



# Environmental Fact Sheet

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## Statement of Principles for Nonroad Diesel Engines

*The Environmental Protection Agency (EPA), the California Air Resources Board (ARB) and the manufacturers of nonroad diesel engines recently signed a Statement of Principles (SOP) that serves as a blueprint to establish a multistep, long-term control program for nonroad diesel engines. The SOP calls for stringent new oxides of nitrogen (NO<sub>x</sub>), hydrocarbon (HC), and particulate matter (PM) emission standards for land-based nonroad diesel engines and marine diesel engines under 50 horsepower (hp). The signatories agree to pursue new standards that will cut NO<sub>x</sub> and PM emissions by more than two-thirds from current levels. This historic agreement represents another example of the type of private/public and federal/state partnership approach to environmental regulation that EPA is pursuing.*

### Emissions From Nonroad Diesel Engines

Engines used in nonroad equipment, such as farm tractors, bulldozers, cranes, and forklifts, are an important part of the agricultural, construction, logging, and material handling industries. The growth and vitality of the nonroad sector, as well as the design and operation characteristics unique to nonroad applications, have increased the contribution of these engines to air pollution. In particular, emissions from nonroad diesel engines covered by the SOP contribute approximately 10 percent of total nationwide emissions of NO<sub>x</sub>. NO<sub>x</sub> reacts with HC in the atmosphere to form urban ozone, or smog. This percentage is even higher in many U.S. cities with air quality problems. In addition, nonroad diesel engines emit diesel PM. EPA projects that, with existing control programs, over 80

percent of diesel PM will come from nonroad engines by 2010 nationwide. NOx, ozone, and PM have all been linked to a range of serious respiratory health problems and a variety of adverse environmental effects. The nonroad engine manufacturers, EPA, and ARB have jointly committed to reduce emissions from this category to protect public health and the environment.

## **History of the Statement of Principles**

This SOP is the result of consultative discussions between EPA, ARB and industry. These discussions were initiated at the request of states and environmental groups to address their concerns about the impact of emissions from both highway and nonroad diesel engines on public health and the environment. These discussions culminated in an agreement calling for more stringent emission standards for heavy-duty highway engines. A Statement of Principles for heavy-duty highway engines, which was signed by EPA, ARB and engine manufacturers in July 1995, noted that EPA and ARB intended to pursue a similar approach for new nonroad engine emission standards.

Pursuant to the highway effort, EPA, ARB and nonroad engine and equipment manufacturers began to work together to evaluate new national controls for nonroad equipment. During the course of these discussions, EPA sought input from other interested parties including states, environmental organizations and public interest groups. The diverse and unique nature of the nonroad sector presented technological and implementation challenges very different than those of the highway sector. The participants were strongly committed, however, and their persistence has paid off. This agreement strives to significantly reduce emissions from nonroad diesel equipment while ensuring regulatory stability and certainty for the nonroad engine and equipment industries.

## **Highlights of the Statement of Principles**

The Statement of Principles is an agreement which includes new emission standards and other provisions for nonroad engines that were either unregulated or lightly regulated, relative to other mobile sources. The nonroad engines considered in this agreement are compression-ignition engines (i.e., diesel-fueled engines), excluding those engines used in aircraft, underground mining equipment, locomotives, and marine applications over 50 horsepower. Highlights include:

- Emission standards in two tiers; each tier phases in by hp level over a number of years; standard levels (in grams per horse power-hour) also vary by hp level:
  - for engines under 50 hp:
 

early tier in 1999-2000	7.1-7.8 NO <sub>x</sub> +HC	0.6-0.75 PM
later tier in 2004-2005	5.6 NO <sub>x</sub> +HC	0.45-0.6 PM
  - for engines 50 hp and over:
 

early tier in 2001-2006	4.8-5.6 NO <sub>x</sub> +HC	0.15-0.3PM
later tier in 2006-2008	3.0-3.5 NO <sub>x</sub> +HC	PM not set
- Implementation flexibility to engine and equipment manufacturers to ease the phase-in of new controls, including special provisions to assist small manufacturers.
- A joint government/industry effort coordinated by EPA to evaluate the adequacy of the current test procedure for nonroad engines to ensure emissions control in use.
- A technology review by EPA in 2001 to ensure the appropriateness of the Tier 3 standards in the agreement.
- Development of a separate research agreement which aims to develop technologies that can reduce NO<sub>x</sub> and PM emissions even more. This cooperative effort will involve many different stakeholders to explore technologies that can achieve very low emission levels while preserving performance, reliability, durability, safety, efficiency, and compatibility with nonroad equipment.

## **Health and Environmental Benefits**

Reducing NO<sub>x</sub>, HC and PM emissions from nonroad engines will provide substantial public health and welfare benefits as well as important environmental gains. The Agency expects major reductions in these emissions from the new standards – by as much as two-thirds from current levels. Preliminary analysis shows that nationwide NO<sub>x</sub> inventories will be reduced by approximately 800,000 tons per year by 2010, with benefits increasing annually as the new, cleaner equipment replaces older machines in the field.

## **Next Steps**

EPA plans to follow this Statement of Principles with an Advance Notice of Proposed Rulemaking (ANPRM). EPA will seek input from all interested parties by soliciting comment on the ANPRM, which will include the text of the diesel nonroad Statement of Principles. The Agency will also request comments on a detailed proposal following the ANPRM.

Control of emissions from spark-ignited engines (i.e., gasoline-fueled and propane-fueled) is also important for long-term air quality improvements. EPA and ARB intend to work with the spark-ignited engine and equipment industry to develop a similar Statement of Principles for spark-ignited nonroad engines approximately by the end of 1996.

## **For More Information**

EPA encourages additional information be obtained electronically via the EPA Internet server or via dial-up modem on the Technology Transfer Network (TTN), an electronic bulletin board system (BBS).

World Wide Web: <http://www.epa.gov/OMSWWW>

TTN BBS: 919-541-5742 (1200-14400 bps, no parity, 8 data bits, 1 stop); voice helpline: 919-541-5384

Information is also available by calling the NO<sub>x</sub>/PM information line at 313-741-7887, or writing to:

U.S. Environmental Protection Agency  
National Vehicle and Fuel Emissions Laboratory  
Nonroad NO<sub>x</sub>/PM Team  
Engine Programs and Compliance Division  
2565 Plymouth Road  
Ann Arbor, Michigan 48105