



Regulatory Announcement

Proposed Phase 2 Standards for Small Spark-Ignition Engines

The U.S. Environmental Protection Agency (EPA) is proposing Phase 2 standards for nonroad small spark ignition (SI) engines that will reduce hydrocarbons plus oxides of nitrogen (HC+NOx) by an additional 30 percent beyond the current Phase 1 standards. The proposed rule includes provisions that give industry flexibility and ease the transition to the more stringent Phase 2 program, especially for small volume engine and equipment manufacturers. The new standards would be phased in between 2001 and 2005.

History of Rulemaking

In July 1995, EPA finalized the first federal regulations affecting small nonroad SI engines at or below 19 kilowatts (kW), or 25 horsepower. The regulations, commonly known as "Phase 1," took effect for most new handheld and nonhandheld engines beginning in model year 1997 and are expected to result in a 32 percent reduction in HC emissions from these engines. Handheld engines are used in equipment such as chain saws, string trimmers and leaf blowers. Examples of equipment using nonhandheld engines include lawn mowers, garden tractors, tillers and certain construction equipment.

Table 1: Small SI Engine Classes				
Nonhandheld		Handheld		
Class I	Class II	Class III	Class IV	Class V
<225 cc	≥225 cc	<20 cc	20 cc ≤XX<50 cc	≥50 cc

This “Phase 2” proposed rule follows several years of negotiations between EPA, engine manufacturers and environmental groups. The proposal is based closely on two Statements of Principles (SOPs) signed by EPA and industry groups. EPA published an Advance Notice of Proposed Rulemaking in March 1997 which announced the signing of the two SOPs and requested comments on all aspects of the SOPs for purposes of developing the proposed rule. As a result of a suit by the Sierra Club, EPA is under a court-ordered deadline to complete a final Phase 2 rule for these engines by December 23, 1998.

While EPA’s and California’s Phase 1 standards for these engines were essentially the same, California (because of its unique air quality problems) is pursuing a second phase of standards that would be substantially tighter than EPA’s.

Overview of Proposed Rule

The proposed Phase 2 program is expected to result in a shift to cleaner, more durable engine technology. Notably, the Phase 2 program will lead to increased use of automotive-style overhead valve (OHV) technology in nonhandheld engines. In addition, the proposal includes new programmatic requirements to ensure that engines meet the tighter standards throughout the useful life of the equipment. Highlights of the proposed rule include:

- Tighter emission standards for HC+NOx (in grams per kilowatt-hour (g/kW-hr)) to be phased-in during model years 2001 through 2005.

Table 2: Phase 2 HC+NOx Emission Standards for Nonhandheld Engines (in g/kW-hr)					
Engine Class	Model Year 2001	Model Year 2002	Model Year 2003	Model Year 2004	Model Year 2005
Class I	25.0	25.0	25.0	25.0	25.0
Class II	18.0	16.6	15.0	13.6	12.1

Table 3: Phase 2 HC+NOx Emission Standards for Handheld Engines (in g/kW-hr) Showing Phase-in by Percentage of Production					
Engine Class	HC+NOx Emission Standard	Model Year 2002	Model Year 2003	Model Year 2004	Model Year 2005
Class III	210	20%	40%	70%	100%
Class IV	172				
Class V	116				

(When compared to Phase 1 standards, Phase 2 standards may not appear more stringent in all cases. This is because Phase 1 standards are ‘new engine’ standards and Phase 2 standards are in-use standards)

- Three useful life categories for nonhandheld engines and two useful life categories for handheld engines to account for widely varying product lives.

Table 4: Useful Life Categories for Nonhandheld Engines (hours)			
	Category C	Category B	Category A
Class I	66	250	500
Class II	250	500	1000

Table 5: Useful Life Categories for Handheld Engines (hours)		
	Residential	Commercial
Class III, IV and V	50	300

- A compliance program to ensure engines continue meeting the standards for the useful life of the engine, including certification, production line testing, and in-use testing.

Health and Environmental Benefits

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of smog. The Phase 2 standards should result in a 30 percent reduction in HC+NO_x emissions from these engines beyond the 32 percent reduction expected from the Phase 1 standards. This is equivalent to an annual reduction of 135,000 tons of HC+NO_x emissions by the time a complete fleet turnover occurs in 2025. This reduction in HC+NO_x emissions will be accompanied by an estimated overall reduction in fuel consumption of about 9 percent.

Small SI engines produce approximately one tenth of U.S. mobile source HC emissions and are the largest single contributor to nonroad HC inventories. Thus, the proposed Phase 2 standards would help the States in their progress towards compliance with the National Ambient Air Quality Standards for ozone.

The proposed standards will generate significant reductions in emissions from these engines at very low costs. Further, they will result in fuel economy improvements which will offset much of the costs of the emission reductions.

Effect On Industry

The proposed regulation will require engine manufacturers to:

- build cleaner, more durable engines;
- certify that those engines will meet standards for their full regulatory useful lives; and
- conduct testing of in-use engines to prove their performance in-use.

The Phase 2 standards will drive virtually all larger (Class 2) nonhandheld engines to the use of OHV technology. This will improve the emission durability and fuel economy of these engines. (A trend toward overhead valves is already underway for these engines.) For other categories of engines, the standards will require improvements to existing engine design, but will not require major technological changes. The rule will not require the use of catalysts for any group of engines.

The proposed rule includes provisions to ease the transition from Phase 1 to the Phase 2 program, to ensure that the Phase 2 standards are cost-effective and achievable, and to minimize the compliance burden while maintaining the environmental benefits of the rule. These provisions include phase-in schedules, a certification averaging, banking, and

trading program for nonhandheld engines, special compliance provisions for very low emitting engines, and special provisions to ease and/or delay the impact of the rule on low volume engines and equipment.

The cost of meeting the tighter standards are expected to range from less than a dollar per engine for smaller, lower priced engines, to approximately \$18 for larger, more expensive engines. When fuel savings are considered, costs are lower and a net savings may actually result for some larger nonhandheld engines.

Public Participation Opportunities

EPA desires full public participation in arriving at final rulemaking decisions. The Agency solicits comments on all aspects of the proposal from all interested parties. Wherever applicable, full supporting data and detailed analysis should also be submitted to allow EPA to make maximum use of the comments. Commenters are especially encouraged to provide specific suggestions for changes to any aspects of the proposal that they believe need to be modified or improved. A public hearing will also be held on February 11, 1998 beginning at 10:00am in Ypsilanti, Michigan. For additional information on the public hearing, please call (734) 668-4334.

For instructions on submitting written comments, please see the *Federal Register* notice published on January 27, 1998. It is available from the EPA Air and Radiation Docket by calling 202-260-7548; please refer to Docket No. A-96-55. In addition, the proposed rule is available electronically via the EPA Internet server at:

<http://www.epa.gov/OMSWWW/equip-ld.htm>

For More Information

Additional documents on small nonroad SI engines are available electronically at the Internet site given above, or by contacting Russ Banush at:

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