ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 90

[FRL–6374–7]

RIN 2060–AE29

Phase 2 Emission Standards for New Nonroad Spark-Ignition Handheld Engines At or Below 19 Kilowatts

AGENCY: Environmental Protection Agency (EPA).

ACTION: Supplemental notice of proposed rulemaking (SNPRM).

SUMMARY: In this action, EPA is reproposing a second phase of emission regulations to control emissions from new nonroad spark-ignition handheld engines at or below 19 kilowatts (25 horsepower). The engines covered by this proposal are used principally in handheld lawn and garden equipment applications such as trimmers, leaf blowers and chainsaws. EPA originally proposed standards for these engines in January 1998, however, recent dramatic advancements in small engine emission control technology have led EPA to repropose significantly more stringent standards for handheld engines than originally proposed. The newly proposed standards are expected to result in an estimated 78 percent reduction of emissions of hydrocarbons plus oxides of nitrogen from those achieved under the current Phase 1 standards applicable to handheld engines. The proposed standards for handheld engines are scheduled to be phased in beginning with the 2002 model year. The standards would result in important reductions in emissions which contribute to excessively high ozone levels in many areas of the United States.

Today's action also includes two provisions that would affect Phase 2 nonhandheld engines. EPA is proposing standards for two additional classes of nonhandheld engines that would apply to engines below 100 cubic centimeters displacement used in nonhandheld equipment applications. EPA is also proposing an option that allows manufacturers to certify engines greater than 19 kilowatts and less than or equal to one liter in displacement to the small engine Phase 2 standards. EPA recently adopted Phase 2 regulations for small SI engines used in nonhandheld equipment generally, and today's proposed standards for additional classes of nonhandheld engines and the option to include engines greater than 19 kilowatts and less than or equal to one liter in displacement would partially modify the scope of the recent final rule.

DATES: Written comments on this SNPRM must be submitted on or before September 17, 1999. EPA will hold a public hearing on August 17, 1999 starting at 10:00 a.m.; requests to present oral testimony must be received on or before August 13, 1999.

ADDRESSES: Written comments should be submitted (in duplicate if possible) to: EPA Air and Radiation Docket, Attention Docket No. A–96–55, Room M–1500 (mail code 6102), 401 M Street, SW, Washington, DC 20460, and to the EPA contact person listed below. Materials relevant to this supplemental proposed rulemaking are contained in this docket and may be viewed from 8:00 a.m. until 5:30 p.m. weekdays. The docket may also be reached by telephone at (202) 260–7548. As provided in 40 CFR part 2, a reasonable fee may be charged by EPA for photocopying. The public hearing will be held in Ann Arbor, MI at the National Vehicle and Fuel Emission Laboratory, 2000 Traverwood; call (734) 214–4270 for further information.

For further information on electronic availability of this supplemental proposed rulemaking, see **SUPPLEMENTARY INFORMATION** below.

FOR FURTHER INFORMATION CONTACT: Philip Carlson, U.S. EPA, Office of Mobile Sources, Engine Programs and Compliance Division, (734) 214–4270; carlson.philip@epa.gov.

SUPPLEMENTARY INFORMATION:

Regulated Entities

Entities potentially regulated by this action are those that manufacture or introduce into commerce new small spark-ignition handheld or nonhandheld nonroad engines or equipment. Regulated categories and entities include:

Category	Examples of regulated entities
Industry	Manufacturers or importers of new nonroad small (at or below 19 kW) spark-ignition handheld or nonhandheld engines and equipment.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your company is regulated by this action, you should carefully examine the applicability criteria in § 90.1 of Title 40 of the Code of Federal Regulations. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

Obtaining Electronic Copies of the Regulatory Documents

The preamble, proposed regulatory language and Supplemental Draft Regulatory Impact Analysis are also available electronically from the EPA Internet Web site. This service is free of charge, except for any cost already incurred for Internet connectivity. The electronic version of this supplemental proposed rule is made available on the day of publication on the primary Web site listed below. The EPA Office of Mobile Sources also publishes **Federal Register** notices and related documents on the secondary Web site listed below.

1. http://www.epa.gov/docs/fedrgstr/EPA–AIR/(either select desired date or use Search feature).

2. http://www.epa.gov/OMSWWW/ (look in What's New or under the specific rulemaking topic)

Please note that due to differences between the software used to develop the document and the software into which the document may be downloaded, changes in format, page length, etc., may occur.

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I. Introduction

A. Background

On January 27, 1998, EPA issued a Notice of Proposed Rulemaking (NPRM) proposing a second phase of regulations to control emissions from new handheld and nonhandheld nonroad SI engines at or below 19 kilowatts (25 horsepower) hereafter referred to as ''small SI engines'' (63 FR 3950). This action was preceded by a March 27, 1997, Advance Notice of Proposed Rulemaking (62 FR 14740). EPA solicited comment on all aspects of the January 1998 NPRM. EPA held a public hearing on February 6, 1998, and the public comment period for the January 1998 NPRM closed March 13, 1998. EPA finalized Phase 2 standards and compliance program requirements for Class I and Class II nonhandheld engines on March 30, 1999 (64 FR 15208). In the final rule for nonhandheld engines, EPA noted that it planned to address the Phase 2 program for handheld engines in future **Federal Register** documents. The purpose of today's supplemental proposal is to propose revised Phase 2 standards and compliance program requirements for handheld engines. Today's supplemental proposal also includes proposed standards and compliance program requirements for two newly designated classes of nonhandheld engines with displacements below 100 cubic centimeters (cc), hereafter referred to as Class I-A and Class I-B engines.

Today's proposed action is taken in response to section 213(a)(3) of the Clean Air Act which requires EPA's standards for nonroad engines and vehicles to achieve the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available, giving appropriate consideration to cost, lead time, noise, energy and safety factors. The standards and other compliance program requirements being proposed today are intended to satisfy this Clean Air Act mandate.

The January 1998 NPRM contained lengthy discussion of the first set of proposed standards, the expected costs of their implementation, the technologies that EPA expected manufacturers would use to meet the standards, and the potential costs and benefits of adopting more stringent standards such as those that were then under consideration by the California Air Resources Board (ARB). In the January 1998 NPRM, EPA explicitly asked for comment regarding the level of the proposed standards and the impacts and timing for implementing more stringent standards, so as to allow EPA to establish the most appropriate standards in the final rule. In particular, EPA requested comment on the impacts and timing for implementing emission standards that would require the same types of technology as anticipated by proposed rules under consideration at that time by the California ARB.

After the close of the comment period and upon reviewing the information supplied during and after the comment period, EPA determined that it was desirable to get further details regarding the technological feasibility, cost and lead time implications of meeting standards more stringent than those contained in the January 1998 NPRM. EPA's January 1998 NPRM already contained estimates of the costs and feasibility of more stringent standards. Some commenters had charged that, based on these 1998 NPRM discussions, EPA's proposed standards would not be stringent enough to satisfy the stringency requirements of Clean Air Act section 213(a)(3). For the purpose of gaining additional information on feasibility, cost and lead time implications of more stringent standards, EPA had several meetings, phone conversations, and written correspondence with specific engine manufacturers, with industry associations representing engine and equipment manufacturers, with developers of emission control technologies and suppliers of emission control hardware, with representatives of state regulatory associations, and with members of Congress. EPA also sought information relating to the impact on equipment manufacturers, if any, of changes in technology potentially required to meet more stringent standards than were contained in the January 1998 NPRM. Additionally, EPA received numerous comments on the January 1998 NPRM requesting closer harmonization with the compliance program provisions that were ultimately adopted by the State of California. In some cases, EPA also discussed these harmonization issues with manufacturers and industry association representatives to improve the Agency's understanding of the needs and benefits to the industry of such harmonization.

As stated on prior occasions, in adopting final Phase 2 requirements for small SI engines, EPA wished to consider all relevant information that became available during the rule development process. This includes information received during the comment period on the January 1998 NPRM, and, to the extent possible, important information which became available after the formal comment period had concluded on the January 1998 NPRM. To the extent that post-NPRM information has expanded or updated the knowledge of the Agency regarding technological feasibility, production lead time estimates for incorporating improved designs, costs to manufacturers, costs to consumers and similar factors, it is reasonable to expect that the improved information may result in changing assessments of how a pending rule can best achieve regulatory goals compared to what had been expected at the time of the January 1998 NPRM. This is especially true in the case of a rulemaking concerning an industry, like the small SI engine industry, that is undergoing relatively rapid technological innovation.

EPA published a Notice of Availability on December 1, 1998 highlighting the additional information gathered in response to the January 1998 NPRM (see 63 FR 66081). After analyzing this information, the Agency concluded that more stringent standards for Class I nonhandheld engines, used in applications such as lawn mowers,

consistent with those adopted by California were indeed achievable on the national scale with existing, well-understood overhead valve technology. EPA had discussed issues regarding the use of this technology in nonhandheld equipment in the January 1998 NPRM. In response to the additional information and to the comments on the NPRM, EPA adopted a final rule for nonhandheld engines that included emission standards considerably more stringent than those proposed for Class I nonhandheld engines in the January 1998 NPRM. In the same final rule, EPA also adopted standards for Class II engines at the levels proposed in the January 1998 NPRM that were based on the use of the same overhead valve technology.

However, since the publication of the January 1998 NPRM, there have been rapid and dramatic advances in emission reduction technologies for handheld engines used in applications such as trimmers, brush cutters, and chainsaws. EPA had not been able to fully evaluate these technologies or discuss their possible availability at the time of the January 1998 NPRM. Having reviewed the available information regarding these new technologies, EPA now believes this new information supports proposed Phase 2 standards for handheld engines that are significantly more stringent than those proposed in the January 1998 NPRM. In light of this information, and in the interest of providing an opportunity for public comment on the stringent levels being considered for the Phase 2 handheld engine emission standards and the technologies available for meeting these standards, EPA is reproposing the Phase 2 regulations for handheld engines in this Supplemental Notice of Proposed Rulemaking (SNPRM).

With today's SNPRM, EPA is also proposing standards for two new classes of small displacement nonhandheld engines. EPA requested comment on the need for such standards in the January 1998 preamble and received comments from a number of engine manufacturers supporting such standards. Originally, the Agency did not propose different standards for small displacement nonhandheld engines citing the availability of the averaging, banking and trading program as a reason for not proposing separate standards. However, because the standards EPA recently finalized for nonhandheld Class I engines are more stringent than originally proposed in the January 1998 NPRM and because it is technologically more difficult to meet a given level of emissions as the engine displacement is decreased, manufacturers who would likely produce such small displacement engines would not likely be able to meet the Phase 2 Class I standards recently finalized and would not be able to produce such small displacement nonhandheld engines even if they could take advantage of the averaging, banking and trading program. Therefore, EPA is proposing standards for two classes of small displacement nonhandheld engines. The first small displacement class would cover nonhandheld engines with displacements below 66 cc and would be referred to as Class I-A engines. The second small displacement class would cover nonhandheld engines at or above 66 cc and below 100 cc and would be referred to as Class I-B engines.

In response to a request from small SI engine manufacturers, today's SNPRM is proposing to allow manufacturers the option of certifying engines greater than 19 kW and less than or equal to one liter in displacement to the small SI engine Phase 2 regulations for nonhandheld engines beginning with the 2001 model year. Because of their size, these engines would not need to be certified under the current Phase 1 small SI engine program. However, because there are a small number of these engines that are primarily derivatives of other certified small SI engines at or below 19 kW, EPA believes it would be appropriate for manufacturers to have the option to certify these engines to the Phase 2 requirements for small SI engines. Engines certified under this option would be required to certify for the longest useful life period of 1,000 hours. This requirements of this option would be consistent with a recently adopted requirement by the California ARB that allows engines above 19 kW and less than or equal to one liter in displacement to certify as small SI engines with a useful life of 1,000 hours.

EPA is also proposing a number of changes to the compliance program for handheld engines originally proposed in the January 1998 NPRM. Most of these proposed changes are to make the Phase 2 handheld engine compliance program the same as the compliance program requirements recently finalized for Phase 2 nonhandheld engines. The proposed requirements for handheld engines are intended to establish a consistent approach to the compliance program for all nonroad small SI engines.

The reader is referred to the March 1999 final rule for nonhandheld engines, the December 1998 Notice of Availability, the January 1998 NPRM, as well as to the docket for this rulemaking, for the range of information upon which the Agency has relied in reproposing Phase 2 standards and compliance program requirements for small SI handheld engines, and for proposing standards for Class I–A and I–B nonhandheld engines.

B. Overview of Re-Proposed Program

The following provides an overview of the reproposed Phase 2 provisions for handheld engines and the proposed provisions for Class I–A and Class I–B nonhandheld engines. Additional detail explaining the program as well as discussion of information and analyses which led to the selection of these proposed requirements is contained in subsequent sections. The reader should note there are a number of provisions contained in the January 1998 NPRM that EPA is not revising in this SNPRM. Thus, those proposed provisions remain as part of EPA's proposed Phase 2 program for handheld engines. Such provisions may not be addressed in detail in this SNPRM, but they could become part of the final program for Phase 2 handheld engines and will be addressed in the final rulemaking document that establishes the Phase 2 requirements for handheld engines, as appropriate.

Consistent with Phase 1 rules, the recently finalized Phase 2 program for nonhandheld engines and this SNPRM distinguish between engines used in handheld equipment and those used in nonhandheld equipment. In today's action, Phase 2 emission standards are proposed for distinct engine size categories referred to as ''engine classes'' within the handheld engine equipment designation. Table 1 summarizes the re-proposed hydrocarbon plus oxides of nitrogen (HC+NOx) emission standards for Class III, Class IV, and Class V handheld engines in grams per kilowatt-hour (g/kW-hr) and when these standards are proposed to take effect under this SNPRM. For comparison purposes, Table 2 contains the Phase 2 standards for handheld engines originally proposed in the January 1998 NPRM. The standards originally proposed in the January 1998 NPRM would have required manufacturers to certify a specified percentage of their sales to the proposed Phase 2 standards during the 2002 to 2005 model years. (The proposed percentages were 20 percent in 2002, 40 percent in 2003, 70 percent in 2004, and 100 percent in 2005.) Table 2 also lists the effective standards factoring in the mix of Phase 1 and Phase 2 engines assuming the proposed phase in schedule contained in the January 1998 NPRM.

TABLE 1.—RE-PROPOSED PHASE 2 HC+NOX EMISSION STANDARDS FOR HANDHELD ENGINES

Engine Class	Re-Proposed HC+NOx Standards (g/kW-hr) by Model Year						
	2002	2003	2004	2005	2006	2007	2008 and later
Class III	226	200	150	100	50	50	50
Class IV	187	168	129	89	50	50	50
Class V	.....	.....	138	129	110	91	72

TABLE 2.—ORIGINALLY PROPOSED PHASE 2 HC+NOX EMISSION STANDARDS FOR HANDHELD ENGINES AND EFFECTIVE DATES

Engine Class	Originally Proposed HC+NOx Standards (g/kW-hr) in January 1998 NPRM*	Effective HC+NOx Standards (g/kW-hr) by Model Year			
		2002	2003	2004	2005 and later
Class III	210	282	264	237	210
Class IV	172	231	217	194	172
Class V	116	156	146	131	116

*The originally proposed Phase 2 standards were to be phased in at 20% in 2002, 40% in 2003, 70% in 2004 and 100% in 2005 and later model years.

After complete phase-in, the re-proposed emission standards contained in this SNPRM for handheld engines (see Table 1) are considerably more stringent than the proposed standards included in the January 1998 NPRM (see Table 2). In addition, except for Class V, the reproposed standards are more stringent during all years of the phase-in than were originally proposed in the January 1998 NPRM. For Class V, the reproposed standards have been delayed until 2004 to allow manufacturers additional time to comply with the significantly more stringent standards included in today's SNPRM. EPA believes that the limited emission reductions forfeited in the short term with the delayed implementation date for Class V engines would be offset in the long term by significantly greater emission reductions once the reproposed standards take effect due to the increased stringency of the reproposed Phase 2 standards.

The more stringent reproposed standards reflect the Agency's analysis of the information received in direct response to the questions posed in the January 1998 NPRM concerning the desirability and feasibility of more stringent standards than the levels first proposed, as well as other information made available to the Agency since the January 1998 NPRM. When fully phased in, these newly proposed Phase 2 standards are expected to result in an estimated 78 percent annual reduction in combined $HC+NO_x$ emissions from small SI handheld engines compared to the Phase 1 emission requirements for such engines. The $HC+NO_x$ reductions expected from the standards contained in today's SNPRM represent more than a 100 percent increase in reductions over the standards proposed in the January 1998 NPRM once the Phase 2 standards are fully phased in.

One feature of the newly proposed Phase 2 handheld standards is that they would decline over a number of model years, allowing manufacturers to transition orderly and efficiently from their existing Phase 1 engine designs and technologies to those necessary to meet the new Phase 2 requirements. In addition, as described later, EPA is proposing a certification averaging, banking and trading (ABT) program that would include handheld engines. As an example, under today's proposal, a manufacturer of Class III engines would be required to meet a gradually decreasing standard on average for this segment of its product line during model years 2002 through 2006. During this time frame, EPA anticipates that a manufacturer would begin selling engine designs certified to meet the California ARB's Tier 2 $HC+NO_x$ standard of 72 g/kW-hr nationwide while continuing to change more and more of its Class III engine designs to designs capable of meeting a 50 g/kW-hr standard, averaging emission performance with older designs and thus meeting on average the declining standard in effect for that model year as noted in Table 1. Finally, EPA expects that the manufacturer would have had sufficient time and resources to change the remainder of its engine designs and production tooling to meet a 50 g/kW-hr standard on average for all of its Class III engines by 2006 or shortly thereafter. Because the reproposed standards are a fleet average standard, a manufacturer could continue selling Class III engines certified above the 50 g/kW-hr $HC+NO_x$ standard even after the 2006 model year provided it has sufficient ABT credits from engines certified below the standard in the same model year, credits banked from previous model years, and/or credits obtained from another small SI engine manufacturer.

As noted earlier, EPA is also proposing to add two new classes of small SI nonhandheld engines that were not proposed in the January 1998 NPRM. As proposed, Class I–A would cover engines with displacement less than 66 cc that are installed in nonhandheld equipment. Class I–B would cover engines equal to or greater than 66 cc but less than 100 cc that are installed in nonhandheld equipment. Table 3 contains the proposed $HC+NO_x$ standards for Class I–A and Class I-B engines. Without these added classes and their specific standards, all engines less than 225 cc would be included in Class I and would have to meet the recently finalized Phase 2 standard adopted for Class I engines (also noted in Table 3).

TABLE 3.—PROPOSED PHASE 2 $HC+NO_x$ Emission Standards for Class I–A and Class I–B Engines and the Final Phase 2 $HC+NO_x$ Emission Standard for Class I Engines

Engine Class	$HC+NO_x$ Standard g/kW-hr	Time frame
Class I–A	50	2000
Class I–B	40	2000
Class I	I6.1	2007

EPA is proposing the Class I–A and Class I–B designations in response to comments submitted on the January 1998 NPRM indicating that new applications for nonhandheld equipment were being developed which would use engines in these displacement ranges. Because it is generally more technically difficult to control emissions of smaller engines, at this time EPA believes it is too costly to require manufacturers to design engines under 100 cc for use in nonhandheld equipment to achieve the Phase 2 Class I $HC+NO_x$ standard of 16.1 g/kW-hr and still have the power and performance capabilities to be useful in powering such equipment. Although EPA does not anticipate that significant numbers of equipment in this category will be produced in comparison to the other engine classes, EPA believes it is reasonable to provide the opportunity to market such equipment since, if sold, such equipment will have reasonably demonstrated consumer value. Further, at the low production volumes anticipated, the contribution to the emissions inventory from such small engines would be extremely small.

As noted above, EPA is proposing to allow manufacturers the option of certifying engines greater than 19 kW and less than or equal to one liter in displacement to the small SI engine Phase 2 regulations beginning with the 2001 model year. Because of their power rating, these engines are currently unregulated by EPA and therefore are not required to meet any emission standards at the federal level. EPA recently issued a Notice of Proposed Finding (see 64 FR 6008) which announced EPA's intent to propose regulations for ''large nonroad SI engines.'' EPA is expecting to issue a NPRM for large nonroad SI engines sometime in 2000. Based on information released along with the Notice of Proposed Finding, EPA expects to propose that engines greater than 19 kW and less than one liter in displacement would be required to comply with the small SI nonroad engine requirements. Therefore, allowing manufacturers to optionally elect to certify engines above 19 kW with displacement less than or equal to one liter is consistent with the program EPA expects to propose for large SI nonroad engines. If for some reason, EPA does not finalize such a requirement for engines above 19 kW and less than or equal to one liter in displacement as part of the large SI nonroad engine program, EPA would expect to consider reasonable approaches to minimize disruption to the affected engine industry. In addition, interested parties would be able to suggest any approaches they believed were appropriate in comments on the large SI nonroad engine NPRM.

