur fuels after completion of the shift to lower sulfur nonroad diesel fuels, regardless of the age of their equipment.

B. Why Is EPA Making This Proposal?

1. Nonroad, Locomotive, and Marine Diesels Contribute to Serious Air Pollution Problems

As discussed in detail in section II and chapter 2 and 3 of draft RIA, emissions from nonroad, locomotive, and marine diesel engines contribute greatly to a number of serious air pollution problems, and these emissions would have continued to do so into the future absent further controls to reduce them. First, these engines contribute to the health and welfare effects associated with ozone, PM, NO_x, SO_x, and volatile organic compounds (VOCs), including toxic compounds such as formaldehyde. These adverse effects include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions and emergency room visits, school absences, work loss days, and restricted activity days), changes in lung function and increased respiratory symptoms, changes to lung tissues and structures, altered respiratory defense mechanisms, chronic bronchitis, and decreased lung function.^{3 4 5} Second and importantly, in

addition to its contribution to ambient PM inventories, diesel exhaust is of specific concern because it has been judged to likely pose a lung cancer hazard for humans as well as a hazard from noncancer respiratory effects. The Agency has classified diesel exhaust as likely to be carcinogenic to humans by inhalation at environmental exposures. Third, ozone and PM cause significant public welfare harm. Specifically, ozone causes damage to vegetation which leads to economic crop and forestry losses, as well as harm to national parks, wilderness areas, and other natural systems. PM causes damage to materials and soiling of commonly used building materials and culturally important items such as statues and works of art. Fourth, NO_x, SO_x and direct emissions of PM contribute to substantial visibility impairment in many parts of the U.S. where people live, work, and recreate, including mandatory Federal Class I areas. Finally, NO_x emissions from nonroad diesel engines contribute to the acidification, nitrification and eutrophication of water bodies.

Millions of Americans live in areas with unhealthful air quality that may endanger public health and welfare (*i.e.*, levels not requisite to protect the public health with an adequate margin of safety). Based upon data for 1999–2001, there are 291 counties that are violating the 8-hour ozone NAAQS, totaling 111 million people. In addition, at least 65 million people in 129 counties live in areas where annual design values of ambient PM_{2.5} violate the PM_{2.5} NAAQS. There are an additional 9 million people in 20 counties where levels above the PM_{2.5} NAAQS are being measured, but the data are incomplete. Without emission reductions from the proposed new standards for nonroad engines, there is a significant future risk that 32 counties with 47 million people across the country may violate the 8-hour ozone national ambient air quality standard (NAAQS) in 2030, based on our modeling. Similarly, modeled PM_{2.5} concentrations in 107 counties where 85 million people live are above specified levels in 2030. An additional 64 million people are projected to live in counties

Center for Environmental Assessment, July 1996. Report No. EPA/600/P-95/001aF, EPA/600/P-95/001bF, EPA/600/P-95/001cF.

⁴ U.S. EPA (2002), Air Quality Criteria for Particulate Matter—Volumes I and II (Third External Review Draft). This material is available electronically at <http://cfpub.epa.gov/ncea/cfm/parmatt.cfm>.

⁵ U.S. EPA (1996) Air Quality Criteria for Ozone and Related Photochemical Oxidants. EPA Office of Research and Development, National Center for Environmental Assessment, July 1996. Report No. EPA/600/P-93/004aF. The document is available on the Internet at <http://www.epa.gov/ncea/ozone.htm>.

³ U.S. EPA (1996) Air Quality Criteria for Particulate Matter—Volumes I, II, and III, EPA Office of Research and Development, National