To offer an incentive for the early introduction of clean engines and to provide engine manufacturers with additional flexibility in meeting the reproposed Phase 2 handheld standards, EPA is proposing to make the recently adopted ABT program for Phase 2 nonhandheld engines also available to handheld engines, as well as to Class I–A and Class I–B engines. EPA did not originally propose an ABT program for handheld engines in the January 1998 NPRM. However, because of the increased stringency of the proposed handheld engine standards contained in this SNPRM, and after manufacturers have indicated an interest in such a program, EPA believes that an ABT component can be an integral part of the Phase 2 standards being proposed for Classes III, IV, and V as well as Classes I–A and I–B.

The standards and the compliance program elements being reproposed today also consider expected in-use deterioration. In contrast to the Phase 1 rules which only regulate the emission performance of engines when new, the Phase 2 standards being proposed today would require manufacturers to account for expected deterioration in emission performance as an engine is used. Manufacturers would be required to evaluate the emission deterioration performance of their engine designs and certify their designs to meet the proposed standards after factoring in the anticipated emission deterioration of a typical in-use engine over its useful life. As contained in today's SNPRM, a handheld engine manufacturer would select from one of three different useful life categories based on the type of engine and equipment in which the engine is installed. Under the proposed program, handheld engines would be certified to the emissions standards for a period of 50, 125, or 300 hours of use based on design features and the intended use of the installation. (A high priced piece of industrial equipment would more likely be equipped with an engine with design features intended to make it most durable and thus certified to the emission standards assuming a useful life period of 300 hours, for example.) For Class I–A engines, EPA is proposing the handheld engine useful life periods of 50, 125, and 300 hours. For Class I–B engines, EPA is proposing that a manufacturer would choose to certify for a useful life period of 125, 250, or 500 hours.

The proposed certification program would require manufacturers to determine an appropriate methodology for accumulating hours of operation to ''age'' an engine in a manner which duplicates the same type of wear and other deterioration mechanisms expected under typical consumer use which could affect emission performance. EPA expects bench testing would be used to conduct this aging operation because this can save time and perhaps money, but actual in-use operation (e.g., trimming grass) would also be encouraged. Emission tests would be conducted when the engine is new and when it has finished accumulating the equivalent of its useful life. The engine would have to pass standards both when it is new and at the end of its designated useful life to qualify for certification. Additionally, the new engine and fully aged engine emission test levels would be compared to determine the expected deterioration in emission performance for other engines of this design; such engines could be tested as they come off the end of a production line, in which case their new engine emission levels would be adjusted by the deterioration factor determined from the certification engine to predict the emission performance or the engine at the end of its useful life.

Selection of engines for testing as they come off the production line would be conducted according to the provisions of the proposed Production Line Testing (PLT) program. This program is explained in more detail in a following section but, briefly, its intent is to allow a sampling of production line engines to be tested for emission performance to assure that the design intent as certified prior to production has been successfully transferred by the manufacturer to mass production. The volume of PLT testing required by the manufacturer would depend on how close the test results from the initial engines tested are to the standards; if these test engines indicate the design is particularly low emitting, few engines would need to be tested, while those designs with emission levels very close to the standards would need additional tests to make sure the design is being

produced with acceptable emission performance.

While the proposed compliance program would not require the manufacturer to conduct any in-use testing to verify continued satisfactory emission performance in the hands of typical consumers, an optional program for such in-use testing is being proposed. EPA believes it is important for manufacturers to conduct in-use testing to assure the success of their designs and to factor back into their design and/or production process any information suggesting emission problems in the field. While not proposing to mandate such a program, the proposal would encourage such testing by allowing a manufacturer to avoid the cost of the PLT program for a portion of its product line by instead supplying data from in-use engines. Under this voluntary in-use testing program, up to twenty percent of the engine families certified in a year could be designated for in-use testing by the manufacturer. For these families, no PLT testing would be required for two model years including that model year. Instead, the manufacturer would select a minimum of three engines off the assembly line or from another source of new engines and emission test them when aged to at least 75 percent of their useful life under typical in-use operating conditions for this engine. The information relating to this in-use testing program would be shared with EPA. If any information derived from this program indicates a possible substantial in-use emission performance problem, EPA anticipates the manufacturer would seek to determine the nature of the emission performance problem and what corrective actions might be appropriate. EPA would offer its assistance in analysis of the reasons for unexpectedly high in-use emission performance and what actions might be appropriate for reducing these high emissions.

As proposed in the January 1998 NPRM, EPA could choose to conduct its own in-use compliance program whether or not a manufacturer chose to conduct such a voluntary in-use testing program. If EPA were to determine that an in-use noncompliance investigation was appropriate, the Agency expects it would conduct its own in-use testing program, separate from any voluntary manufacturer testing program, to determine whether a specific class or category of engines is complying with applicable standards in use.

All of the general provisions of this proposed compliance program have been adopted as part of California's compliance program for these classes of small engines.[1] Importantly, the testing and data requirements, engine family descriptors, compliance statements and similar testing and information requirements of these proposed federal Phase 2 handheld regulations are, to the best of EPA's knowledge, the same general compliance program requirements adopted by the California ARB. This will be advantageous to manufacturers marketing the same product designs in California as in the other states, as they would need to prepare only one set of certification application information, supplying one copy to the California ARB for certification in the State of California and one copy to EPA for federal certification. This similar treatment under the regulations would also extend to the proposed PLT program and would also likely extend to the proposed optional in-use testing program, such that any test data and related information developed for the California ARB should also satisfy the federal regulatory requirements being proposed today.

In addition to the regulatory provisions outlined above, this proposal includes special provisions for small volume engine manufacturers, small volume engine families produced by other engine manufacturers, small volume equipment manufacturers who rely on other manufacturers to supply them with these small SI handheld engines, and small volume equipment models. These special small volume handheld provisions are intended to lessen the demonstration requirements and in some cases delay the effective dates of the standards so as to smooth the transition to these Phase 2 requirements. This is especially important for small volume applications because the eligible manufacturers involved may not have the resources to ensure that engines complying with the proposed Phase 2 standards will be available within the time frames otherwise envisioned under these regulations. Since these proposed flexibility provisions are limited to small volume applications, the risk to air quality should be negligible. However, without these provisions, the economic impacts to small volume manufacturers could be increased and the possibility of reduced product offering would be greater, especially for those products intended to serve niche markets which satisfy special needs. The proposed small volume flexibilities are explained more fully in section II.D. of today's SNPRM and are detailed in the proposed regulations.

[1] While the voluntary in-use test program has not been codified in the California ARB Tier 2 rules for these engines, EPA has discussed the program with the California ARB. EPA expects that the California ARB would consider allowing manufacturers to participate in the voluntary in-use test program and receive the same decreased PLT testing as contained in this proposal.

II. Content of the Supplemental Proposed Rule

The following sections provide additional detail on the provisions of the supplemental proposed rule outlined above.

A. Emission Standards and Related Provisions

1. Class Structure

This SNPRM retains the same basic class structure for small SI engines as implemented in the Phase 1 regulations and proposed in the January 1998 NPRM with the addition of the proposed designations of Class I–A and Class I–B engines. The Phase 1 rules established separate classes based on engine size in recognition of the greater difficulty in controlling emissions from smaller displacement engines compared to larger displacement engines. The Phase 1 program also separated engine classes into those intended for use in equipment typically carried by the operator during its use such as chain saws or string trimmers (referred to as handheld equipment) and those engines normally used in equipment which is not carried by the operator such as lawnmowers and generators (referred to as nonhandheld equipment). These usage distinctions seemed appropriate because the small engine industry is for the most part split between these two categories, with very few manufacturers making both handheld engines and nonhandheld engines. In addition, the nature of these two industry segments is quite different. For example, handheld engine manufacturers produce engines primarily for use in equipment they also manufacture. In contrast, nonhandheld engine manufacturers typically supply engines to separate nonhandheld equipment manufacturers and do not make their own equipment.

As noted above, EPA is proposing standards for two new classes of nonhandheld engines in this SNPRM. Under the existing Phase 1 program, Class I includes all nonhandheld engines with displacements below 225 cc. EPA received several comments on the January 1998 NPRM supporting the adoption of standards for additional nonhandheld categories below 225 cc. EMA requested the creation of a new class of small displacement nonhandheld engines in order to fill a void in the equipment market left by

products that would no longer be able to utilize 2-stroke engines if the proposed Phase 2 Class I standards were adopted. They noted that production of some 4-stroke side valve (SV) engines under 76 cc had already been discontinued with the advent of Phase 1 standards due to practicality, and that with the more stringent standards proposed for Phase 2, even greater numbers of these engines would be eliminated from the market. EMA also noted that the California ARB had proposed an $HC+NO_X$ standard of 72 g/kW-hr for engines below 60 cc, recognizing that engines below 60 cc are designed for functionally different types of equipment than those above 60 cc. Honda commented that the Phase 1 standards and the proposed Phase 2 standards for Class I are not appropriate for the smallest engines in the class because of the increased difficulty in reducing emissions with small displacement engines. Honda recommended the addition of a small displacement nonhandheld engine class with the emission standard harmonized with the California ARB's standard for 0–60 cc engines. Suzuki recommended the addition of a small displacement nonhandheld class of 100 cc and less, arguing that overhead valve (OHV) engines in this size already have difficulty meeting the Phase 1 $HC+NO_X$ standards because of large combustion chamber surface-to-volume ratios. They commented that the addition of a new class of small displacement nonhandheld engines would allow the use of lightweight 4-strokes in applications that require mobility but do not qualify as multi-positional under the handheld classification. Suzuki recommended that the $HC+NO_X$ standard should be 40 g/kW-hr, with the same durability classes and in-use programs as proposed for Class I engines. Tecumseh noted that they foresee a need for 4-stroke engines in the 50–100 cc range, which would not be able to meet the proposed Phase 2 Class I standard. They commented that an additional class below 225 cc was needed and they also suggested a 40 g/kW-hr $HC+NO_X$ standard for 50–100 cc engines.

Based on the fact that it is more difficult for smaller displacement engines to meet the same emission standards as larger displacement engines, EPA believes that a standard which is technically feasible and economically viable for the larger displacement Class I 4-stroke engines (which have displacements typically above 125 cc and are primarily used in lawnmowers), could be too costly for manufacturers to be achievable for smaller displacement engines that manufacturers would need to use in new equipment applications requiring the use of much smaller displacement nonhandheld engines. Therefore, it appears that the span of engine displacements within Class I is too large to allow for a technologically appropriate engine standard for both the larger and smaller engines in that class. Although this has not significantly affected manufacturers' ability to produce engines for applications under the Phase 1 rules, EPA believes this may not be the case in the future based on the comments noted above. If EPA were to retain the broader Class I category, products like those noted by manufacturers in their comments above would need to be dropped or could not be introduced. Thus, to allow for the marketing of a wide range of nonhandheld products, including applications that could be powered by the smallest displacement engines, EPA is proposing to subdivide the Class I engine category by adding two new nonhandheld engine classes and redesignating the span of displacements covered by Class I. Under today's proposal, Class I–A would include nonhandheld engines below 66 cc, Class I–B would include nonhandheld engines equal to or greater than 66 cc but less than 100 cc, and Class I would cover engines equal to or greater than 100 cc but less than 225 cc. The proposed displacement range for Class I–A would harmonize the requirements with those adopted by the California ARB. Based on the comments submitted by manufacturers, EPA believes the proposed displacement range for Class I–B is appropriate and should not compromise the emissions benefits of the recently finalized Phase 2 program for Class I engines since more than 99 percent of the currently certified Class I engines (based on estimated production levels submitted by manufacturers to EPA) have displacements greater than 100 cc. EPA requests comments on EPA's proposal for Class I–A and I–B engines and new information regarding manufacturer's plans to develop and market such engines.

If the proposed Class I–A and I–B standards are adopted, EPA would not expect that manufacturers would shift significant production from Class I to the smaller displacement engines. In addition, EPA would not expect that manufacturers would certify 2-stroke engines to the proposed Class I–A and I–B standards and use such engines in popular Class I equipment applications such as walk-behind mowers. If such a change in the market were to occur, the benefits of the recently finalized Phase 2 program for Class I engines which anticipates a turnover to clean 4-stroke OHV technology would be seriously compromised. EPA requests comments on the potential for 2-stroke engines to meet the proposed Class I–A and I–B standards and the potential for such engines to be used in existing nonhandheld applications such as mowers.

As noted above, EPA is proposing an option that would allow manufacturers to certify engines above 19 kW and less than one liter in displacement to the small SI engine program beginning with the 2001 model year. Such engines would need to be certified to the Phase 2 requirements for the appropriate class of nonhandheld engines, which is expected to be the Class II requirements (i.e., engines above 225 cc in displacement), for a useful life period of 1,000 hours. EPA requests comment on the requirements of this proposed option.

2. Emission Standards

As noted earlier, EPA is proposing more stringent $HC+NO_X$ emission standards for all three classes of handheld engines than were originally proposed in the January 1998 NPRM. The Clean Air Act at section 213(a)(3) requires the Agency to adopt standards that result in the greatest emission reductions achievable through the application of technology which the Administrator determines will be available, giving appropriate consideration to cost, lead time, noise, energy and safety factors. As a result of information now available, much of it in the form of comments received during and after the comment period on the January 1998 NPRM, and due to the rapid technological advances the industry is making in an effort to design engines which are more environmentally friendly, EPA believes that standards more stringent than those originally proposed are achievable during the next decade. Extensive discussions over several months with several manufacturers of handheld engines and equipment have provided EPA with information to decide on the standards and phase in schedules being proposed today. (Records of these discussions have been included in the docket for this rule.) Specific advances for 2-stroke engines include stratified scavenged engines and novel approaches to improve fuel metering, both of which should allow 2-stroke engines to have substantially lower emissions and remain viable

powerplants for handheld equipment. In addition, there have been recent technical advances for handheld engines including the feasibility of catalysts and the expanded application of the mini 4-stroke design.

While not all technologies under consideration have been fully proven on a production engine operated under typical in-use conditions, EPA is confident that these and other technologies will be proven in the near future providing the industry with several alternatives for emission control. Certification or manufacturer prototype information as listed in Chapter 3 of the Supplemental Draft RIA, demonstrates that currently available technology can achieve lower emission levels than the standards set by the California ARB, especially if one considers the use of a low-efficiency catalyst. For low engine out emissions, prototypes of the LE Engine technology developed by John Deere and the stratified scavenging design developed by Komatsu Zenoah have shown the ability for 2-stroke engines to achieve very low emission levels in the range of 36 g/kW-hr to 66.8 g/kW-hr with the John Deere technology [2] (assuming a emissions deterioration factor of 1.1 over the useful life of the engine) and 67 g/kW-hr with the Komatsu Zenoah technology (based on California ARB certification information for the 2000 model year). A low efficiency catalyst could lower these emission levels by 20 g/kW-hr and result in emission levels of 16 g/kW-hr to 47 g/kW-hr $HC+NO_X$. In addition, mini 4-stroke engines in Class IV have been certified to a range of new engine values from 15.7 g/kW-hr to 37.6 g/kW-hr. With an assumed emissions deterioration factor of 1.5 over the useful life of the engine, the mini 4-stroke engines would yield emissions at a full useful life of 23.6 g/kW-hr to 56.4 g/kW-hr. Use of a catalyst that achieves a 20 g/kW-hr reduction on the highest emitting 4-stroke engine would yield an emissions level of 36.4 g/kW-hr $HC+NO_X$. These stringent emission levels show that very low emission standards for handheld engines are feasible especially given the inherently low deterioration of 2-stroke emissions, and the ability to use a low efficiency catalyst or thermal reactor on some engine families.[3] EPA requests comment on the ability of the John Deere LE technology, the Komatsu Zenoah stratified scavenging design, or mini 4-stroke technologies to accommodate a catalyst. Specific areas on which EPA is requesting comment include the ability to provide sufficient engine and muffler cooling with each of the technologies, catalyst conversion efficiencies, and engine or equipment design changes needed to accommodate a catalyst specifically in response to the U.S. Department of Agriculture (USDA) Forest Service requirements for equipment used on Federal land.

The emissions information cited above is from engines designed for use in Class III or Class IV applications. In most cases, EPA believes similar designs should be able to be designed for Class V applications as well. However, because most Class V engines are used in higher power commercial applications, the ability to utilize a ''low'' efficiency catalyst (and the related muffler skin and exhaust plane temperatures that result from the throughput of exhaust emissions through the catalyst) may be inhibited due to the USDA Forest Service requirements for equipment used on Federal land. In addition, the high power equipment in Class V requires additional cooling compared to the amount of cooling typically required in Class III and IV engines. Cooling may be achieved by directing more of the fuel/oil mixture through the crankcase. For the John Deere LE technology, this will result in higher level of emissions than for Class IV engines, since more fuel/oil will be scavenged. These factors may affect the ability of some designs to be applied to the largest of Class V applications or for such designs to meet a 50 g/kW-hr $HC+NO_X$ standard. EPA therefore believes that a $HC+NO_X$ standard of 72 g/kW-hr is most appropriate for Class V engines. EPA requests comment on the ability of 4-stroke engines, redesigned 2-stroke engines, or other technologies, such as electronic fuel injection or the application of catalysts, to achieve a 50 g/kW-hr $HC+NO_X$ standard.

Based on the information noted above, EPA is proposing emission standards that require handheld engines in Class III and Class IV, on average, to meet an $HC+NO_X$ standard of 50 g/kW-hr and handheld engines in Class V, on average, to meet an $HC+NO_X$ standard of 72 g/kW-hr by the end of the applicable phase-in period. For a full discussion of the technologies EPA believes could be employed to achieve the proposed handheld engine standards, the reader is directed to Chapters 3 and 4 of the Supplemental Draft RIA.

A number of issues have been raised by various parties regarding the technologies noted above which could affect the potential for manufacturers to use these technologies to achieve the proposed standards. A list of the most important issues is noted below. While EPA believes that a number of important issues have been highlighted and would need to be addressed before successful introduction of these technologies, EPA also believes that given the amount of leadtime before manufacturers would be required to certify their entire product range to the proposed $HC+NO_X$ standards, the variety of technology options available, and the work manufacturers have already performed in anticipation of the California ARB Tier 2 regulations, that the reproposed set of standards are achievable, especially given the provisions of the proposed ABT program which allow for early credits generation and the exchange of credits across engine classes and the proposed flexibilities for small volume engine families and small volume engine manufacturers. Specifically, manufacturers are anticipated to sell in the initial years of the program engine families with emission levels substantially below the phase in standards. Many could accumulate a large number of banked credits by, for example, offering their designs certified to the California ARB standards for sale in the other 49 states. EPA requests comments on these assumptions and on the issues listed below, including the potential for addressing these concerns and any resulting impact on manufacturers' ability to meet the standards contained in this SNPRM which, as noted earlier, allow for the use of the ABT program.

With regard to the John Deere LE technology, a number of concerns have been raised including the ability of the design to provide adequate lubrication to the crankcase, the ease of use and operation of the fuel system in real world conditions, the potential for increased PM emissions, the need for redesign of equipment to incorporate the technology, durability due to the potential for carbon buildup in the transfer ports (as described in the Supplemental RIA, Chapter 2, section 3.2.5), and the applicability to Class V engines, especially professional chainsaws, which have unique operating characteristics (e.g., cold weather operation) and cooling requirements. However, John Deere has made substantial progress toward resolving such potential problems as

[2] The reader is directed to items IV–G–30, IV–G–32, and IV–B–05 of Docket A–96–55 for further information on the John Deere technology.

[3] In addition to the technologies described in today's notice other potential emission control technologies have been examined by EPA. Two of these technologies, a spark ignition technology by Pyrotek and a vaporizing carburetor technology by Boswell, are described in further detail in Chapter 3 of the Draft Supplemental RIA.

adequate performance across the range of operating conditions and speeds. Indeed, EPA expects John Deere to market in California handheld equipment (Class IV trimmers and chainsaws) using this technology beginning with the 2000 model year. Comments are requested on the likelihood that cost-effective solutions can be made available over the next two to three years across the full range of handheld engines and applications.

In addition to these technically related concerns, a number of engine manufacturers have raised concerns about the level of the licensing fees that John Deere has stated that it would charge for use of the patented equipment designs. The fees noted by John Deere in their literature to other handheld engine manufacturers noted a minimum licensing fee of $7.50 per engine with fees ranging as high as 5% of the wholesale price of the equipment for an application costing above $300 with a sales volume less than 50,000 units per year, which is a typical cost for Class V commercial applications. These manufacturers have suggested that the fees are higher than typically paid for patented technologies and noted that the fees suggested by John Deere may, in some cases, be as high as the profit margin on the equipment currently being sold.[4] EPA specifically requests comments on the licensing fees suggested by John Deere, the impact such fees would have on competition given the cost for other technology options, and the level of licensing fee necessary to allow this licensed technology to be a cost effective option for other manufacturers.

For the stratified scavenging engine technology, a number of concerns have been raised about the technology. These issues include the ability to design engines that achieve the amount of power necessary for all applications, the feasibility of providing additional cooling which may be required by the design, as well as the ability for all applications to provide sufficient cooling for a low efficiency catalyst. In fact, Komatsu has already certified a model year 2000 Class IV engine with both EPA and the California ARB at levels meeting the California ARB's Phase 2 standard. EPA expects Komatsu to market their stratified scavenging engine technology nationwide in certain handheld equipment (Class IV trimmers) using this technology beginning with the 2000 model year.

With regard to the mini 4-stroke technology, a number of concerns have been raised primarily regarding the application to Class V engines. These issues primarily relate to the limited ability to apply such technology because of the power, weight, and acceleration requirements of Class V handheld equipment applications. It can be noted that both Ryobi and Honda have introduced 4-stroke engines for Class IV handheld applications weighing about seven pounds which are comparable to the weight of 2-stroke engines used in similar handheld applications. Although these 4-stroke engines were once thought to be limited to trimmer type applications only, EPA is aware of developments of the use of 4-stroke engines to higher speed applications. Therefore, EPA believes that 4-stroke engines could be used for the majority of Class IV applications. Request comments on this assumption. As noted later in section III.B.2 of today's document, EPA has assumed that 4-stroke technology would likely only be applicable to the smallest of Class V engine designs.

However, to the extent that 4-stroke engines might replace some 2-stroke engines in certain applications, EPA is interested in receiving additional information to better compare their expected performance. EPA is specifically requesting information on the following areas: the durability of 4-stroke engines and how this might impact the certified useful life of such engines, the amount and cost of maintenance required to maintain performance, and the likelihood such maintenance would be performed (including a comparison to maintenance requirements and in-use maintenance experience for 2-stroke engines) and how the relative cost of the handheld piece of equipment might affect these considerations (e.g., is it more likely that maintenance will be performed on the engine of a more expensive piece of equipment than on the engine installed in a less expensive piece of similar equipment, even if the engines are certified to the same useful life?). Other information relevant to a comparison of 4-stroke engines versus 2-stroke engines such as weight and performance differences is also requested.

For the application of catalysts to handheld equipment, the concerns raised include user safety due to potential excessive heat generated by the catalyst, which may influence engine operation and durability, and the ability to provide additional cooling of the exhaust gas and catalyst area which may be necessary for operator safety or for manufacturers to meet the USDA Forestry Service requirements that apply to equipment used on Federal land. EPA is aware that manufacturers have been researching and developing catalyst technology for handheld engine applications and have already been working to address the issues noted above through innovative catalyst designs, use of low efficiency catalysts and more engine improvements, catalyst shielding, and catalyst placement. In addition, one handheld engine manufacturer, Husqvarna, is currently using low-efficiency catalysts on several of their 1999 model year Class IV engine families used primarily in commercial trimmer/edger applications. A second manufacturer, Tanaka, has publicized their PureFire technology which includes engine improvements and a catalyst. EPA requests comment on the status of catalyst technology development for handheld engine applications and the likelihood that catalysts will be able to be applied to the full range of handheld engine applications to meet the proposed standards and appropriate safety requirements.

As noted earlier, the proposed standards would be phased in through a set of declining average in-use standards by model year. For Classes III and IV, the standards would be phased in between the 2002 and 2006 model years. For Class V, the proposed Phase 2 standards would be phased in between the 2004 and 2008 model years. (Table 1, presented earlier, contains the actual emission standards by model year of the proposed Phase 2 standards for handheld engines.) EPA believes the proposed leadtime before the standards are scheduled to take effect is appropriate based on the fact that the proposed $HC+NO_X$ standards for Class III and Class IV are more stringent than the California ARB's $HC+NO_X$ standards for these engines (i.e., 72 g/kW-hr for engines 0–65cc with the exception of exempted applications), on which industry had been focusing and developing technologies over the past few years, and because many of the Class V engine families are used in certain farm and construction equipment applications which are exempted from meeting the California ARB standards as discussed below. In addition, EPA had been discussing standards similar in stringency to the California ARB's standards with the handheld industry in the time since the January 1998 NPRM through December 1998. EPA believes that industry needs sufficient time in the near term to finish developing products for the California market that meet the California ARB

[4] "Meetings with Husqvarna/Frigidaire Home Products on Small Engine Phase 2 Handheld Regulations," EPA memo from Phil Carlson to Docket A–96–55, June 29, 1999.

emission standards which take effect on January 1, 2000. However, not all engines will necessarily be redesigned to meet the California ARB standards due to the farm and construction equipment exemption noted above, and because some manufacturers have told EPA that they expect to provide a limited lineup of engines for the California market. Furthermore, EPA believes the proposed schedule of standards will allow manufacturers to sell their engines designed to meet the California ARB Tier 2 standards nationwide for a number of years, recouping the investments made for such designs, while redesigning their product offerings to meet the proposed $HC+NO_X$ standards on average.

Although the standards contained in today's SNPRM envision that manufacturers will phase in engines meeting a 50 g/kW-hr $HC+NO_X$ level in Class III and Class IV and a 72 g/kW-hr $HC+NO_X$ level in Class V, manufacturers of handheld engines would be required to certify all of their engine families in a given engine class (unless they qualify for some type of small volume provision as described later) for a specific useful life period in the first year of the applicable phase-in. (As noted earlier, EPA's Phase 1 program only requires compliance for new engines.) Manufacturers need enough time to perform the useful life tests on each of the engine families, with the exception of those already certified for California (since California also requires full useful life compliance) which the manufacturer is planning to sell outside of California, as well as to research, develop and adopt low emitting technology on engine families such that each manufacturer meets the average emission standards through the final year of the phase-in schedule.

EPA is proposing a two year delay in the effective date for the Class V engines. This delay is based on an analysis of EPA's Phase 1 certification database shows that a significant proportion of Class V engine production is likely to be exempted from California ARB regulation because of the type of equipment in which the engines are used. Manufacturers of these products, which have a long list of certified engine families, have not had to address these engines for California, and therefore will need additional time to comply with EPA's proposed Phase 2 standards. In addition, this delay takes into consideration leadtime concerns raised by the two major engine manufacturers in this class who manufacture professional high quality equipment in light of their extensive product development process. EPA requests comment on the appropriateness of the proposed two year delay for Class V engines.

For all categories of handheld engines, the $HC+NO_X$ standards being proposed today represent significant increases in stringency and will require virtually all of the currently certified Phase 1 engines to be redesigned. Under the proposed $HC+NO_X$ standards, EPA expects emissions from handheld engines on average will be reduced by approximately 78 percent compared to Phase 1 engines. Under this proposal, the nation should continue to benefit from improved emission performance for handheld engines at least through 2011 as these standards take effect and fleet turnover to cleaner engines occurs.

As noted earlier, the standards being proposed today are more stringent than the California ARB's Phase 2 standard. (California's Phase 2 standard for small SI engines is 72 g/kW-hr $HC+NO_X$, except for engines used in exempted farm and construction applications). EPA requests comments on the costs, feasibility, and other effects of complying nationwide with a 72 g/kW-hr $HC+NO_X$ standard for all three classes of handheld engines versus the standards being reproposed today.[5] Specific areas on which EPA is requesting comments include the engine designs and technologies that would be used to comply with a 72 g/kW-hr $HC+NO_X$ standard, the cost of adopting such technologies (both relative to engines currently certified under the Phase1 program and as an extension of production of California compliant engines), and the potential for such Class III and Class IV engines to be modified to meet a 50 g/kW-hr $HC+NO_X$ standard. Recently, a number of handheld engine manufacturers indicated to EPA that they would prefer the following alternative set of $HC+NO_X$ standards: 72 g/kW-hr for Classes III and IV phased in between 2002 and 2007, and 87 g/kW-hr for Class V phased in between 2004 and 2007. These manufacturers do not presently employ the kinds of technology EPA expects would be used to meet EPA's reproposed standards, and they specifically raised questions regarding the applicability of light-weight 4-stroke technology and the developmental state of John Deere's LE technology. In addition to the information requested above, EPA requests comment on the alternative standard set nominated by this segment of the handheld industry. EPA is particularly interested in receiving information about the costs associated with this alternative set of standards. As part of the final rulemaking, EPA plans to consider this cost information and use it, as appropriate, in an analysis of the potential costs and emission reductions of these alternative standards for comparison with the additional emission reductions (and presumably higher costs) of the proposed standards. This information will be useful as the Agency determines the appropriate level of standards consistent with Clean Air Act section 213(a)(3).

EPA is not proposing tighter CO standards for handheld engines in this SNPRM. This proposal would maintain the same CO emission standards contained in the January 1998 NPRM. At this time, it does not appear that additional reductions in CO emissions from these engines will be needed to allow most areas of the country to attain the CO ambient air quality standard. Absent this air quality need, EPA does not believe that requiring manufacturers to achieve additional reductions in CO emissions by a more stringent standard is necessary. It should be noted that many of the emission control techniques likely to be adopted to meet the proposed Phase 2 $HC+NO_X$ standards on 2-stroke engines, including for example the use of improved fuel metering and combustion chamber improvements, have shown lower CO emissions than Phase 1 engines. Although EPA is not proposing tighter CO standards, EPA expects some CO emission reduction will occur as a result of the technologies likely to be adopted to meet the proposed Phase 2 $HC+NO_X$ standards. EPA is not able at this time, however, to quantify the expected level of CO reductions to a sufficiently precise degree that the Agency believes it can confidently propose a more stringent standard than that contained in the January 1998 NPRM.

Neither EPA's Phase 1 rule for small SI nonroad engines nor the recent Phase 2 rule for nonhandheld engines included particulate matter (PM) standards and today's proposal continues the same approach. EPA is not proposing PM standards for Phase 2 handheld engines. EPA believes that the types of technologies expected to be used to meet the proposed Phase 2 gaseous emission standards will result in reduced PM levels from handheld engines. EPA requests information on PM emissions from handheld engines and the need for PM standards for small SI nonroad engines in general. Relevant information might include PM emission rates from small SI engines, loading contributions to ambient PM concentrations from these engines, user

[5] Commenters are asked to consider energy, noise, and safety impacts in their comments.

health effects from direct exposure to PM contained in engine exhaust from small SI engines, and contribution from small SI engine PM emissions to visibility impairment.

For Class I–A engines (i.e, nonhandheld engines with displacement less than 66 cc), because these new nonhandheld equipment applications are expected to use engines with much the same displacement and design as their handheld Class IV counterparts, EPA is proposing to apply the Class IV standards of 50 g/kW-hr for $HC+NO_X$ and 610 g/kW-hr for CO. Although the California ARB's standards are less stringent than the standards contained in today's SNPRM, the addition of this class harmonizes the use of these engine sizes within this rulemaking between EPA and the California ARB. Because the Class I–A engines will be designs that are not currently certified as nonhandheld engines, EPA is proposing that the standards for Class I–A engines take effect immediately upon the effective date of finalization of these proposed standards, which EPA expects would occur during the 2000 model year. With regard to the test procedure manufacturers use for certification testing of Class I–A engines, EPA is proposing to adopt the handheld engine test procedure, typically referred to as cycle ''C''. EPA requests comment on the proposed requirements for Class I–A engines.

For Class I–B engines (i.e., nonhandheld engines with displacement from 66 cc to less than 100 cc), 4-stroke engines have certain disadvantages which make it more difficult for them to meet the recently adopted Phase 2 $HC+NO_X$ standard for nonhandheld engines compared to their larger size counterparts (i.e., nonhandheld engines with displacement above 100 cc in Class I and Class II). EPA recognized this difference when it adopted the Phase 2 $HC+NO_X$ emission standards for engines less than 225 cc (i.e., Class I where the standard is 16.1 g/kW-hr) and engines greater than 225 cc (i.e., Class II where the standard is 12.1 g/kW-hr). The current set of engines certified to EPA's Phase 1 standards includes three Class I engines (1 OHV engine and 2 SV engines) below 100 cc that are certified at new engine levels close to the Phase 1 $HC+NO_X$ standard (i.e., 16.1 g/kW-hr) ranging from 13.3 to 15.9 g/kW-hr. Assuming an in-use $HC+NO_X$ deterioration factor of 1.5, the Phase 2 emission values of the engines would be 19.9 and 23.9 g/kW-hr, respectively, which is above the Phase 2 standard of 16.1 g/kW-hr. In the January 1998 NPRM, EPA made the assumption that averaging of emission credits would allow these smaller size engines to utilize credits from an engine manufacturer's larger size engines. Comments on the NPRM suggested that this was not the case for all engine manufacturers. Comments from one of these manufacturers suggested that EPA establish a standard of 40 g/kW-hr because they produced a side valve engine under 100 cc which required this value to be able to certify. Due to the very small production estimates of engines in this size range (i.e., 0.1% of Class I), EPA is proposing standards for Class I–B engines of 40 g/kW-hr for $HC+NO_X$ and 610 g/kW-hr for CO. As proposed for Class I–A engines, EPA is proposing that the standards for Class I–B engines take effect immediately upon the effective date of finalization of these proposed standards, which EPA expects will occur during the 2000 model year. For the test procedure manufacturers use for certification testing, EPA is proposing to adopt the nonhandheld engine test procedures, typically referred to as cycle ''A'' and cycle ''B'.

Based on comments from manufacturers, EPA is establishing the Class I–B category to allow for the production of engines to meet niche markets. The Agency would not expect a migration into this category of current 4-stroke Class I engines, almost all of which are above 125 cc, because of the minimum size apparently necessary to meet the power demands of typical current applications such as walk behind lawnmowers. However, EPA is concerned that the relatively higher performance of 2-stroke engines could allow 2-stroke engines in the high end of the Class I–B category (e.g., between 90 cc and 100 cc) to meet the 40 g/kW-hr standard and create interest in using them in such current applications as small walk behind lawnmowers. EPA would not want to proliferate the use of such higher emitting engines in current applications and does not intend to allow migration of 2-stroke engines into nonhandheld applications. EPA requests comment on these assumptions and on ways to prevent this proliferation from occurring. EPA also requests comment on the level of the proposed Class I–B standards and the feasibility of achieving lower emission standards with OHV, SV, and 2-stroke engines.

3. $NMHC+NO_X$ Standard for Class I–B Natural Gas-Fueled Engines

In the recent final rule for small SI Phase 2 nonhandheld engines, EPA adopted separate standards for small spark ignition engines fueled by natural gas which manufacturers could certify to in lieu of the otherwise applicable $HC+NO_X$ standards. Because EPA believes it is possible that there could be Class I–B applications designed to run on natural gas, EPA is proposing similar separate standards for Class I–B spark ignition engines fueled by natural gas which could be certified to in lieu of the $HC+NO_X$ standards. EPA believes this option is necessary because the methane portion for gasoline fueled engines is around 5 to 10 percent of total hydrocarbons, whereas for engines fueled with natural gas, the methane portion can be around 70 percent. Because the methane from these engines has a very low ozone forming potential compared to the other hydrocarbons in the engine's exhaust, EPA believes it is appropriate to provide an alternative set of emission standards for engines fueled with natural gas. Otherwise, requiring such engines to meet the same HC standard as gasoline-fueled applications would result in a more stringent standard for natural gas-fueled engines. The proposed $NMHC+NO_X$ standard of 37 g/kW-hr for Class I–B natural gas-fueled applications would provide equivalent stringency to the $HC+NO_X$ standards for gasoline-fueled engines being proposed today. EPA is proposing standards for Class I–B only, as EPA does not expect that natural gas-fueled handheld engines or Class I–A engines might be built. EPA requests comment on the need to establish standards for Class I–A engines operated on natural gas. Aside from having the option to certify to $NMHC+NO_X$ standards, all other aspects of this proposal would pertain equally to engines fueled with natural gas as with gasoline-fueled engines.

4. Useful Life Categories

In the January 1998 NPRM, EPA proposed two useful life categories of 50 and 300 hours for handheld engines. EPA received several comments supporting the addition of a mid-range useful life category for handheld engines, with one manufacturer supporting a level of 125 hours. While EPA believes that 50 hours is appropriate for most of the products targeted at the home consumer, some engines targeted for home consumer use (including some new engines which are expected to enter the market in the next few years) are expected to have designs which tend to be more durable than the 50 hour level yet are not as durable as the commercial grade of 300-hour equipment. As a result, EPA is proposing to add a midrange to the useful life categories for handheld engines of 125 hours as recommended by one manufacturer. Therefore, under

today's proposal, a manufacturer would choose between three useful life categories for handheld engines of 50, 125, and 300 hours. A manufacturer would be responsible for demonstrating compliance with the proposed standards described above in section II.A.2. at whichever useful life level it designated for its engine families.

For the newly proposed category of Class I–A engines, EPA is proposing the handheld engine useful life categories of 50, 125 and 300 hours. EPA believes the engine designs in Class I–A will be similar to handheld engines in terms of durability of design. It should be noted that the proposed useful life designations for Class I–A engines are the same as those established by the California ARB in its Tier 2 rule for engines of this size range. For Class I–B engines, EPA is proposing the useful life categories of 125, 250 or 500 hours recently finalized for nonhandheld engines. EPA believes the engines designs in Class I–B will be similar to Class I nonhandheld engines in terms of durability of design. The proposed useful life designations for Class I–B engines are the same as those established by the California ARB in its Tier 2 rule for engines of this size range.

5. Selection of Useful Life Category

In the January 1998 NPRM, EPA proposed that the engine manufacturers would be responsible for assuring that the correct useful life was used for certification demonstration and labeling purposes. Specific criteria were proposed which the manufacturers would have had to evaluate and use in documenting their determinations of useful life category selection. Comments received suggested such a requirement was overly rigid and unnecessary. Given the comments received, EPA is still very concerned that manufacturers select the most appropriate useful life category for each engine to assure it is properly evaluated during certification. In addition, because EPA is proposing to include all handheld engines and Class I–A and Class I–B engines in the ABT program which allows the exchange of emission credits across engine families in different useful life categories, the proper selection of the useful life period is important to ensure that the credit program is fair and environmentally sound. However, so as not to add potentially unnecessary burden on the industry, today's SNPRM proposes a less rigid methodology for determining useful life categories that EPA recently finalized for Phase 2 nonhandheld engines. Rather than mandating a fixed set of criteria, this proposal rests the responsibility with the industry to make their best, most conscientious selection. For manufacturers of handheld engines, virtually all engines are placed in specific equipment also manufactured by the engine manufacturer or, in those cases where engines are supplied to another equipment manufacturer, into equipment well known by the engine manufacturer. Class III, IV and V engine manufacturers know the design features and performance characteristics of both their engines and the equipment in which they are installed, and understand the expected in-use operation of this equipment and thus the expected useful life of the engine. Additionally, based on design features these manufacturers build into their engines, they have a good idea of the expected useful life in such applications. Similarly, EPA expects that manufacturers of Class I–A and Class I–B engines will have a good idea of the types of equipment their engines are expected to be used in and, from their marketing information, a reasonably accurate projection of the relative volumes in such applications. Given that these engines will be used in new applications, manufacturers should have an even clearer understanding of these projections. Relying on this information, manufacturers should be able to make good selections of appropriate useful life categories for their engines. While this proposal leaves that responsibility to the manufacturer, EPA expects it would periodically review the manufacturers' decisions to ensure this regulation is being properly implemented and to determine whether modifications to the rules were appropriate. This proposed approach would result in the same regulatory requirement as the State of California, eliminating any extra burden in this regard due to federal rules.

B. Averaging, Banking, and Trading

In today's SNPRM, EPA is proposing to make the comprehensive certification averaging, banking, and trading (ABT) program recently adopted for nonhandheld Phase 2 engines available for Phase 2 handheld engines, Class I–A, and Class I–B engines. Averaging means the exchange of emission credits among engine families within a given engine manufacturer's product line. Averaging allows a manufacturer to certify one or more engine families to Family Emissions Limits (FELs) above the applicable emission standard. However, the increased emissions would have to be offset by one or more engine families certified to FELs below the same emission standard, such that the average emissions in a given model year from all of the manufacturer's families (weighted by various parameters including engine power, useful life, and number of engines produced) are at or below the level of the emission standard. Banking means the retention of emission credits by the engine manufacturer generating the credits for use in future model year averaging or trading. Trading means the exchange of emission credits between engine manufacturers which then can be used for averaging purposes, banked for future use, or traded to another engine manufacturer.

The following section describes the proposed ABT program for handheld engines, Class I–A engines, and Class I–B engines. The basic framework of the ABT program is the same as that recently finalized for nonhandheld engines. The proposed program would be the first ABT program for handheld engines, since the Phase 1 rule did not include an ABT program. The January 1998 NPRM included an ABT program, however, the proposed program was limited to nonhandheld engines only. Given the level of the standards contained in the January 1998 NPRM for handheld engines, EPA did not believe an ABT program was necessary for handheld engines. However, because EPA is now proposing significantly more stringent Phase 2 standards for handheld engines, EPA believes an ABT program is an important element in making the stringent Phase 2 emissions standards proposed today achievable with regard to technological feasibility, lead time, and cost. The proposed ABT program is intended to enhance the flexibility offered to engine manufacturers that will be needed in transitioning their product lines to meet the stringent $HC+NO_X$ standards being proposed. The proposed ABT program would also encourage the early introduction of cleaner engines certified under the Phase 2 requirements, thus securing earlier emission benefits. EPA requests comments on the proposed ABT program as well as alternative programs that would provide incentives for manufacturers to achieve emission reductions earlier than required by the proposed standards.

EPA believes that the new ABT program is consistent with the statutory requirements of section 213 of the Clean Air Act. Although the language of section 213 is silent on the issue of averaging, it allows EPA considerable discretion in determining what regulations are most appropriate for implementing section 213. The statute does not specify that a specific standard or technology must be implemented, and it requires EPA to consider costs, lead time, and other factors in making

its determination of ''the greatest degree of emissions reduction achievable through the application of technology which the Administrator determines will be available.'' Section 213(a)(3) also indicates that EPA's regulations may apply to nonroad engine classes in the aggregate, and need not apply to each nonroad engine individually.

As noted above, the proposed ABT program would apply to all classes of handheld engines as well as Class I–A and Class I–B engines. The ABT program would be available for $HC+NO_X$ emissions but will not be available for CO emissions. The ABT program would also apply to natural gas-fueled engines. All credits for natural gas-fueled engines would be determined against the standards to which the engine certified (either the $HC+NO_X$ standard or the optional $NMHC+NO_X$ standards noted earlier). Under the proposal, manufacturers would be allowed to freely exchange $NMHC+NO_X$ credits with $HC+NO_X$ credits.

The ABT program contained in the January 1998 NPRM proposed some restrictions on cross-class averaging for nonhandheld engines. However, the recent final rule eliminated most of those restrictions. Given the level of the standards recently finalized for nonhandheld engines and the level of the standards contained in today's proposal, EPA is far less concerned that credits from one class could result in delays in technology improvement for other classes, and does not believe that any cross-class restrictions are necessary beyond those retained in the final nonhandheld Phase 2 rulemaking. Therefore, today's SNPRM proposes no additional restrictions on credit exchanges across any of the classes of small SI engines. Under the proposed program, manufacturers would be allowed to exchange credits from handheld engines to nonhandheld engines. EPA specifically requests comment on the cross-class exchange of credits between handheld and nonhandheld engines.

Under an ABT program, a manufacturer establishes a family emission limit (FEL) for an engine family that takes the place of the emission standard for all compliance determinations. As part of the ABT program, EPA is proposing upper limits on the FEL values that may be declared by manufacturers under the Phase 2 standards. For Classes III, IV and V, EPA is proposing FEL upper limits based on the Phase 1 standards, adjusted to account for expected average deterioration over the useful life period of these engines. The proposed $HC+NO_x$ FEL upper limits are 300 g/kW-hr for Class III engines, 246 g/kW-hr for Class IV engines, and 166 g/kW-hr for Class V engines. For the newly proposed categories of Class I–A and Class I–B engines, EPA is proposing $HC+NO_x$ FEL upper limits of 94 g/kW-hr and 50 g/kW-hr, respectively. The Class I–A level is based on the maximum certification level of current Phase 1 engines similar in size to those expected to be certified as Class I–A engines (a 26 cc Class IV engine certified to a new engine level of 37.6 g/kW-hr $HC+NO_x$), adjusted to account for an estimated maximum deterioration factor of 2.5 over the useful life of the engine. The Class I–B level is based on the maximum new engine emissions level expected from Class I–B engines (estimated to be 20 g/kW-hr $HC+NO_x$) adjusted to account for an estimated maximum deterioration factor of 2.5 over the useful life of the engine.

EPA is proposing that all credits should be calculated based on the difference between the manufacturer-established FEL and the Phase 2 $HC+NO_x$ standard for the applicable model year using the following equation.

$$\text{Credits} = (\text{Standard}—\text{FEL}) \times \text{Production} \times \text{Power} \times \text{Useful life} \times \text{Load Factor}$$

At the time of certification, manufacturers would be required to supply information to EPA on the terms used in the above noted equation. ''Production'' represents the manufacturer's U.S. production of engines for the given engine family, excluding exported engines and engines that will be sold in California. ''Power'' represents the maximum modal power of the certification test engine over the certification test cycle. ''Useful Life'' is the regulatory useful life established by the manufacturer for the given engine family. ''Load Factor'' is a constant that is dependent on the test cycle over which the engine is certified.

Under the proposed ABT program, credits would have an unlimited credit life for the duration of the Phase 2 program and would not be discounted in any manner.

Under the proposed ABT program, manufacturers of handheld engines would be allowed to use portions of the ABT program prior to implementation of the Phase 2 standards to provide an incentive to accelerate introduction of cleaner technologies into the marketplace. The Agency believes that making bankable credits available prior to the effective date of the new standards would reward those manufacturers who take on the responsibility of complying with the Phase 2 requirements sooner than required and would also result in early environmental benefits.

Under the proposed early banking provisions for handheld engines, manufacturers would be allowed to begin using the averaging and banking portions of the ABT program beginning with the 2000 model year for engines certified to the Phase 2 requirements and produced after the effective date of this action. Manufacturers would be allowed to generate early credits from those engine families with FELs below the initial Phase 2 $HC+NO_x$ standards for the appropriate engine class (i.e., 226 g/kW-hr for Class III engines, 187 g/kW-hr for Class IV engines, and 131 g/kW-hr for Class V engines). This proposed approach for early credits from handheld engines is different than the approach recently finalized for nonhandheld engines. Under the recently finalized Phase 2 rule for nonhandheld engines, early credits are only available for engines with FELs below the final standards, not the initial phase in standards. EPA believes a different approach is appropriate for handheld engines because the proposed Phase 2 handheld engine standards represent such dramatic reductions from the Phase 1 standards that will require the complete redesign of nearly every handheld engine currently produced. In contrast for nonhandheld engines, there are already a significant number of engines being produced that EPA believes would already meet the recently finalized Phase 2 standards. Because of the increased effort engine manufacturers will need to expend to meet the proposed Phase 2 handheld standards, EPA believes it is appropriate to allow manufacturers to generate early credits from engines certified with FELs below the initial Phase 2 standards rather than the final Phase 2 standards. If the final Phase 2 handheld engine standards were used for the determination of early credits, the ability of engine manufacturers to generate early credits would be so severely constrained as to make this option not useful; neither the manufacturer nor the environment would benefit from the such an early credit program design. Because the proposed Phase 2 standards for Class I–A and Class I–B engines are scheduled to take effect with the 2000 model year, there is no need to provide manufacturers with the ability to earn early credits from such engines.

All engines for which a manufacturer generates early credits would have to comply with all of the proposed requirements for Phase 2 engines (e.g., the Production Line Testing program

requirements). Manufacturers of handheld engines would not be allowed to trade their early engine credits to other manufacturers until the first effective model year of the Phase 2 standards for the applicable engine class. EPA requests comments on the design of the early credits provisions contained in today's proposal.

As discussed in section II.D. of today's document, EPA is proposing several compliance flexibility provisions for engine manufacturers and equipment manufacturers that allow the limited use of Phase 1 engines in the Phase 2 time frame. Phase 1 engines sold by engine manufacturers under the flexibility provisions would be excluded from the ABT program. In other words, engine manufacturers would not have to use credits to certify Phase 1 engines used for the flexibility provisions even though they would likely exceed the proposed Phase 2 standards.

As noted elsewhere in today's document, EPA is proposing a number of provisions that address post-certification compliance aspects of the proposed standards. In one specific case, EPA would allow manufacturers to use credits from the certification ABT program to address excess emissions situations determined after the time of certification. As noted in the discussion on compliance, EPA does not believe that the typical type of enforcement action that could be taken when a substantial nonconformity is identified (i.e., an engine family recall order) would generally be workable for small SI engines given the nature of the market. Instead, for the purposes of implementing the PLT program, EPA is proposing provisions to allow manufacturers to use engine certification ABT credits to offset limited emission performance shortfalls for past production of engines determined through the PLT program as described in section II.C. of today's SNPRM. Under the proposed provisions, manufacturers would be allowed to use small SI engine certification ABT credits available to them to offset such emission performance shortfalls.

Under today's proposal, EPA would not allow manufacturers to automatically use ABT credits to remedy a past production nonconformance situation in the Selective Enforcement Audit (SEA) program. As described in today's SNPRM, EPA expects to primarily rely on the PLT program to monitor the emissions performance of production engines. However, EPA expects that SEAs may be conducted in certain cases. Therefore, as discussed in section II.C., if EPA were to determine that an engine family is not complying with the standards as the result of an SEA, EPA would work with the manufacturer on a case-by-case basis to determine an appropriate method for dealing with such a nonconformity. The option(s) agreed upon by EPA and the engine manufacturer might, or might not, include the use of ABT credits to make up for any ''lost'' emission benefits uncovered by the SEA.

All of these aspects of the proposed handheld ABT program are consonant with the final ABT program recently adopted for nonhandheld Phase 2 engines.

C. Compliance Program

The compliance program being proposed today is comprised of three parts: a pre-production certification program during which the manufacturer would evaluate the expected emission performance of the engine design including the durability of that emission performance; an assembly line test program which would sample products coming off the assembly line to assure the design as certified continues to have acceptable emission performance when put into mass production; and a voluntary in-use test program during which participating manufacturers would evaluate the in-use emission performance of their product under typical operating conditions. EPA would also have the option to run an SEA program and its own in-use testing for small SI engines.

Under the proposed compliance programs for small handheld SI engines, a manufacturer would divide its product offering based upon specific design criteria which have a potential for significantly different emission performance; these subdivisions are called engine families. Each engine family would be required to meet the standard applicable for the class in which that engine resides unless the manufacturer chooses to participate in the ABT program also being proposed today. (See section II.B. of today's SNPRM for discussion of the proposed ABT program.) The other provisions of the compliance program are explained in more detail below. In all cases, to the best of EPA's knowledge, the requirements of this proposed federal compliance program would be sufficiently similar to the requirements of the California ARB program for these engines such that for engine families sold in both the State of California and federally, the engines selected for testing, the test procedures under which they are tested and the data and other information required to be supplied by regulations can be the same under both programs. Thus, EPA expects that a manufacturer would be able to compile one application for certification satisfying the information needs of both programs, saving the manufacturer time and expense. Similarly, EPA and the California ARB expect to share information from their compliance programs such that any production line testing or in-use testing conducted for one agency would satisfy the similar needs of the other agency, again minimizing the burden on the manufacturers.

1. Certification

This section addresses the proposed certification program for engine manufacturers covered by today's proposal. The certification process as required in the Act is an annual process and requires that manufacturers demonstrate that regulated engines will meet appropriate standards throughout their useful lives. The Act prohibits the sale, importation or introduction into commerce of regulated engines when not covered by a certificate.

Under the January 1998 proposal, manufacturers of handheld engines would have been required to establish deterioration factors for each engine family based on an analysis of technically appropriate data. This data could have included results from the proposed field/bench adjustment program, the proposed handheld engine in-use testing program, as well as other appropriate testing data. The proposed certification requirements for handheld engines were different than those proposed for nonhandheld engines.

Based on comments received on the January 1998 NPRM and EPA's further evaluation of the originally proposed certification program, EPA is revising the proposed certification program for Phase 2 handheld engines significantly. EPA received a significant number of comments regarding the complexity of the proposed certification program, the prohibitive expense of field aging engines, and the advantages of harmonizing EPA's final certification program with that of the California ARB. EPA now believes the complexity of the originally proposed program would make it difficult to manage and organize the certification program for both industry and EPA. EPA also believes that harmonizing its programs with the California ARB would allow the industry to more efficiently comply with the reproposed emission standards and requirements. Additionally, EPA is concerned the field/bench adjustment program may not be statistically reliable enough to establish appropriate

deterioration factors. (In an effort to control the cost of this program, only a minimum amount of data was proposed to be required; this small amount of data would hurt the statistical reliability of any resulting decision.)

In light of these comments and concerns, EPA is reproposing a significantly less complex certification program that would harmonize the handheld Phase 2 program with the requirements of the California ARB's Regulations for 1995 and Later Small Off-Road Engines, amended January 29, 1999. In the reproposed program, the requirements for manufacturers of handheld engines would be the same as those recently finalized for nonhandheld engines. Under today's proposal, manufacturers of handheld engines would be required to demonstrate that their regulated engines comply with appropriate emission standards throughout the engines' useful lives. To account for emission deterioration over time, manufacturers would need to establish deterioration factors for each regulated pollutant for each engine family. This proposal allows manufacturers to establish deterioration factors by using bench aging procedures which appropriately predict the in-use emission deterioration expected over the useful life of an engine or an in-use evaluation which directly accounts for this deterioration. As is the case with many EPA mobile source regulations, the multiplicative deterioration factors could not be less than one. Additionally, where appropriate and with suitable justification, deterioration factors could be carried over from one model year to another and from one engine family to another.

Today's proposal also provides flexibility for small volume engine manufacturers and small volume engine families. Under the proposed provisions, handheld engine manufacturers would be allowed the option of using assigned deterioration factors established by the Agency. The deterioration factors, either assigned or generated, would be used to determine whether an engine family complies with the applicable emission standards in the certification program, the production line testing program, and the Selective Enforcement Auditing program.

As in Phase 1, manufacturers would be allowed to submit certification applications to the Agency electronically, either on a computer disk or through electronic mail, making the certification application process efficient for both manufacturers and the Agency. Also, EPA and the California ARB expect to have a common application format allowing manufacturers to more easily apply for certification.

In today's SNPRM, EPA is also proposing a method by which manufacturers can separately certify configurations for use at high altitude. Manufacturers are currently required by the Phase 1 rule to certify engines for use at any altitude, but the rule does not specifically address separate high altitude and low altitude configuration testing. The existence of, and the need for the high altitude modifications has been a topic of recent discussions between EPA and manufacturers. To allow an engine to perform properly and meet emission standards while being operated at high altitudes, many manufacturers have developed special high altitude carburetor jets or high altitude kits. However, if an engine with such a kit installed is removed from high altitude, the kit would have to be removed and the engine returned to its original configuration for the engine to continue to perform properly and meet emission standards.

Today's proposal would allow manufacturers of both handheld and nonhandheld engines to certify an engine for separate standard and high altitude configurations. All engines would be required to meet, under all altitude conditions, the emission standards proposed today. The proposed method would be available for both Phase 1 and Phase 2 handheld and nonhandheld engines. Without such a certification option, installation of an altitude kit and other associated modifications might be considered tampering by EPA. No test data on engines with high altitude modifications performed would be required as a condition of certification, as this would add significantly to the manufacturer's certification compliance testing cost. Furthermore, no testing seems necessary since the altitude kits and associated modifications are intended to compensate for the change in air density when moving to high altitude by returning the engine to approximately the same operating point as evaluated during required certification testing. Similarly, no special labeling would be required for engines which have such altitude kits certified or for those in-use engines which have had altitude modifications performed. Consumers have a natural incentive to have the high altitude kit installed and adjustments performed when using an engine at altitude as this greatly improves performance; for the same reason EPA expects the modifications to be removed when returning the engine to low altitude. However, EPA believes some additional assurance is needed that the high altitude modifications are designed to provide good emission control and that the instructions for making these modifications are clear and readily available and thus likely to be performed correctly.

To provide this assurance, this proposal would require a manufacturer to list these altitude kits with their appropriate part numbers along with all the other certified parts in the certification application. In the application, the manufacturer would have to declare the altitude ranges at which the appropriate kits would be installed on or removed from an engine for proper emission and engine performance. The manufacturer would also be required to include a statement in the owner's manual for the engine or engine/equipment combination (and other maintenance-related literature intended for the consumer) that also declared the altitude ranges at which the appropriate kits must be installed or removed. Finally, the manufacturer, using appropriate engineering judgement which, at the manufacturer's option, could also include test data, would be required to determine that an engine with the altitude kit installed would meet each emission standard throughout its useful life. The rationale for this assessment would need to be documented and provided to the Agency as part of the certification application.

2. Production Line Testing—Cumulative Summation Procedure

This section addresses the proposed production line testing (PLT) program for engines covered by today's SNPRM. The proposed PLT program contained is the same as that adopted recently for nonhandheld engines and would require manufacturers to conduct manufacturer-run testing programs using the Cumulative Summation Procedure (CumSum).[6] The CumSum program, as proposed today, would require manufacturers to conduct testing on each of their engine families (unless they were relieved of this requirement under provisions granting flexibility). The maximum sample size that would be required for each engine family is 30 engines or 1 percent of a family's projected production, whichever is smaller. However, the actual number of

[6] The CumSum procedure has been promulgated for marine engines in EPA's spark-ignition marine rule at 40 CFR part 91 (61 FR 52088, October 4, 1996). In this section, ''PLT'' refers to the manufacturer-run CumSum procedure. ''PLT'' does not include Selective Enforcement Auditing (SEA), which is addressed separately in section II.C.4. of this preamble.

tests ultimately required would be determined by the results of the testing. With the proposed program, the EPA PLT program and the corresponding California ARB program would be harmonized, requiring manufacturers to use the same CumSum procedure for testing production engines for both agencies. Manufacturers would be able to submit PLT reports to EPA electronically, either on a computer disk or through electronic mail, which should save both the industry and EPA time and money.

As mentioned in the discussion of the proposed ABT program, above, manufacturers could, for a limited amount of production, use ABT credits to offset the estimated excess emissions of previously produced noncomplying engine designs as determined in the PLT program. (The amount of excess emissions would be determined based on the difference between the new FEL established by the manufacturer as a result of the PLT program and the original FEL established prior to the PLT program.) Under today's proposal, a manufacturer could raise the FEL for one engine family per model year. If a PLT program failure required a manufacturer to raise the FEL for more than one engine family per model year, the manufacturer could do so only if the applicable engine family represented no more than ten percent of the manufacturer's production for that model year. For any additional engine families that were found to be in noncompliance as a result of the PLT program, the engine manufacturer would need to conduct projects approved by EPA that were designed to offset the excess emissions from those engines.

With regard to future production of engines identified to be in noncompliance as a result of PLT testing, the manufacturer would be expected to correct the noncompliance problem causing the emission noncompliance either by changing the production process, changing the design (which would require recertification) or raising the FEL to compensate for the higher emissions (also requiring recertification). In the event a manufacturer raised an FEL as a result of a PLT failure, it could do so for future production as well as past production as described above which would require a calculation of credits the manufacturer would need to obtain for the past production engines. EPA expects few instances in which the manufacturer would need to correct a PLT failure through raising the FEL since that would imply the manufacturer incorrectly set the initial FEL for that family. Frequent use of this remedy would suggest the manufacturer was incapable of correctly setting the FELs for its product, in which case EPA would have to reconsider allowing a manufacturer to participate in the ABT program at its option. It should also be noted that compliance with the applicable standard (or the applicable FEL) will be required of every covered engine. Thus, every engine that failed a PLT test would be considered in noncompliance with the standards and must be brought into compliance. EPA's rules allowing the use of the average of tests to determine compliance with the PLT program is intended only as a tool to decide when it is appropriate to suspend or revoke the certificate of conformity for that engine family, and is not meant to imply that not all engines have to comply with the standards or applicable FEL.

As discussed in the flexibilities section, EPA is proposing that small volume manufacturers and small volume engine families need not be included in the PLT program at the manufacturer's option.

3. Voluntary In-Use Testing

This section addresses the proposed voluntary in-use testing program. The January 1998 proposal would have required manufacturers of handheld engines to conduct in-use testing on a maximum of 25 percent of their engine families each model year. The proposal would also have allowed these handheld engine manufacturers to fulfill the in-use testing requirements by testing bench-aged engines, provided the manufacturer has successfully completed the field/bench adjustment program. Finally, under the January 1998 proposal, handheld engine manufacturers would have been allowed to participate in an in-use averaging, banking, and trading program.

The foundation of the in-use compliance program for manufacturers of handheld engines in the January 1998 proposal was the Field/Bench Adjustment Program. Based on a thorough evaluation of the proposed program, EPA does not believe the Field/Bench Adjustment Program would be statistically reliable enough on which to build an in-use testing compliance program due to the relatively small amount of data which would have been required. Additionally, in developing this SNPRM, EPA has attempted to harmonize this proposal as closely as possible with the California ARB's Regulations for 1995 and Later Small Off-Road Engines, amended January 29, 1999, allowing the industry to more efficiently comply with the standards and requirements. Based on these factors, as well as industry comments regarding the prohibitive expense of conducting field aged in-use tests, EPA is not including the in-use program contained in the January 1998 NPRM as part of today's reproposal.

However, EPA still desires meaningful in-use data so that it can more appropriately assess the actual emissions inventory of this industry. Therefore, EPA is proposing a voluntary in-use testing program. The proposed voluntary in-use testing program for engines covered by today's SNPRM is the same as the voluntary in-use testing program recently finalized by the Agency for nonhandheld engines. The proposed voluntary in-use testing program would give engine manufacturers the option of using a portion of their PLT resources to generate field aged emissions data. At the start of each model year, manufacturers could elect to place up to 20 percent of their engine families in this voluntary program. For those families in this program, manufacturers would not be required to conduct PLT for two model years, the current year and the subsequent year. (The California ARB has indicated that they would also exempt families in such an in-use testing program from their PLT requirements.) Instead, manufacturers would place a minimum of three randomly selected production engines in existing consumer-owned, independently-owned, or manufacturer-owned fleets. Manufacturers would install the engines in equipment that represents at least 50 percent of the production for an engine family and age the engine/equipment combination in actual field conditions to at least 75 percent of each engine's useful life. Once an engine in this program had been sufficiently field aged, the manufacturer would conduct an emissions test on that engine. Manufacturers would have three calendar years from the date they notified the Agency of their intent to include a family in the program to complete testing.

While the compliance program proposed today would not require a manufacturer to conduct any in-use testing to verify continued satisfactory emission performance in the hands of typical consumers, EPA believes it is worthwhile to have an optional program for such in-use testing. EPA believes it is important for manufacturers to conduct in-use testing to assure the success of their designs and to factor back into their design and/or production process any information suggesting emission problems in the field. If any

information derived from this program indicates a substantial in-use emission performance problem, EPA anticipates the manufacturer would seek to determine the nature of the emission performance problem and what corrective actions might be appropriate. EPA would offer its assistance in analysis of the reasons for unexpectedly high in-use emission performance and what actions might be appropriate for reducing such high emissions. Whether or not a manufacturer chose to conduct a voluntary in-use testing program, EPA could always choose to conduct its own in-use compliance program. If EPA were to determine that an in-use noncompliance investigation was appropriate, the Agency expects it would conduct its own in-use testing program, separate from this voluntary manufacturer testing program, to determine whether a specific class or category of engines is complying with applicable in-use standards.

4. Selective Enforcement Auditing

As noted in the January 1998 proposal, the SEA program is not the Agency's preferred production line testing program for small engines. The CumSum procedures, described above, are being proposed as the production line program that manufacturers would conduct. The SEA program is included in today's SNPRM as a ''backstop'' to the CumSum program and would be used in cases where EPA believes there is evidence of improper testing or of a nonconformity that is not being addressed by the CumSum program. The SEA program, as proposed, would also apply to engine families optionally certified to the small volume manufacturer provisions and the small volume engine family provisions, in cases where manufacturers elect not to conduct PLT testing for such families. However, as for other families, EPA does not expect families certified under the small volume provisions would be routinely tested through an SEA program.

Under today's SNPRM and in contrast to the PLT program, manufacturers who fail an SEA would not have the automatic option of using ABT credits to remedy noncomplying engines already introduced into commerce. The proposed PLT program is designed to allow a manufacturer to continually evaluate its entire production and quickly respond to the results throughout the model year. EPA believes that allowing a manufacturer to use credits, for a limited amount of engines, to remedy past production emission failures is consistent with the continual evaluation provided by the PLT program. The SEA program, in contrast, is designed to be a one time, unannounced inspection of a manufacturer's production line with definitive passing or failing results. EPA believes that in this type of a compliance program, where at most only a few engine families might be tested each year, manufacturers must place more emphasis on the transition from certification to the production line and must set initial FELs accurately. To encourage accurate FEL settings at the time of certification, the proposed SEA program would not allow manufacturers to automatically remedy SEA failures by retroactively adjusting FELs. EPA is proposing that remedies for an SEA failure would be best determined on a case-by-case basis which might or might not include the use of ABT credits depending upon EPA's assessment of the specific case.

D. Flexibilities

In the January 1998 NPRM, EPA proposed a number of flexibilities to ease the transition from the Phase 1 to the Phase 2 program, to ensure that the Phase 2 standards are cost-effective and achievable, and to reduce the compliance burden while maintaining the environmental benefits of the rule. Several comments were received on the flexibilities proposed, some supporting the proposals and others offering recommended changes. In addition, the need for modifications to the proposed set of flexibilities evolved out of the investigations which led to other changes to the proposal including the more stringent handheld engine standards, the addition of Class I–A and Class I–B engine classes, and the expanded ABT program provisions being proposed. The following section summarizes the revised flexibilities proposed with today's SNPRM. EPA requests comments on the proposed flexibilities.

1. Carry-Over Certification

Consistent with other mobile source emission certification programs, EPA is proposing to allow a manufacturer to use test data and other relevant information from a previous model year to satisfy the same requirements for the existing model year certification program as long as the data and other information are still valid. Such ''carry-over'' of data and information is common in mobile source programs where the engine family being certified in the current model year is identical to the engine family previously certified.

2. Flexibilities for Small Volume Engine Manufacturers and Small Volume Engine Families

EPA proposed a number of compliance flexibilities for small volume engine manufacturers and small volume engine families in the January 1998 NPRM. With today's SNPRM, EPA is proposing a slightly revised set of flexibilities for handheld engines that would be available to both small volume engine families and small volume engine manufacturers. The three proposed flexibilities that would be available to manufacturers of small volume engine families and small volume engine manufacturers are as follows: (1) The eligible family or manufacturer could certify to Phase 1 standards and regulations until the third year after the end of the proposed Phase 2 schedule (i.e., the 2009 model year for Classes III and IV and the 2011 model year for Class V engines); such engines would be excluded from the ABT program until they are certified to the Phase 2 standard, (2) the eligible family or manufacturer could certify using assigned deterioration factors, and (3) the eligible family or manufacturer could elect to not participate in the PLT program, however, the SEA program would still be applicable.

With regard to Class I–A and Class I–B, EPA is proposing only one of the flexibilities for small volume engine families and small volume engine manufacturers noted above. EPA is proposing to allow eligible Class I–A and Class I–B small volume engine families or manufacturers to elect to not participate in the PLT program, however, the SEA program would still be applicable. As noted earlier, the proposed Class I–A and Class I–B designations are new, and therefore there are no engine families currently certified as Class I–A or Class I–B engines. Because the engines that will be designated as Class I–A or Class I–B engines will be new designs or existing designs that are expected to be able to meet the proposed standards, EPA does not believe there is a need to offer delayed implementation of the proposed standards or allow manufacturers to use assigned deterioration factors. Therefore, EPA is not proposing either the delayed implementation flexibility or use of assigned deterioration factors flexibility for Class I–A or Class I–B.

EPA originally proposed allowing small volume engine manufacturers to continue producing Phase 1 engines until the last year of the phase in of the Phase 2 standard applicable to the engine's class. (For handheld engines,

the final year of the phase in would have been 2005 under the January 1998 NPRM.) However, since the proposed standards contained in today's SNPRM are significantly more stringent than the standards upon which the original proposed flexibility was based, the number of engine families expected to be modified and, especially, the degree of modification necessary has increased. This is expected to add significantly to the technical and resource burden on the engine manufacturers. As anticipated in the January 1998 proposal, EPA still expects the major engine manufacturers would choose to modify their small volume engine families last as these represent niche markets. Additionally, these niche applications may represent some of the more difficult engine applications due to their unique requirements. The experience gained in designing, producing and getting in-use feedback on their larger engine family designs should be helpful in minimizing the cost and assuring the performance of the small volume engines. Similarly, the design challenges for the small volume engine manufacturer because of the more stringent proposed Phase 2 standards are expected to increase, suggesting more time to accomplish the transition to Phase 2 standards would be warranted. EPA expects manufacturers would take advantage of the extra time being proposed today to smooth the transition to Phase 2 standards by bringing the small volume engines into compliance throughout this time period. Due to the fact that circumstances vary greatly from one manufacturer to another, EPA believes it would be inappropriate to mandate a percent phase-in schedule or some other mandatory rate of phase-in for these small volume engine families and small volume engine manufacturers. Therefore, EPA is proposing only a final compliance requirement that is effective three years after the end of the proposed Phase 2 phase-in schedule. EPA believes that a three year delay is appropriate based on discussions with manufacturers and given the number of engine families expected to be eligible for the proposed flexibilities. EPA has also considered the air quality impact of this proposed flexibility and believes that, under the reproposed provisions, less than two percent of the total small engine production would likely take advantage of this option to delay compliance with the Phase 2 standards with only a negligible impact on the emission benefits expected from the program.

3. Small Volume Engine Manufacturer Definition

As described earlier, EPA proposed a number of flexibilities for engine manufacturers defined as small volume engine manufacturers in the January 1998 NPRM (see section II.D.2.). EPA continues to believe flexibilities aimed at the small volume handheld engine manufacturer are appropriate and is retaining the proposed definition of small volume handheld engine manufacturers in this SNPRM. To qualify as a small volume engine manufacturer, a handheld engine manufacturer would need to produce no more than 25,000 handheld engines annually. In addition, for manufacturers of Class I–A and Class I–B nonhandheld engine families, where EPA is also proposing limited small volume engine manufacturer flexibility, a manufacturer of such engines would need to produce no more than 10,000 nonhandheld engines annually.

4. Small Volume Engine Family Definition

In the January 1998 NPRM, EPA proposed that manufacturers of small volume engine families also be provided the same flexibilities as small volume engine manufacturers (see section II.D.2.). To qualify as a small volume engine family, EPA proposed that a handheld engine family would need to have an annual production level of no more than 2,500 engines. Without such flexibilities, EPA believes the cost and other difficulties of modifying these small volume engine families to comply with the Phase 2 standards may be difficult enough that the manufacturer might either be unable to complete the modification of the engine design in time or may choose for economic reasons to discontinue production of the small volume engine family. The impact of such a scenario would of course fall on the engine manufacturer through reduced engine sales, but would also fall perhaps even more significantly on small volume equipment applications, the most typical use for these small volume engine families. Due to the unique character of these small volume equipment applications, it is quite possible that some equipment manufacturers might not be able to find a suitable replacement engine. In such a case, that equipment manufacturer would also be significantly impacted through lost sales, and consumers would be harmed through the loss in availability of the equipment.

In response to the January 1998 NPRM, the Portable Power Equipment Manufacturers Association (PPEMA) requested a ''slight upward adjustment'' of the proposed 2,500 unit cap for handheld engines. Based on PPEMA's comments, EPA has re-examined the production limits for small volume engine families and believes that the interests of preserving the availability of small volume engine families would be better served by revising the annual production cap to 5,000 units for handheld engine families. (The recent final rule for nonhandheld engines also adopted a production cap of 5,000 units for nonhandheld engines.) EPA believes this proposed change to the definition would allow a larger number of niche equipment applications to be served and the risk of loss in engine availability should be reduced. At the same time, EPA believes the potential for adverse emission impacts remains very small. Based on the higher cutoffs, EPA estimates that 98 percent of handheld engines would still be covered by the full compliance program and subject to the earliest practical implementation of the proposed rule.

Class I–A and Class I–B engine families would also be subject to a cap of 5,000 engines (the same level recently adopted for nonhandheld engines) in order to qualify as a small engine family and be eligible for the proposed small volume engine family flexibility described earlier.

5. Flexibilities for Equipment Manufacturers and Small Volume Equipment Models

In the January 1998 NPRM, EPA proposed three flexibilities aimed at assuring the continued supply under the Phase 2 regulations of engines for unique, typically small volume equipment applications. First, EPA proposed that small volume equipment manufacturers could continue using Phase 1 compliant engines through the third year after the last applicable phase-in date of the final Phase 2 standards for that engine class if the equipment manufacturer was unable to find a suitable Phase 2 engine before then. Second, EPA proposed to allow individual small volume equipment models to continue using Phase 1 compliant engines throughout the time period the Phase 2 regulation is in effect if no suitable Phase 2 engine was available and the equipment was in production at the time these Phase 2 rules were adopted. If the equipment is ''significantly modified'' then this exemption would end, since design accommodations could be made during such a modification to accept an engine meeting Phase 2 standards. Third, EPA proposed a hardship provision that would allow any equipment

manufacturer, regardless of size, for any of its applications, regardless of size, to continue using a Phase 1 engine for up to one more year beyond the last phase-in of the final standard for that engine class if the requirement to otherwise use a Phase 2 compliant engine would cause substantial financial hardship. For today's SNPRM, EPA is retaining the proposed flexibilities, except that the criteria for determining whether someone is a small volume equipment manufacturer is being revised (see section II.D.6. below).

Because the applications expected to use Class I–A or Class I–B engines will be new engines and equipment designs or designs that use engines that already exist under the Phase 1 program (and are expected to meet the proposed Phase 2 standards), EPA does not believe there is a need to provide flexibilities for small volume equipment manufacturers and small volume equipment models in the newly proposed engine classes which would allow delayed introduction of engines certified to the proposed Phase 2 standards. Therefore, no such flexibilities are being proposed for Class I–A or Class I–B.

6. Small Volume Equipment Manufacturer Definition

As part of the January 1998 NPRM, EPA proposed that small volume equipment manufacturers would be defined as those whose annual production for sale in the U.S. across all models was 5,000 or fewer pieces of equipment utilizing handheld engines.

EPA has reexamined the production cutoff level for handheld equipment manufacturers. EPA believes there would be advantages to increasing the production cutoff included in the definition for small volume handheld equipment manufacturers. (EPA's recently finalized rule for nonhandheld engines expanded the cutoff level for the definition of small volume nonhandheld equipment manufacturer to 5,000 units.) Such a change would expand the flexibilities to slightly larger manufacturers who are still, compared to the rest of the industry, among the smallest. Therefore, EPA is proposing a revised definition for small volume handheld equipment manufacturer that is based on an annual production cutoff of 25,000 or fewer units. EPA estimates that this limit would cover approximately two percent of the annual sales in the handheld category. Providing the proposed flexibilities described in the previous section should allow significant relief to these smallest equipment manufacturers while at the same time assuring the vast majority of equipment uses the lowest emitting engines available.

7. Small Volume Equipment Model Definition

EPA is retaining the small volume equipment model definition proposed in the January 1998 NPRM for today's SNPRM. As proposed, the small volume equipment model definition would cover handheld models of 2,500 or less annual production. Providing the proposed flexibilities described in the section on flexibilities for small volume equipment models should allow significant relief to equipment manufacturers while at the same time assuring the vast majority of equipment uses the lowest emitting engines available.

E. General Provisions and Recommendations

In the January 1998 NPRM, EPA discussed a number of general provisions that would impact Phase 2 engines. EPA received comments on several of these issues, as well as recommendations on other general issues. A number of these issues, including the handheld engine definition, use of engines in recreational equipment, engine labeling, and emissions warranty affect some or all of the engines covered by today's SNPRM. These general provisions and other recommendations are discussed in this section of the preamble.

1. Definition of Handheld Engine

With today's SNPRM, EPA is retaining the same definition for handheld engine as was in effect for Phase 1 and is not proposing a new definition for handheld engine, except as discussed below. It should be noted that in response to comments from Honda and others, EPA recently proposed modifications to criteria for determining whether an engine could be classified as handheld that, if finalized, would be applicable for the remainder of Phase 1 and also apply for the Phase 2 program (64 FR 5251, February 3, 1999). Under the proposed modification, a manufacturer would be permitted to exceed the weight limits (14 kg for generators or pumps, or 20 kg for one-person augers) in cases where the manufacturer could demonstrate that the extra weight was the result of using a 4-stroke engine or other technology cleaner than the otherwise allowed two stroke engine. Today's reproposed program would incorporate the Agency's decision reached in the rulemaking addressing the proposed modifications to the handheld definition.

2. Engines Used in Recreational Vehicles and Applicability of the Small SI Regulations to Model Airplanes

Today's SNPRM does not propose any revisions to the provisions relating to engines used in recreational vehicles established in the Phase 1 program, except as discussed below. It should be noted that EPA recently issued a proposal that addresses the applicability of the small SI regulations to engines used in model airplane applications (64 FR 5251). Under this recent proposal, EPA has proposed to consider engines that serve ''only to propel a flying vehicle * * * through air'' to be recreational engines provided they also meet the other existing criteria that apply to that term. As ''recreational'' engines they would be effectively excluded from the small SI program. Today's reproposed program would incorporate the Agency's decision reached in the rulemaking addressing the proposed modifications to the recreational vehicle definition.

3. Engine Labeling

Under the January 1998 NPRM, EPA proposed that manufacturers would be required to state the useful life hours on the engine label. For nonhandheld engines only, EPA proposed an alternative to this engine labeling requirement. Under the alternative proposal, nonhandheld engine manufacturers could use a designator of useful life hours (e.g., A, B, or C) and then include words on the label which would direct the consumer to the owner's manual for an explanation of the meaning of the useful life designator.

As indicated in the January 1998 NPRM, EPA believes that requiring manufacturers to include on the engine label the number of hours of emission compliance for which the engine is properly certified would provide an important tool to consumers in making their purchase decisions between competing engines. In addition, EPA anticipates manufacturers will use the useful life hours of the engine as a marketing tool. EPA originally included the alternative option noted above based on the concern expressed by nonhandheld engine manufacturers that consumers could be confused by the meaning of the useful life period if the specific number of hours was included on the label. However, as indicated in the preamble to the January 1998 NPRM, EPA was concerned that an alternative designation, such as ''A, B, or C'' may not provide the same useful information to the consumer as including the useful life hours directly

on the label. EPA is also aware of labeling options being considered by California that would allow removing the actual hours of operation from the engine label and including additional information on the product, perhaps not permanently affixed to the engine, which would satisfy the need to properly inform consumers. Allowing such labeling would also serve the goal of harmonization which was supported by PPEMA in their comments on the January 1998 NPRM.

With today's SNPRM, EPA is proposing to extend the alternative labeling option contained in the January 1998 NPRM, as noted above, to handheld engines. The Agency sees no reason why consumers would react differently to labeling information whether it is affixed to a handheld engine or a nonhandheld engine. Additionally, this SNPRM proposes to allow other labeling options provided the Administrator determines that such options satisfy the information intent of the label. This proposed option is intended to allow for the nationwide use of the California labeling system. In evaluating the adequacy of an alternative label, EPA would consider the extent to which the manufacturer's alternative engine label combined with other readily accessible consumer information adequately informs the consumer of the emission performance of the engine. The reproposed labeling requirements would be the same as those recently adopted in the final Phase 2 nonhandheld rulemaking.

It should be noted that EPA expects to work in partnership with the industry in developing consumer outreach material to better inform consumers of the emission improvements available through purchase of equipment using Phase 2 engines. EPA expects such outreach material will better serve the informational needs of consumers than just relying on any of the proposed labeling options.

4. Emission Warranty

Under the current regulations, the base emission performance warranty extends for a period of two years of engine use from the date of sale. However, since the January 1998 NPRM was issued, manufacturers of handheld engines have indicated to EPA that there are applications, particularly for commercial equipment, in which the useful life hours of the entire piece of equipment can be surpassed in one year of typical in-use operation. Therefore, EPA is proposing an option whereby manufacturers of handheld engines could request approval from EPA to adopt an emission warranty period of one year if they can demonstrate such a shorter warranty period would be appropriate for that engine/equipment combination. In addition, EPA is dropping the proposed warranty provisions from the January 1998 NPRM which would have required a different Phase 2 warranty statement compared to the Phase 1 warranty statement. Therefore, the Phase 2 provisions specifying what manufacturers must warrant, would remain unchanged from the existing Phase 1 program, and would match those contained in the recently adopted final Phase 2 nonhandheld rulemaking.

III. Projected Impacts

A. Environmental Benefit Assessment

National Ambient Air Quality Standards (NAAQS) have been set for a number of criteria pollutants, including ozone (O_3), which adversely affect human health, vegetation, materials and visibility. Concentrations of ozone are impacted by HC and NO_X emissions. EPA believes that the standards proposed in this rule would reduce emissions of HC and NO_X and help most areas of the nation in their progress towards attainment and maintenance of the NAAQS for ozone. The following section provides a summary of the roles of HC and NO_X in ozone formation. The following section also addresses the estimated emissions impact of this rule, and the health and welfare effects of ozone, CO, and hazardous air pollutants.

1. Roles of HC and NO_X in Ozone Formation

Both HC and NO_X contribute to the formation of tropospheric ozone through a complex series of reactions. EPA's primary reason for controlling emissions from small SI handheld engines is the role of their HC emissions in forming ozone. Of the major air pollutants for which NAAQS have been designated under the CAA, the most widespread problem continues to be ozone, which is the most prevalent photochemical oxidant and an important component of smog. Ozone is a product of the atmospheric chemical reactions involving oxides of nitrogen and volatile organic compounds. These reactions occur as atmospheric oxygen and sunlight interact with hydrocarbons and oxides of nitrogen from both mobile and stationary sources.

A critical part of this problem is the formation of ozone both in and downwind of large urban areas. Under certain weather conditions, the combination of NO_X and HC has resulted in urban and rural areas exceeding the national ambient ozone standard by as much as a factor of three. Thus it is important to control HC over wider regional areas if these areas are to come into and maintain compliance with the ozone NAAQS.

2. Health and Welfare Effects of Tropospheric Ozone

Ozone is a powerful oxidant causing lung damage and reduced respiratory function after relatively short periods of exposure (approximately one hour). The oxidizing effect of ozone can irritate the nose, mouth, and throat causing coughing, choking, and eye irritation. In addition, ozone can also impair lung function and subsequently reduce the respiratory system's resistance to disease, including bronchial infections such as pneumonia.

Elevated ozone levels can also cause aggravation of pre-existing respiratory conditions such as asthma.[7] Ozone can cause a reduction in performance during exercise even in healthy persons. In addition, ozone can also cause alterations in pulmonary and extra pulmonary (nervous system, blood, liver, endocrine) function. Elevated ozone levels have also been shown to affect vegetation, including reduced agricultural and commercial forest yields, reduced growth and decreased survivability of tree seedlings, increased tree and plant susceptibility to disease, pests, and other environmental stresses, and potential long-term effects on forests and ecosystems.

High levels of ozone have been recorded even in relatively remote areas, since ozone and its precursors can travel hundreds of miles and persist for several days in the lower atmosphere. Ozone damage to plants, including both natural forest ecosystems and crops, occurs at ozone levels between 0.06 and 0.12 ppm.[8] Repeated exposure to ozone levels above 0.04 ppm can cause reductions in the yields of some crops above ten percent.[9] The value of crops lost to ozone damage, while difficult to estimate precisely, has been estimated to be on the order of $2 billion per year in the United States.[10] The effect of ozone on complex ecosystems such as forests is even more difficult to quantify. However, there is evidence that some forest types are negatively affected by

[7] United States Environmental Protection Agency, Review of the National Ambient Air Quality Standards for Ozone—Assessment of Scientific and Technical Information: OAQPS Staff Paper, EPA–450/2–92–001, June 1989, pp. VI–11 to 13.

[8] U.S. EPA, *Review of NAAQS for Ozone,* p. X–10.

[9] U.S. EPA, *Review of NAAQS for Ozone,* p. X–10.

[10] U.S. EPA, *Review of NAAQS for Ozone,* p. X–22.

ambient levels of ozone.[11] Specifically, in the San Bernardino Mountains of southern California, ozone is believed to be the agent responsible for the slow decline and death of ponderosa pine trees in these forests since 1962.[12]

Finally, by trapping energy radiated from the earth, tropospheric ozone may contribute to heating of the earth's surface via the ''greenhouse effect,'' thereby contributing to global warming,[13] although tropospheric ozone is also known to reduce levels of UVB radiation reaching the earth's surface, the increase of which is expected to result from depletion of stratospheric ozone.[14]

3. Estimated Emissions Impact of the Supplemental Proposed Regulations

The emission standards contained in today's proposal are expected to reduce average in-use exhaust HC+NO_X emissions from small SI handheld engines by approximately 78 percent beyond Phase 1 standards for handheld engines by the year 2027, by which time a complete fleet turnover is expected. This translates into an annual nationwide reduction of roughly 264,000 tons of exhaust HC+NO_X in the year 2027 over that expected from Phase 1. Reductions in CO levels beyond Phase 1 levels, due to improved technology, are also to be expected but have not been estimated because EPA does not believe it can accurately quantify the expected benefit.

Along with the control of all hydrocarbons, the proposed standards should be effective in reducing emissions of hydrocarbons considered to be hazardous air pollutants (HAPs), including benzene and 1,3-butadiene. However, the magnitude of reduction would depend on whether the control technology reduces the individual HAPs in the same proportion as total hydrocarbons.

These emission reduction estimates are based on in-use population projections using growth estimates, engine attrition (scrappage), activity indicators and new and in-use engine emission factors. Data on activity indicators were based on the Phase 1 nonroad small SI regulation. Estimates of engine populations were based on population data available from the PSR databases[15], data provided by small SI engine and equipment manufacturers to EPA, and on a study done for the California Air Resources Board by Booz Allen & Hamilton. Population projections into the future are based on a linear growth assumption. Attrition rates (based on the probability that an engine remains in service into a specific calendar year) for all engines included in this analysis are developed on the assumption that the equipment attrition function may be represented by a cumulative Normal distribution function. The in-use emission factors are based on a multiplicative deterioration factor which is a function of the cumulative hours of equipment usage.

Table 4 presents the emission inventories for the handheld engines covered by this proposed rule which were developed using EPA's NONROAD Model. The total annual nationwide HC and NO_X emissions from small SI handheld engines included in this proposal were estimated for both the baseline scenario (i.e., with Phase 1 controls applied) and the controlled scenario (i.e., the proposed Phase 2 controls). Because there are so few engines expected to be certified under the proposed Class I-A and Class I-B standards, EPA has not included any emissions from such engines in the inventory or benefit projections. The reader is directed to Chapter 6 of the Supplemental Draft RIA for a complete description of the inventory modeling analysis.

TABLE 4.—PROJECTED ANNUAL EXHAUST HC+NO_X Emissions from Handheld Equipment (Tons/Year)

Year	With Phase 1 Controls only	With the Proposed Phase 2 Program	Tons Reduced due to the Proposed Phase 2 Program	Percentage Reduction (percent)
2000	207,257	207,257	.....	.....
2005	227,039	126,602	100,437	44.2
2010	250,390	60,992	189,398	75.6
2015	274,072	61,583	212,489	77.5
2020	297,967	66,276	231,691	77.8
2025	321,400	71,436	249,964	77.8

4. Health and Welfare Effects of CO Emissions

CO is a colorless, odorless gas which can be emitted or otherwise enters into ambient air as a result of both natural processes and human activity. Although CO exists as a trace element in the troposphere, much of human exposure resulting in elevated levels of carboxyhemoglobin (COHb) in the blood is due to incomplete fossil fuel combustion, as occurs in small SI engines.

The concentration and direct health effect of CO exposure are especially important for small SI handheld engines because the operator of a handheld application is close to the equipment as it functions. In some applications, the operator must be adjacent to the exhaust outlet and is in the direct path of the exhaust as it leaves the engine.

The toxicity of CO effects on blood and tissues, and how these effects manifest themselves as organ function changes, have also been topics of substantial research efforts. Such studies provided information for establishing the National Ambient Air Quality Standard for CO. The current primary and secondary NAAQS for CO are 9 parts per million for the one-hour average and 35 parts per million for the eight-hour average.

5. Health and Welfare Effects of Hazardous Air Pollutant Emissions

The focus of today's proposal is reduction of HC emissions as part of the solution to the ozone nonattainment problem. However, direct health effects

[11] U.S. EPA, *Review of NAAQS for Ozone*, p. X–27.

[12] U.S. EPA, *Review of NAAQS for Ozone*, p. X–29.

[13] NRC, *Rethinking the Ozone Problem*, p. 22.

[14] *The New York Times*, September 15, 1992, p. C4.

[15] Power Systems Research, Engine Data and Parts Link data bases, St. Paul, Minnesota, 1992.

are also a reason for concern due to direct human exposure to emissions from small SI handheld engines during the operation of handheld equipment. Of specific concern is the emission of hazardous air pollutants (HAPs). In some applications, the operator must be adjacent to the exhaust outlet and is in the direct path of the exhaust as it leaves the engine. Today's regulatory proposal should be effective in reducing HAPs such as benzene and 1,3-butadiene, in so far as these are components of the HC emissions being reduced by the Phase 2 standards.

Benzene is a clear, colorless, aromatic hydrocarbon which is both volatile and flammable. Benzene is present in both exhaust and evaporative emissions. Health effects caused by benzene emissions differ based on concentration and duration of exposure. The International Agency for Research on Cancer (IARC), classified benzene as a Group I carcinogen, namely an agent carcinogenic to humans. Occupational studies continue to provide the bulk of evidence of benzene's carcinogenicity. Workers are exposed at much higher levels than is the general public. Human epidemiologic studies of workers in highly exposed occupations have demonstrated that exposure to benzene can cause acute nonlymphocytic leukemia and other blood disorders, that is, preleukemia and aplastic anemia. Additionally, changes in blood and bone marrow consistent with hematotoxicity are recognized in humans and experimental animals. Benzene has also been linked with genetic changes in humans and animals.

1,3-butadiene is a colorless, flammable gas at room temperature. This suspected human carcinogen is insoluble in water and its two conjugated double bonds make it highly reactive. 1,3-butadiene is formed in internal combustion engine exhaust by the incomplete combustion of the fuel and is assumed not present in evaporative and refueling emissions. The Health Risk Assessment of 1,3-Butadiene (EPA/600/P–98/001A, February 1998), concludes that 1,3-butadiene is a known human carcinogen, based on three types of evidence: (1) Excess leukemia in workers occupationally exposed to 1,3-butadiene (by inhalation), (2) occurrence of a variety of tumors in mice and rats by inhalation, and (3) evidence in animals and humans that 1,3-butadiene is metabolized into genotoxic metabolites. Other health effects due to very high levels of exposure include heart, blood and lung diseases.

Because air toxic levels generally decrease in proportion to overall emissions once emission control technology is applied, the amount of benzene and 1,3-butadiene produced by new small SI engines should diminish once the proposed program becomes effective. Consequently, exposure to HAPs from new handheld engines would be reduced, as would associated health and environmental effects. Although there is little data on direct health effects of small SI engines, one Swedish study concluded that benzene emissions from chainsaw engines were rather high.[16]

B. Cost and Cost-Effectiveness

EPA has calculated the cost-effectiveness of this proposed rule by estimating costs and emission benefits for these engines. EPA made best estimates of the combination of technologies that an engine manufacturer might use to meet the proposed standards, best estimates of resultant changes to equipment design, engine manufacturer compliance program costs, and engine fuel savings in order to assess the expected economic impact of the proposed Phase 2 emission standards for handheld engines. Emission benefits are taken from the results of the environmental benefit assessment (see section III.A. above). The resulting cost-effectiveness result of the proposed Phase 2 standards is approximately $2,146 per ton of $HC+NO_X$ if fuel savings are not taken into account. If fuel savings are considered as a credit against cost, the cost-effectiveness calculation results in approximately $1,911 per ton of $HC+NO_X$. This section describes the background and analysis behind these results.

The analysis for this proposal is based on data from engine families certified to EPA's Phase 1 standards, and information on the latest technology development and related emission levels that the Agency obtained prior to and since the publication of the January 1998 NPRM. The analysis does not include any production volumes that are covered by the California ARB's standards. The California ARB will implement emission standards for many of these engines prior to the proposed federal Phase 2 regulations. Therefore, this analysis only accounts for costs for each engine sold outside California and those engines sold in California that are not covered by the California ARB rules, such as those that California determined are used in farm and construction equipment. EPA assumed that any Phase 1 engine design that would need to be modified to meet Phase 2 standards was assumed to incur the full cost of that modification, including design cost. Similarly, the cost to equipment manufacturers was assumed to be fully attributed to this federal rule even if an equipment manufacturer would have to make the same modifications in response to the California ARB regulations. The details of EPA's cost and cost-effectiveness analyses can be found in Chapters 4 and 7 of the Supplemental Draft RIA for this rule. EPA requests comment on its cost effectiveness analysis and requests any relevant information that would assist the Agency in revising the analysis as appropriate.

1. Class I–A and Class I–B

No costs for Class I–A are included in this Phase 2 regulation. This is due to several factors. First, costs for research and development for engines in Class I–A are included in the research and development of handheld engine families (Classes III–V) since they are the same engine families, but would just be allowed to be used in nonhandheld applications. Second, certification and PLT testing for these engine families for use to handheld applications (Classes III–V) will likely be used toward certification for this class. In regards to benefits, no benefits for Class I–A engine families were estimated due to the anticipated limited use (i.e., small niche markets) of these engines in nonhandheld applications. Because no Class I engine families currently exist in this displacement range, EPA would not expect a loss in the Phase 2 Class I emission benefits from the adoption of the proposed Class I–A standards.

The costs for Class I–B include only certification to the Phase 2 regulation. The EPA Phase 1 certification database (as of September 1998) indicates there are only three engine families (two of these meet the proposed small volume engine family cutoff) that would be certified to this class, two are SV engines and one is an OHV engine, all with similar emission results for $HC+NO_X$. The engine families can currently meet the proposed emission standards for this class and therefore no additional variable costs or fixed costs were included for research and development or production. In addition, the Phase 2 program allows small volume engine families and manufacturers an option to perform PLT. No benefits are included for it is not known if all of the engine families in this newly proposed displacement

[16] ''Occupational Exposure to Chain Saw Exhausts in Logging Operations,'' American Industrial Hygiene Association, J48, 1987.

category will utilize the new class due to the fact that these engines must be certified to the California ARB standards (16.1 g/kW-hr $HC+NO_X$ for engines between 60 cc and 225 cc) if they are to be sold in California. Also, the low production estimates for engine families in this class are a very small fraction of the overall engine sales in this category which make up the benefits for the Phase 2 nonhandheld engine rulemaking and therefore should have no appreciable impact on the emission benefits of the Phase 2 rule for nonhandheld engines.

2. Handheld Engine Technologies

Table 5 lists the technologies that have been considered in the cost estimation for Class III–V engines in this proposed rulemaking. Additional detail regarding the impact of these modifications can be found in Chapter 3 of the Supplemental Draft RIA.

TABLE 5.—Potential Technology Improvements Per Class and Engine Design

Technologies	Class	Engine design
Compression Wave Technology with Catalyst	III	2-stroke
Compression Wave Technology with Catalyst Stratified scavenging with catalyst 4-stroke engine	IV	2-stroke
None	IV	4-stroke
Compression Wave Technology Stratified scavenging	V	2-stroke
Likely only applicable to the smallest Class V engines	V	4-stroke

3. Handheld Engine Costs

The engine cost increase is based on incremental purchase prices for new engines and is comprised of variable costs (for hardware, assembly time and compliance programs), and fixed costs (for R&D and retooling). Variable costs were applied on a per engine basis and fixed costs were amortized at seven percent over five years. Engine technology cost estimates were based on a study performed by ICF and EF&EE in October 1996 entitled ''Cost Study for Phase Two Small Engine Emission Regulations'' and cost estimates provided by industry in confidence. Details of the assumed costs and analysis can be found in Chapters 3 and 4 of the Supplemental Draft RIA.

Analysis of the EPA Phase 1 certification database, as of September 1998, was conducted to determine a potential impact of the proposed Phase 2 standards on each manufacturer assuming the proposed ABT program would be available to engine manufacturers. While the proposed ABT program would allow credit exchanges across classes, this analysis considered only ABT within each class since some manufacturers produce substantially in only one handheld class. The choice of technologies for emission improvement of these engine families was based on the engine family that would be most influential in reducing a manufacturer's overall average emission level within that class. The cost analysis was updated with consideration of cost information submitted in confidence by several engine manufacturers in order to most accurately reflect expected costs.

For Class III, review of EPA's Phase 1 database showed that 78 percent of the engine families would need to incorporate at least some of the technologies listed in Table 5. For Class IV, review of EPA's Phase 1 certification database shows that 84 percent of the engine families would need to incorporate emission improvements from amongst those listed in Table 5. For Class V, review of EPA's Phase 1 database showed that 65 percent of the engine families would need to incorporate at least some of the technologies listed in Table 5. (It should be noted that a small number of the engine families in Class V are lawnmowers or snowblowers which either have their own schedule for meeting emission standards from Phase 1 (existing handheld equipment with 2-stroke engines, such as some lawnmowers) or do not have to meet the $HC+NO_X$ standards due to sole wintertime use (such as snowblowers)). The incorporation of such technologies would require both variable and fixed expenditures.

The proposed Phase 2 emission standards for this diverse industry would impact companies differently depending on a company's current product offering and related deteriorated emission characteristics used in establishing FELs for use in averaging emissions across engine families. Some companies may improve the emission characteristics of their large volume engine families to provide credits for their smaller volume families. The real world impact on engine manufacturers would also be influenced by a manufacturer's ability to reduce the emissions from its major impact engine family in light of competition with others in the marketplace.

4. Handheld Equipment Costs

In most cases, the companies that manufacture engines for use in handheld equipment also manufacture the equipment. There are a small number of independent equipment manufacturers which do not make their own engines (ref: 1996 PSR EOLINK). Due to the overwhelming number of equipment models manufactured by engine/equipment manufacturers compared to the small number of independent equipment manufacturers, information for the analysis was taken from the known data in EPA's Phase 1 certification database which contains information from the engine/equipment manufacturers. Additional information was added from the auger equipment manufacturers who have been in touch with EPA throughout the Phase 2 process. Due to the degree of estimation used in the analysis, it is assumed that any equipment manufacturers not included in the analysis would not have a significant impact on the analysis. The costs for equipment conversion for handheld equipment was derived from the ICF/EF&EE cost study [17] which contained estimates based on the engine technology being utilized. Full details of EPA's cost analysis can be found in Chapter 4 of the Supplemental Draft RIA. EPA has assumed that capital costs would be amortized at seven percent over ten years.

This rulemaking assumes that the majority of Class III through V engines would be converted to using some form of compression wave technology with catalyst, mini 4-stroke or stratified scavenging with catalyst. The split in equipment impact was dependent on the split in technologies assumed amongst engines in each engine class. This was due to the vertical integration of this industry. The engine design impacts with the compression wave technologies with catalyst are assumed to be one injection mold design change for the engine shroud to accommodate cooling patterns for the engine and the muffler/exhaust gas temperatures. For stratified scavenging with a catalyst, the equipment must assure that it can house the new engine which may be slightly larger than its predecessor due to power loss. In addition, as with the compression wave technology, the equipment must allow for adequate cooling and protection of the user from the hot muffler. Several engine shroud changes are necessary along with added

[17] ICF and Engine, Fuel and Emissions Engineering, Incorporated; ''Cost Study for Phase Two Small Engine Emission Regulations'', Draft Final Report, October 25, 1996, in EPA Air Docket A–93–29, Item #II–A–04.

heat shields and air flow path modifications due to the use of the catalyst. Mini 4-strokes require a total redesign of the engine shroud, tank placements, etc. due to the new design of the engine. For this rulemaking, the analysis assumes that most Class III engines will utilize compression wave technology with a catalyst and some engines using stratified scavenging with a catalyst. The majority of Class IV engines are assumed to use compression wave technology with a catalyst and a small number of engines are assumed to use stratified scavenging with a catalyst or mini 4-stroke technologies. The majority of Class V engines are assumed to utilize compression wave technology and a small number are assumed to use stratified charge.

5. Handheld Operating Costs

The total life-cycle operating costs for this proposal include any expected decreases in fuel consumption. Life cycle fuel cost savings have been calculated per class using the NONROAD emission model. The model calculates fuel savings from the years of implementation to 2027 and takes into account factors including equipment scrappage, projected yearly sales increase per equipment type, and engine power. Details on the assumptions and calculations on fuel savings are included in Chapters 4 and 7 of the Supplemental Draft RIA.

Based on information described in Chapter 3 of the Draft Supplemental RIA (see section 3.2), a fuel consumption savings of 30 percent has been assumed from the two stroke engines as they are converted to compression wave, mini 4-stroke, or stratified scavenging design. The designs are expected to result in improved fuel economy since the engine designs may run on a leaner air/fuel mixture with or without improved combustion efficiency and reduce or altogether eliminate scavenging with fuel/oil mixture.

6. Cost Per Engine and Cost-Effectiveness

a. Cost Per Engine

Total costs for this proposal would vary per year as engine families are phased-in to compliance with the proposed Phase 2 standards over several years, as capital costs are recovered, and as compliance programs are conducted. The term ''uniform annualized cost'' is used to express the cost of this proposal over the years of this analysis.

The methodology used for estimating the uniform annualized cost per unit is as follows. Cost estimates from 1996 and 1997 model years, for technology and compliance programs respectively, were estimated and increased to 1998 dollars using the GDP Implicit Price deflator (1.9% in 1996, 1.9% in 1997 and 1.0% in 1998).[18] While a number of technologies are potentially possible for these engines, only the costs for one technology were chosen in order to simplify the estimates of the technologies manufacturers will choose to implement in the future years. Engine technology costs for all engine designs in Classes III and IV were based on compression wave (John Deere LE) with catalyst (cost information from MECA and ICF). The most detailed cost information was available from these sources and it is believed that the technology will prove to be most applicable to the broad range of engines. Engine technology costs for engine designs in Class V were also based on the John Deere LE technology, however no catalyst cost was applied for it is assumed that the standard does not require catalysts. While the technology is not yet proven in Class V engines, it is believed that it may likely be applicable. The cost estimates, including licensing fee, are assumed to allow room for expected costs from other technologies. EPA's Phase 1 database was then analyzed to determine the number of engine families per class that would likely incorporate the emission reduction technologies taking into consideration the availability of the proposed ABT program. The estimated costs per year were then calculated by multiplying the number of engine families and corresponding production volume by the fixed and variable costs per technology grouping, respectively. Since the majority of equipment manufacturers are also engine manufacturers in this market, retail markups used are 16 percent by the engine/equipment manufacturer and 5 percent by the mass merchandiser. All markups are based on industry-specific information from the Phase 1 program. For compliance program costs, the costs for certification bench aging were estimated based on the number of engine families in EPA's Phase 1 database and the expected certification date under the phase in of the proposed Phase 2 standards. To complete the calculation of the uniform annualized cost per unit, all of these costs are summed per year and then discounted seven percent to the first year of Phase 2 regulation. The yearly costs are summed and a uniform annualized cost is calculated. The uniform annualized cost is then divided by production at two points in time, the first full year of implementation of the proposed Phase 2 standards (2006 for Classes III and IV and 2008 for Class V), and the last year of this analysis (2027), to obtain two separate uniform annualized costs per unit. The average of these two values is then presented as the uniform annualized cost per unit in Table 6.

The yearly fuel savings (tons/yr) per class were calculated from the NONROAD model. The yearly fuel savings (tons/yr) were converted to savings (1998$) through conversion to gallons per year multiplied by $0.765 (a 1995 average refinery price of gasoline to end user, without taxes) increased to 1998 using the GDP deflator for 1996, 1997 and 1998. The yearly fuel savings were then discounted by 7 percent to the first year of Phase 2 regulation, for each engine class. The yearly results were totaled and then divided by an annualized factor to yield the uniform annualized fuel savings. The fuel savings for each class was calculated for the production years of 2006, 2008 and 2027. The average of these two values was utilized as the average fuel savings per unit per class per year as shown in Table 6.

The average resultant cost per unit class is calculated by subtracting the average fuel savings from the average cost, see Table 6. The reader is directed to Chapter 7 of the Supplemental Draft RIA for more details of this analysis.

TABLE 6.—ENGINE YEARLY FUEL SAVINGS AND RESULTANT COST PER UNIT COSTS BASED ON UNIFORM ANNUALIZED COSTS (1998$)

Class	Cost Per Unit	Savings Per Unit	Resultant Cost Per Unit
III	$17.35	$0.50	$16.85
IV	22.84	1.02	21.82
V	53.42	3.04	50.38

Note: Nearly all of the handheld industry is vertically integrated and therefore it is most appropriate to acknowledge cost/unit rather than cost/engine for the engine and equipment manufacturers are the same in nearly all cases.

b. Cost-Effectiveness

EPA has estimated the cost-effectiveness (i.e., the cost per ton of emission reduction) of the proposed HC+NOx standards over the typical lifetime of the handheld, Class I–A and Class I–B equipment that would be covered by today's proposal. EPA has examined the cost-effectiveness by

[18] Information obtained from the Bureau of Economic Analysis' website (www.bea.doc.gov/bea/dn/niptbl-d.htm#).

performing a nationwide cost-effectiveness analysis in which the net present value of the cost of compliance per year is divided by net present value of the HC+NOx benefits. The resultant discounted cost-effectiveness is $2,146 cost/ton HC+NOx without fuel savings factored in, and $1,911 with fuel savings taken into consideration. Chapter 7 of the Supplemental Draft RIA contains a more detailed discussion of the cost-effectiveness analysis. The overall cost-effectiveness of this proposed rule on HC+NOx emission reductions, with fuel savings, is shown in Table 7 compared to the cost effectiveness of other nonroad rulemakings, which also reflect fuel savings.

TABLE 7.—COST-EFFECTIVENESS OF THE PROPOSED PHASE 2 HANDHELD, CLASS I–A AND CLASS I–B ENGINE STANDARDS (WITH FUEL SAVINGS) COMPARED TO OTHER NONROAD PROGRAMS

Nonroad Program	Cost-effectiveness	Pollutants
Proposed Phase 2 Small SI Handheld Engines	$1,911/ton	HC+NOx.
Phase 2 Small SI Nonhandheld Engines	$507/ton	HC+NOx.
Phase 1 Small SI Engines	$217/ton	HC+NOx.
Recreational Marine SI Engines	$1,000/ton	HC.
Tier 2/3 Standards for Nonroad CI Engines	$410–$650/ton	HC+NOx.

IV. Public Participation

The process for developing this supplemental proposed rule provided several opportunities for formal public comment. EPA published an Advance Notice of Proposed Rulemaking (ANPRM) on March 27, 1997 (62 FR 14740) which announced the signing of two Statements of Principles (SOPs) with the small engine industry and several other interested parties. The ANPRM and included SOPs outlined possible programs which would increase the stringency of the small engine regulations compared to Phase 1 rules. Comments were received in response to this ANPRM which, in combination with the programs outlined in the ANPRM, formed the basis of the Notice of Proposed Rulemaking (NPRM) for Phase 2 standards which was published on January 27, 1998 (63 FR 3950). A public hearing was held on February 11, 1998 during which oral testimony was received on the proposal. Written comments were received during the formal comment period for the proposal and some additional written comments were received after the formal comment period closed. To expand upon comments received during the comment period and to address specific questions EPA had of the industry regarding technical feasibility and cost of some options for Phase 2 standards, EPA received additional information after the close of the formal comment period and participated in a number of phone conversations and meetings with industry representatives for this purpose. All of this information that is germane to Phase 2 handheld small SI standards, including documentation of phone calls and meetings, has been included in the docket for this supplemental proposed rule. Since considerable information was received after the formal comment period closed, a Notice of Availability highlighting the supplemental information was also published on December 1, 1998 (63 FR 66081) alerting interested parties to the availability of this supplemental information. Much of this information was relied upon in support of the recently finalized Phase 2 nonhandheld small SI program. All relevant information received, regardless of the date of receipt, was, to the maximum extent possible, considered in the development of this supplemental proposed rule for the Phase 2 handheld small SI program.

V. Administrative Requirements

A. Administrative Designation and Regulatory Analysis

Under Executive Order 12866, the Agency must assess whether this regulatory action is ''significant'' and therefore subject to Office of Management and Budget (OMB) review and the requirements of the Executive Order (58 FR 51735, Oct. 4, 1993). The order defines ''significant regulatory action'' as any regulatory action that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or,

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, EPA has determined that this rulemaking is a ''significant regulatory action'' because the proposed standards and other regulatory provisions, are expected to have an annual effect on the economy in excess of $100 million. A Supplemental Draft RIA has been prepared and is available in the docket associated with this rulemaking. This proposal was submitted to OMB for review as required by Executive Order 12866. Any written comments from OMB are in the public docket for this rulemaking.

B. Regulatory Flexibility

The Regulatory Flexibility Act (RFA) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions. For the reasons set out below, this proposed rule would not have a significant economic impact on a substantial number of entities.

EPA has identified industries that would be subject to this rule and has contacted small entities and small entity representatives to gain a better understanding of the potential impacts of the proposed Phase 2 handheld engine program on their businesses. This information was useful in estimating potential impacts of this proposal on affected small entities, the details of which are more fully discussed in Chapter 8 of the Supplemental Draft RIA. Small not-for-profit organizations and small governmental jurisdictions are not expected to be impacted by this proposal. Thus EPA's impact analysis focuses on small businesses. For purposes of the impact analysis, ''small business'' is defined by number of employees, according to published Small Business Administration (SBA) definitions. Since handheld equipment

manufacturers also tend to be the engine manufacturers, which also tend to be larger businesses, there are few small business entities involved in the analysis.

However, the Agency desires to minimize, to the extent appropriate, impacts on those companies which may be adversely affected, and to ensure that the emissions standards are achievable. Thus, flexibility provisions for the rule (discussed earlier in section II.D.) were developed based on analysis of information gained through discussions with potentially affected small entities as well as analysis of other sources of information, as detailed in Chapters 8 and 9 of the Supplemental Draft RIA. Many of the flexibilities in today's proposal should benefit the engine and equipment manufacturers that do qualify as small business entities.

The economic impact of the proposed rule on small entity engine and equipment manufacturers was evaluated using a ''sales test'' approach which calculates annualized compliance costs as a percent of sales revenue. The ratio is an indication of the severity of the potential impacts. EPA expects that, at worst, 3 small entity engine manufacturers and 6 small entity equipment manufacturers would be impacted by more than one percent of their sales revenue. Also, no more than 4 entities would be impacted by more than three percent of their annual sales revenue, as indicated by the analysis. This base case analysis assumes that manufacturers do not take advantage of the flexibilities being offered, but that they would be able to pass through most necessary price increases to the ultimate consumer. EPA would thus expect today's proposed rule to have a minimal impact on small business entities.

However, EPA is proposing a number of flexibilities to further reduce the burden of compliance on any small-volume engine manufacturers, small volume equipment manufacturers and manufacturers of small-volume engine families and small-volume equipment models. The Agency received a number of comments from engine and equipment manufacturers, which were generally supportive of the flexibilities initially proposed, but which suggested changes in production caps and other provisions. EPA has incorporated many of these suggested changes to the extent possible in this proposal, keeping in mind equity and air quality considerations. Given these flexibilities being afforded to the engine and equipment manufacturers, the results of the analysis suggest that of those small entities analyzed, only one small business engine manufacturer and none of the small business equipment manufacturers would likely experience an impact of greater than one percent of their sales revenue. Other outreach activities have also indicated that the impact of today's proposed rule could be minimized given sufficient lead time to incorporate the new technology with normal model changes. Again, the Agency has not attempted to quantify the beneficial impact on small volume manufacturers of the lead time provided (which can include delaying the impact of these rules up until the 2009 model year for Classes III and IV and up until the 2011 model year for Class V).

Although EPA believes that the above-mentioned flexibility provisions will minimize any adverse impact on small entities (see Chapter 8 of the Supplemental Draft RIA), the Agency has already adopted a hardship relief provision for nonhandheld engines that would also apply to handheld engines. This was developed to further ensure that standards can be achieved without undue hardship on the business entities involved. While it is difficult to project utilization of such a provision, EPA expects that it could further reduce any possible adverse economic impact of the proposed rule.

The results of the impact analysis show minimal impacts on small businesses. EPA expects that such impacts will be negligible if small companies take advantage of the above-mentioned flexibilities. Most of the small companies contacted considered it likely that they would be able to pass most of their cost increases through to their customers. Many of these entities are also involved in filling niche markets, and are thus in a particularly good position to pass these costs along to the ultimate consumers. Finally, the ample lead time contained by today's proposed rule should also allow for an orderly transition to the more advanced technology. Therefore, I certify that this action will not have a significant economic impact on a substantial number of small entities and therefore a regulatory flexibility analysis for this proposal has not been prepared. The Agency continues to be interested in the potential impacts of the proposed rule on small entities and welcomes additional comments during the rulemaking process on issues related to such impacts. In spite of the expected minimal impacts on small entities, EPA will continue its efforts to notify small business engine and equipment manufacturers of this proposed rule and to inform them of their opportunities for providing feedback to the Agency.

C. Paperwork Reduction Act

The information collection requirements in this supplemental proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA and a copy may be obtained from Sandy Farmer by mail at OP Regulatory Information Division, U.S. Environmental Protection Agency (2137), 401 M St., SW, Washington, DC 20460, by email at farmer.sandy@epa.gov, or by calling (202) 260–2740. A copy may also be downloaded off the Internet at http://www.epa.gov/icr.

The information planned to be collected via this supplemental proposed rule is necessary to assure that the engine manufacturers required to seek certification of their engines have fulfilled all the essential requirements of these proposed regulations. In particular, this information will document the design of the engine for which certification is sought, the type(s) of equipment in which it is intended to be used and the emission performance of these engines based upon testing performed by or on behalf of the engine manufacturer. Additional, essential information is necessary to document the results of testing performed by the manufacturer under a proposed production line testing program to determine that the engines, as manufactured continue to have acceptable emission performance. Finally, if the manufacturer elects to conduct testing of in-use engines under a voluntary in-use testing program contained in the proposed regulations, information is necessary to document the results of that in-use testing program.

Table 8 provides a listing of the information collection requirements associated with the proposed Phase 2 program for nonroad SI handheld engines at or below 19 kW along with the appropriate OMB control numbers. The cost of this burden has been incorporated into the cost estimate for this rule. The Agency has estimated that the public reporting burden for the collection of information required under this supplemental proposed rule would average approximately 87,120 hours annually for the industry at an estimated annual cost of $5,360,000. The hours spent by an individual manufacturer on information collection activities in any given year would be highly dependent upon manufacturer specific variables, such as the number of

engine families, production changes, emission defects etc.

TABLE 8.—PUBLIC REPORTING BURDEN

Type of Information	OMB Control No.
Certification	2060–0338
Averaging, banking and trading	2060–0338
Production line testing	N/A
Pre-certification and testing exemption	2060–0007
Engine exclusion determination	2060–0124
Emission defect information	2060–0048
Importation of nonconforming engines	2060–0294

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR Chapter 15.

Comments are requested on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques. Send comments on the ICR to Director, OP Regulatory Information Division, U.S. Environmental Protection Agency (2137), 401 M Street, SW, Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, marked ''Attention: Desk Office for EPA.'' Include the ICR number in any correspondence. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after July 28, 1999, a comment to OMB is best assured of having its full effect if OMB receives it by August 27, 1999. The final rule will respond to any OMB or public comments on the information collection requirements contained in this supplemental proposal.

D. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (''Unfunded Mandates Act'') requires that the Agency prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by State, local, and tribal governments, in aggregate, or by the private sector, of $100 million or more in any one year. Section 203 requires the Agency to establish a plan for obtaining input from and informing, educating, and advising any small governments that may be significantly or uniquely affected by the rule.

Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The Agency must select from those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with law.

Because this proposed rule is estimated to result in the expenditure by State, local and tribal governments or the private sector of greater than $100 million in any one year, the Agency has prepared a budgetary impact statement and has addressed the selection of the least costly, most cost-effective or least burdensome alternative. While this proposed rule does not impose enforceable obligations on State, local, and tribal governments, because they do not produce small SI handheld engines or equipment, EPA has estimated the proposed rule to cost the private sector an annualized cost of $359 million per year (over the 20 year period from 2002 to 2021). However, the Agency has appropriately considered cost issues in developing this proposed rule as required by section 213(a)(3) of the Clean Air Act, and has designed the proposed rule such that it will in EPA's view be a cost-effective program. Because small governments would not be significantly or uniquely affected by this proposed rule, the Agency is not required to develop a plan with regard to small governments.

The impact statement under section 202 of the Unfunded Mandates Act must include: (1) A citation of the statutory authority under which the rule is adopted; (2) an assessment of the costs and benefits of the rule including the effect of the mandate on health, safety and the environment; (3) where feasible, estimates of future compliance costs and disproportionate impacts upon particular geographic or social segments of the nation or industry; (4) where relevant, an estimate of the effect on the national economy; and (5) a description of the EPA's consultation with State, local, and tribal officials. Because this proposed rule is estimated to impose costs to the private sector in excess of $100 million per year, it is considered a significant regulatory action. Therefore, EPA has prepared the following statement with respect to sections 202 through 205 of the Unfunded Mandates Act.

1. Statutory Authority

This rule proposes standards for emissions of $HC+NO_X$ and CO from small nonroad SI handheld engines pursuant to section 213 of the Clean Air Act. Section 216 defines the terms ''nonroad engine'' and ''nonroad vehicle.'' Section 213(a)(3) requires these standards to achieve the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the engines or vehicles to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to manufacturers and to noise, energy, and safety factors associated with the application of such technology. Section 213(b) requires the standards to take effect at the earliest possible date considering the lead time necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period and energy and safety. Section 213(d) provides that the standards shall be subject to sections 206, 207, 208 and 209 of the CAA, with such modifications of the applicable regulations implementing such sections as the Administrator deems appropriate, and shall be enforced in the same manner as standards prescribed under section 202. Therefore, the statutory authority for this rule is as follows: sections 202, 203, 204, 205, 206, 207, 208, 209, 213, 215, 216, and 301(a) of the Clean Air Act, as amended. Moreover, this proposed rule is being issued pursuant to a court order entered in *Sierra Club* v. *Browner,* No. 93–0124 and consolidated cases (D.D.C.).

2. Social Costs and Benefits

The social costs and benefits of this proposed rule are discussed in sections III.A. and III.B. of this notice, and in Chapters 6 through 7 of the Supplemental Draft RIA. Those discussions are incorporated into this statement by reference.

3. Effects on the National Economy

As stated in the Unfunded Mandates Act, macroeconomic effects tend to be measurable, in nationwide economic models, only if the economic effect of the regulation reaches 0.25 to 0.5 percent of gross domestic product (in the range of $15 billion to $30 billion). A regulation with a smaller aggregate effect is highly unlikely to have any measurable impact in macroeconomic terms unless it is highly focused on a particular geographic region or economic sector. Because the economic impact of the proposed Phase 2 rule for small SI handheld engines is expected to be far less than these thresholds, no estimate of this proposed rule's effect on the national economy has been conducted.

4. Consultation With Government Officials

Today's proposed rule would not create a mandate on State, local or tribal governments, since it would not impose any enforceable duties on these entities who do not produce small SI handheld engines or equipment. Thus, EPA did not consult with State, local or tribal governments in the context of discussing mandated costs that would apply to such governments. However, EPA did consult with state governmental representatives, and with representatives of associations representing state air regulatory agencies, in the contexts of developing the most stringent achievable regulations and of addressing state ozone attainment needs. The consulted entities include the California ARB and the Northeast States for Coordinated Air Use Management (NESCAUM). These consultations are documented in the record for this rule, and are reflected and discussed in the SOPs, the March 1997 ANPRM, the January 1998 NPRM, the December 1998 Notice of Availability, the recently finalized Phase 2 rule for nonhandheld small SI engines and equipment, and today's SNPRM.

5. Regulatory Alternatives Considered

To ensure the cost-effectiveness of this proposed rule and still fulfill the intent of the Clean Air Act, EPA has proposed numerous flexibility provisions that EPA expects would reduce the burden of the Phase 2 program for small volume manufacturers and manufacturers of small volume models and families. The flexibility provisions are discussed in section II.D. of today's document. Moreover, the technological options considered for the proposed rule's standards and related provisions are discussed in section II.A. of the document. EPA specifically requests comment on the standards contained in today's reproposal and the alternative set of standards (described in section II.A.) supported by a number of handheld engine manufacturers. Section II.B. discusses the proposed ABT program, and section II.C. discusses the proposed compliance program for Phase 2 handheld engines.

E. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, section 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rule involves technical standards. While commenters suggested the use of ISO 8178 test procedures for measuring emissions, the Agency has decided not to propose the ISO procedures in this SNPRM. The Agency believes that these procedures would be impractical because they rely too heavily on reference testing conditions. Since the test procedures in these proposed regulations would need to be used not only for certification, but also for production line testing, selective enforcement audits, and voluntary in-use testing, EPA believes they must be broadly based. In-use testing is best done outside tightly controlled laboratory conditions so as to be representative of in-use conditions. EPA believes that the ISO procedures are not sufficiently broadly usable in their current form for this proposed program, and therefore should not be adopted by reference. EPA has instead proposed to continue relying on the procedures outlined in 40 CFR Part 90. EPA is hopeful that future ISO test procedures will be developed that are usable for the broad range of testing needed, and that such procedures could be adopted by reference at that point.

F. Executive Order 13045: Protection of Children's Health

Executive Order 13045, entitled ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997), applies to any rule that: (1) Was initiated after April 21, 1997 or for which a Notice of Proposed Rulemaking was published after April 21, 1998; (2) is determined to be ''economically significant'' as defined under Executive Order 12866; and (3) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets all three criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to Executive Order 13045, because substantive actions were initiated before April 21, 1997 and EPA published a Notice of Proposed Rulemaking before April 21, 1998. The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under Section 5–501 of the Order has the potential to influence the regulation. This supplemental proposed rulemaking is based on technology performance and not health or safety risks. Therefore, EPA does not have reason to believe this proposed action involves environmental health and safety risks that present a disproportionate risk to children.

G. Executive Order 12875: Enhancing the Intergovernmental Partnership

Under Executive Order 12875, EPA may not issue a regulation that is not required by statute and that creates a mandate upon a State, local or tribal government, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by those governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 12875 requires EPA to provide to the Office of Management and Budget a description of the extent of EPA's prior consultation with representatives of affected State, local and tribal governments, the nature of their concerns, copies of any written communications from the governments,

and a statement supporting the need to issue the regulation. In addition, Executive Order 12875 requires EPA to develop an effective process permitting elected officials and other representatives of State, local and tribal governments ''to provide meaningful and timely input in the development of regulatory proposals containing significant unfunded mandates.''

Today's proposed rule would not create a mandate on State, local or tribal governments. The proposed rule would not impose any enforceable duties on these entities, because they do not produce small SI handheld engines or equipment. Accordingly, the requirements of section 1(a) of Executive Order 12875 do not apply to this proposed rule.

H. Executive Order 13084: Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to the Office of Management and Budget a description of the extent of EPA's prior consultation with representatives of affected tribal governments and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments ''to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities.''

Today's proposed rule would not significantly or uniquely affect the communities of Indian tribal governments because it would not impose any enforceable obligations on them. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this proposed rule.

VI. Statutory Authority

Authority for the actions set forth in this proposed rule is granted to EPA by Sections 202, 203, 204, 205, 206, 207, 208, 209, 213, 215, 216, and 301(a) of the Clean Air Act as amended (42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7547, 7549, 7550, and 7601(a)).

List of Subjects in 40 CFR Part 90

Environmental protection, Administrative practice and procedure, Air pollution control, Confidential business information, Imports, Labeling, Nonroad source pollution, Reporting and recordkeeping requirements, Research, Warranties.

Dated: June 30, 1999.

Carol M. Browner,

Administrator.

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is proposed to be amended as follows:

PART 90—CONTROL OF EMISSIONS FROM NONROAD SPARK-IGNITION ENGINES

1. The authority citation for part 90 is revised to read as follows:

Authority: 42 U.S.C. 7521, 7522, 7523, 7524, 7525, 7541, 7542, 7543, 7547, 7549, 7550, and 7601(a).

Subpart A—General

1a. Section 90.1 is proposed to be amended by adding a sentence to the end of paragraph (a) to read as follows:

§ 90.1 Applicability.

(a) * * * To the extent permitted by other parts of this chapter, this Part may, at the engine manufacturer's option, apply to engines with gross power output greater than 19 kW that have an engine displacement of less than or equal to one liter.

* * * * *

2. Section 90.3 is proposed to be amended by adding the words ''handheld and'' immediately preceding the word ''nonhandheld'' in the definition of ''Phase 2 engine,'' by adding the words ''any handheld engine family or'' immediately preceding the words ''any nonhandheld engine family'' in the definition of ''Small volume engine family,'' and by adding a sentence to the end of the definitions of ''Small volume engine manufacturer,'' ''Small volume equipment manufacturer,'' and ''Small volume equipment model'' to read as follows:

§ 90.3 Definitions.

* * * * *

Small volume engine manufacturer * * *. For handheld engines, the term *small volume engine manufacturer* means any engine manufacturer whose total eligible production of handheld engines are projected at the time of certification of a given model year to be no more than 25,000 handheld engines.

Small volume equipment manufacturer * * *. For handheld equipment, the term *small volume equipment manufacturer* has the same meaning except that it is limited to 25,000 pieces of handheld equipment rather than 5,000 pieces of nonhandheld equipment.

Small volume equipment model * * *. For handheld equipment, the term *small volume equipment model* has the same meaning except that it is limited to 2,500 pieces of handheld equipment, rather than 500 pieces of nonhandheld equipment.

* * * * *

Subpart B—Emission Standards and Certification Provisions

3. Section 90.103 is proposed to be amended in paragraph (a) introductory text, by revising the heading for Table 2, adding two new entries to the beginning of Table 2, and adding Table 4, to read as follows:

§ 90.103 Exhaust emission standards.

(a) * * *

TABLE 2.—PHASE 2 CLASS I–A, CLASS I–B, AND CLASS I ENGINE EXHAUST EMISSION STANDARDS

[Grams per kilowatt-hour]

Engine class	$HC+NO_X$	$NMHC+NO_X$	CO	Effective date
I–A	50	.....	610	2000 Model Year.
I–B	40	37	610	2000 Model Year.
* * * * * * *				

* * * * *

TABLE 4.—PHASE 2 HANDHELD EXHAUST EMISSION STANDARDS BY MODEL YEAR

[Grams per kilowatt-hour]

Engine class and emission requirement	Model year						
	2002	2003	2004	2005	2006	2007	2008 and later
Class III:							
HC+NOx	226	200	150	100	50	50	50
CO	805	805	805	805	805	805	805
Class IV:							
HC+NOx	187	168	129	89	50	50	50
CO	805	805	805	805	805	805	805
Class V:							
HC+NOx	.....	.....	138	129	110	91	72
CO	.....	.....	603	603	603	603	603

* * * * *

4. Section 90.103 is proposed to be amended by revising the first and last sentences of paragraph (a)(6) and the first and last sentences of paragraph (a)(7) to read as follows:

* * * * *

(a) * * *

(6) In lieu of certifying to the applicable Phase 2 standards, small volume engine manufacturers as defined in this part may, at their option, certify their engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I–A and Class I–B engine families, until the 2009 model year for Class III and Class IV engine families, and until the 2011 model year for Class V engine families. * * * Beginning with the 2010 model year for nonhandheld engine families, the 2009 model year for Class III and Class IV engine families, and the 2011 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

(7) In lieu of certifying to the applicable Phase 2 standards, manufacturers of small volume engine families, as defined in this part may, at their option, certify their small volume engine families as Phase 1 engines until the 2010 model year for nonhandheld engine families excluding Class I–A and Class I–B engine families, until the 2009 model year for Class III and Class IV engine families, and until the 2011 model year for Class V engine families. * * * Beginning with the 2010 model year for nonhandheld engine families, the 2009 model year for Class III and Class IV engine families, and the 2011 model year for Class V engine families, these engines must meet the applicable Phase 2 standards.

* * * * *

5. Section 90.104 is proposed to be amended by adding a sentence to the end of paragraph (g)(1), by redesignating paragraph (g)(3) as paragraph (g)(4), by adding new paragraph (g)(3), and by revising the introductory text of paragraph (h)(2) to read as follows:

§ 90.104 Compliance with emission standards.

* * * * *

(g)(1) * * * The provisions of this paragraph do not apply to Class I–A and Class I–B engines.

* * * * *

(3) Table 2 follows:

TABLE 2.—HANDHELD ENGINE $HC+NO_x$ and CO Assigned Deterioration Factors for Small Volume Manufacturers and Small Volume Engine Families

Engine class	Two-stroke engines		Four-stroke engines		Engines with aftertreatment
	$HC+NO_x$	CO	$HC+NO_x$	CO	
Class III	1.1	1.1	1.5	1.1	Dfa must be calculated using the formula in § 90.104(g)(4)
Class IV	1.1	1.1	1.5	1.1	Do.
Class V	1.1	1.1	1.5	1.1	Do.

* * * * *

(h) * * *

(2) For engines not using assigned dfs from Table 1 or Table 2 of paragraph (g) of this section, dfs shall be determined as follows:

* * * * *

6. Section 90.105 is proposed to be amended by adding a sentence to the end of paragraph (a)(1), by adding two entries to the beginning of Table 1 of paragraph (a)(2), and adding new paragraphs (a)(3) and (a)(4) to read as follows:

§ 90.105 Useful life periods for Phase 2 engines.

(a) * * *

(1) * * * Engines with gross power output greater than 19 kW that have an engine displacement less than or equal to one liter that optionally certify under this part as allowed in § 90.1(a), must certify to a useful life period of 1,000 hours.

(2) Table 1 follows:

TABLE 1.—USEFUL LIFE CATEGORIES FOR NONHANDHELD ENGINES (HOURS)

Class I–A	50	125	300
Class I–B	125	250	500
*	*	*	*
*	*	*	*

TABLE 1.—USEFUL LIFE CATEGORIES FOR NONHANDHELD ENGINES (HOURS)—Continued

(3) For handheld engines: Manufacturers shall select a useful life category from Table 2 of this paragraph (a) at the time of certification.

(4) Table 2 follows:

TABLE 2.—USEFUL LIFE CATEGORIES FOR HANDHELD ENGINES (HOURS)

Class III	50	125	300
Class IV	50	125	300
Class V	50	125	300

* * * * *

7. Section 90.107 is proposed to be amended by removing the word ''and'' at the end of paragraph (d)(6)(iv), adding the word ''and'' at the end of paragraph (d)(6)(v), and adding a new paragraph (d)(6)(vi) to read as follows:

§ 90.107 Application for certification.

* * * * *

(d) * * *

(6) * * *

(vi) Information relating to altitude kits to be certified, including: a description of the altitude kit; appropriate part numbers; the altitude ranges at which the kits must be installed on or removed from the engine for proper emissions and engine performance; statements to be included in the owner's manual for the engine/equipment combination (and other maintenance related literature) that declare the altitude ranges at which the kit must be installed or removed and that state that the operation of the engine/equipment at an altitude different from what it was certified at, for extended periods of time, and may increase emissions; and a statement that an engine with the altitude kit installed will meet each emission standard throughout its useful life (the rationale for this assessment must be documented and retained by the manufacturer, and provided to the Administrator upon request);

* * * * *

8. Section 90.114 is proposed to be amended by revising paragraph (f)(1), by adding a new paragraph (f)(2), and by revising paragraph (f)(3) to read as follows:

§ 90.114 Requirement of certification—engine information label.

* * * * *

(f) * * *

(1) For nonhandheld engines: The Emissions Compliance Period referred to on the Emissions Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. For engines less than 66 cc, Category C = 50 hours, B = 125 hours, and A = 300 hours. For engines equal to or greater than 66 cc but less than 225 cc displacement, Category C = 125 hours, B = 250 hours, and A = 500 hours. For engines of 225 cc or more, Category C = 250 hours, B = 500 hours, and A = 1000 hours.

(2) For handheld engines: The Emissions Compliance Period referred to on the Emissions Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. Category C = 50 hours, B = 125 hours, and A = 300 hours.

(3) The manufacturer must provide, in the same document as the statement in paragraph (f)(1) or (f)(2) of this section, a statement of the engine's displacement or an explanation of how to readily determine the engine's displacement. The Administrator may approve alternate language to the statement in paragraph (f)(1) or (f)(2) of this section, provided that the alternate language provides the ultimate purchaser with a clear description of the number of hours represented by each of the three letter categories for the subject engine's displacement.

9. Section 90.116 is proposed to be amended by redesignating paragraphs (b)(1) through (b)(5) as paragraphs (b)(3) through (b)(7), respectively, and by adding new paragraphs (b)(1) and (b)(2), and revising newly designated paragraph (b)(3) to read as follows:

§ 90.116 Certification procedure—determining engine displacement, engine class, and engine families.

* * * * *

(b) * * *

(1) Class I–A—engines less than 66 cc in displacement,

(2) Class I–B—engines greater than or equal to 66 cc but less than 100 cc in displacement,

(3) Class I—engines greater than or equal to 100 cc but less than 225 cc in displacement,

* * * * *

10. Section 90.119 is proposed to be amended by revising paragraphs (a)(1)(i) and (a)(1)(ii) to read as follows:

§ 90.119 Certification procedure—testing.

(a) * * *

(1) * * *

(i) Class I, I–B, and II engines must use Test Cycle A described in Subpart E of this part, except that Class I, I–B, and II engine families in which 100 percent of the engines sold operate only at rated speed may use Test Cycle B described in Subpart E of this part.

(ii) Class I–A, III, IV, and V engines must use Test Cycle C described in Subpart E of this part.

* * * * *

Subpart C—Certification Averaging, Banking, and Trading Provisions

11. Section 90.203 is proposed to be amended by revising paragraph (f) to read as follows:

§ 90.203 General provisions.

* * * * *

(f) No Phase 2 engine family may have a HC + NO_x FEL that is greater than 32.2 g/kW-hr for Class I engines, 94 g/kW-hr for Class I–A engines, 50 g/kW-hr for Class I–B engines, 26.8 g/kW-hr for Class II engines, 300 g/kW-hr for Class III engines, 246 g/kW-hr for Class IV engines, or 166 g/kW-hr for Class V engines.

* * * * *

§ 90.204 [Amended]

12. Section 90.204 is proposed to be amended by removing the word ''nonhandheld'' in paragraph (b).

13. Section 90.205 is proposed to be amended by adding new paragraphs (a)(2), (a)(4), (a)(5) and (b)(3), (b)(4), and (b)(5) to read as follows:

§ 90.205 Banking.

(a) * * *

(2) Beginning with the 2000 model year, a manufacturer of a Class I–A or Class I–B engine family with an FEL below the applicable emission standard for a given model year may bank credits in that model year for use in averaging and trading.

* * * * *

(4) Beginning with the 2002 model year, a manufacturer of a Class III or Class IV engine family with an FEL below the applicable emission standard for a given model year may bank credits in that model year for use in averaging and trading.

(5) Beginning with the 2004 model year, a manufacturer of a Class V engine family with an FEL below the applicable emission standard for a given model year may bank credits in that model year for use in averaging and trading.

* * * * *

(b) * * *

(3) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class III engines, a manufacturer may bank early credits for all Class III engines with HC+NOx FELs below 226 g/kW-hr. All early credits for Class III engines shall be calculated against a HC+NOx level of 226 g/kW-hr.

(4) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for Class IV engines, a manufacturer may bank early credits for all Class IV engines with $HC+NO_X$ FELs below 187 g/kW-hr. All early credits for Class IV engines shall be calculated against a $HC+NO_X$ level of 187 g/kW-hr.

(5) Beginning with the 2000 model year and prior to the applicable date listed in paragraph (a) of this section for

Class V engines, a manufacturer may bank early credits for all Class V engines with $HC+NO_X$ FELs below 131 g/kW-hr. All early credits for Class V engines shall be calculated against a $HC+NO_X$ level of 131 g/kW-hr.

* * * * *

14. Section 90.207 is proposed to be amended in paragraph (a) by revising the first sentence in the definition of ''load factor'' following the equation to read as follows:

§ 90.207 Credit calculation and manufacturer compliance with emission standards.

(a) * * *

Load Factor = 47 percent (i.e., 0.47) for Test Cycle A and Test Cycle B, and 85 percent (i.e., 0.85) for Test Cycle C. * * *

* * * * *

Subpart D—Emission Test Equipment Provisions

15. Section 90.301 is proposed to be amended by revising the first and second sentences of paragraph (d) to read as follows:

§ 90.301 Applicability.

* * * * *

(d) For Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II natural gas fueled engines, the following sections from 40 CFR part 86 are applicable to this subpart. The requirements of the following sections from 40 CFR part 86 which pertain specifically to the measurement and calculation of non-methane hydrocarbon (NMHC) exhaust emissions from otto cycle heavy-duty engines must be followed when determining the NMHC exhaust emissions from Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II natural gas fueled engines. * * *

Subpart E—Gaseous Exhaust Test Procedures

16. Section 90.401 is proposed to be amended by revising the first and second sentences of paragraph (d) to read as follows:

§ 90.401 Applicability.

* * * * *

(d) For Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II natural gas fueled engines, the following sections from 40 CFR part 86 are applicable to this subpart. The requirements of the following sections from 40 CFR part 86 which pertain specifically to the measurement and calculation of non-methane hydrocarbon (NMHC) exhaust emissions from otto cycle heavy-duty engines must be followed when determining the NMHC exhaust emissions from Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II natural gas fueled engines. * * *

17. Section 90.404 is proposed to be amended by revising paragraph (b) to read as follows:

§ 90.404 Test procedure overview.

* * * * *

(b) The test is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, carbon dioxide, and oxides of nitrogen and fuel consumption. For Phase 2 Class I–B, Class I, and Class II natural gas fueled engines the test is also designed to determine the brake-specific emissions of non-methane hydrocarbons. The test consists of three different test cycles which are application specific for engines which span the typical operating range of nonroad spark-ignition engines. Two cycles exist for Class I–B, I and II engines and one is for Class I–A, III, IV, and V engines (see § 90.103(a) and § 90.116(b) for the definitions of Class I–A, I–B, and I–V engines). The test cycles for Class I–B, I, and II engines consist of one idle mode and five power modes at one speed (rated or intermediate). The test cycle for Class I–A, III, IV, and V engines consists of one idle mode at idle speed and one power mode at rated speed. These procedures require the determination of the concentration of each pollutant, fuel flow, and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per brake kilowatt hour (g/kW-hr).

* * * * *

18. Section 90.408 is proposed to be amended by revising the table in paragraph (b)(2) to read as follows:

§ 90.408 Pre-test procedures.

* * * * *

(b) * * *

(2) * * *

Engine class	Test cycle	Operating mode
I, I–B, II	A	6
I, I–B, II	B	1
I–A, III, IV, V	C	1

* * * * *

19. Section 90.409 is proposed to be amended by revising the last sentence of paragraph (a)(3) and by revising paragraph (b)(6) to read as follows:

§ 90.409 Engine dynamometer test run.

(a) * * *

(3) * * * For Phase 2 Class I, Phase 2 Class I–B, and Phase 2 Class II engines equipped with an engine speed governor, the governor must be used to control engine speed during all test cycle modes except for Mode 1 or Mode 6, and no external throttle control may be used that interferes with the function of the engine's governor; a controller may be used to adjust the governor setting for the desired engine speed in Modes 2–5 or Modes 7–10; and during Mode 1 or Mode 6 fixed throttle operation may be used to determine the 100 percent torque value.

(b) * * *

(6) For Class I, I–B, and II engines, during the maximum torque mode calculate the torque corresponding to 75, 50, 25, and 10 percent of the maximum observed torque (see Table 2 in Appendix A to this subpart).

* * * * *

20. Section 90.410 is proposed to be amended by revising paragraph (a), the first and third sentences of paragraph (b), and the first sentence of paragraph (c) to read as follows:

§ 90.410 Engine test cycle.

(a) Follow the appropriate 6-mode test cycle for Class I, I–B and II engines and 2-mode test cycle for Class I–A, III, IV, and V engines when testing spark-ignition engines (see Table 2 in Appendix A of this subpart).

(b) For Phase 1 engines and Phase 2 Class I–A, III, IV, and V, and Phase 2 Class I and II engines not equipped with an engine speed governor, during each non-idle mode, hold both the specified speed and load within ± five percent of point. * * * For Phase 2 Class I, I–B, and II engines equipped with an engine speed governor, during Mode 1 or Mode 6 hold both the specified speed and load within ± five percent of point, during Modes 2–3, or Modes 7–8 hold the specified load with ± five percent of point, during Modes 4–5 or Modes 9–10, hold the specified load within the larger range provided by +/− 0.27 Nm (+/− 0.2 lb-ft), or +/− ten (10) percent of point, and during the idle mode hold the specified speed within ± ten percent of the manufacturer's specified idle engine speed (see Table 1 in Appendix A to this Subpart for a description of test Modes). * * *

(c) If the operating conditions specified in paragraph (b) of this section for Class I, I–B, and II engines using Mode Points 2, 3, 4, and 5 cannot be maintained, the Administrator may authorize deviations from the specified load conditions. * * *

* * * * *

21. Appendix A to Subpart E of Part 90 is proposed to be amended in Table 2 by revising the table heading and by removing the last entry and adding two

new entries in its place to read as follows:

Appendix A to Subpart E of Part 90—Tables

* * * * *

TABLE 2.—TEST CYCLES FOR CLASS I–A, I–B, AND CLASS I–V ENGINES

Mode	1	2	3	4	5	6	7	8	9	10	11
Speed	Rated Speed						Intermediate Speed				Idle
*	*	*		*		*		*		*	
Weighting for Phase 1 Engines	90%										10%
Weighting for Phase 2 Engines	85%										15%

Subpart H—Manufacturer Production Line Testing Program

§ 90.701 [Amended]

22. Section 90.701 is proposed to be amended by adding the words ''handheld and'' immediately preceding the word ''nonhandheld'' in paragraph (a).

Subpart K—Prohibited Acts and General Enforcement Provisions

23. Section 90.1003 is proposed to be amended by revising the first sentence of paragraph (b)(6)(i) and adding a new sentence to the end of paragraph (b)(6)(i), by revising the first two sentences of paragraph (b)(6)(ii) and adding a new sentence to the end of paragraph (b)(6)(ii), by revising paragraph (b)(6)(iii) introductory text, and by adding a new paragraph (b)(7) to read as follows:

§ 90.1003 Prohibited acts.

* * * * *

(b) * * *

(6)(i) Regulations elsewhere in this part notwithstanding, for three model years after the phase-in of each set of Class I through Class V Phase 2 standards; i.e. through August 1, 2010 for Class I engines, through model year 2008 for Class II engines, through model year 2009 for Class III and Class IV engines, and through model year 2011 for Class V engines, small volume equipment manufacturers as defined in this part, may continue to use, and engine manufacturers may continue to supply, engines certified to Phase 1 standards (or identified and labeled by their manufacturer to be identical to engines previously certified under Phase 1 standards), provided the equipment manufacturer has demonstrated to the satisfaction of the Administrator that no certified Phase 2 engine is available with suitable physical or performance characteristics to power a piece of equipment in production prior to the initial effective date of Phase 2 standards, as indicated in § 90.103(a). * * * These provisions do not apply to Class I–A and Class I–B engines.

(ii) Regulations elsewhere in this part notwithstanding, for the duration of the Phase 2 rule in this part, equipment manufacturers that produce small volume equipment models, as defined in this part, for a Class I model in production prior to August 1, 2007, or a Class II model in production prior to the 2001 model year, or a Class III or Class IV model in production prior to the 2002 model year, or a Class V model in production prior to the 2004 model year, may continue to use in that small volume equipment model, and engine manufacturers may continue to supply, engines certified to Phase 1 requirements (or identified and labeled by their manufacturer to be identical to engines previously certified under Phase 1 standards). To be eligible for this provision, the equipment manufacturer must have demonstrated to the satisfaction of the Administrator that no certified Phase 2 engine is available with suitable physical or performance characteristics to power the small volume equipment model. * * * These provisions do not apply to Class I–A and Class I–B engines.

(iii) An equipment manufacturer which is unable to obtain suitable Phase 2 engines and which can not obtain relief under any other provision of this part, may, prior to the date on which the manufacturer would become in noncompliance with the requirement to use Phase 2 engines, apply to the Administrator to be allowed to continue using Phase 1 engines, through August 1, 2008 for Class I engines, through the 2006 model year for Class II engines, through the 2007 model year for Class III and Class IV engines, and through the 2009 model year for Class V engines, subject to the following criteria (These provisions do not apply to Class I–A and Class I–B engines.):

* * * * *

(7) Actions for the purpose of installing or removing altitude kits and performing other changes to compensate for altitude change as described in the application for certification pursuant to § 90.107(d) and approved at the time of certification pursuant to § 90.108(a) are not considered prohibited acts under paragraph (a) of this section.

Subpart L— Emission Warranty and Maintenance Instructions

24. Section 90.1103 is proposed to be amended by adding two sentences to the end of paragraph (a) to read as follows:

§ 90.1103 Emission warranty, warranty period.

(a) * * * Manufacturers of handheld engines subject to Phase 2 standards may apply to the Administrator for approval for a one year warranty period for handheld engines that are subject to severe service in seasonal equipment and are likely to run their full useful life hours in one year. Such an application must be made prior to certification.

* * * * *

Subpart M—Voluntary In-Use Testing

§ 90.1201 [Amended]

25. Section 90.1201 is proposed to be amended by adding the words ''handheld and'' immediately preceding the word ''nonhandheld''.

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