

## TITLE 13. CALIFORNIA AIR RESOURCES BOARD

### NOTICE OF PUBLIC HEARING TO CONSIDER THE ADOPTION OF EXHAUST AND EVAPORATIVE EMISSION CONTROL REQUIREMENTS FOR SMALL OFF-ROAD ENGINES LESS THAN OR EQUAL TO 19 KILOWATTS AND EQUIPMENT THAT USE SUCH ENGINES

The Air Resources Board (the Board or ARB) will conduct a public hearing at the time and place noted below to consider amendments to the small off-road engine regulations and test procedures, and adoption of evaporative emission standards, certification procedures, and evaporative test procedures for small off-road engines.

DATE: September 25, 2003

TIME: 9:00 a.m.

PLACE: South Coast Air Quality Management District  
Auditorium  
21865 East Copley Drive  
Diamond Bar, CA 91765-4182

This item will be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., September 25, 2003, and may continue at 8:30 a.m., September 26, 2003. This item may not be considered until September 26, 2003. Please consult the agenda for the meeting, which will be available at least 10 days before September 25, 2003, to determine the day on which this item will be considered.

If you have special accommodation or language needs, please contact the ARB's Clerk of the Board at (916) 322-5594 or [sdorais@arb.ca.gov](mailto:sdorais@arb.ca.gov) as soon as possible. TTY/TDD/Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

#### **INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW**

**Sections Affected:** Proposed adoption of sections 2405.1, 2405.2, and 2405.3, 2750, 2751, 2752, 2753, 2754, 2755, 2756, 2757, 2758, 2759, 2760, 2761, 2762, 2763, 2764, 2765, 2766, 2767, 2768, 2769, 2770, 2771, 2772, and 2773, title 13, California Code of Regulations (CCR). Proposed adoption of the incorporated "California Exhaust Emission Standards and Test Procedures for 2005 and Later Small Off-Road Engines," and the incorporated "Small Off-Road Engine Evaporative Emission Test Procedures, TP-901 and TP-902" and "Small Off-Road Engine Evaporative Emissions Control System Certification Procedures, CP-901 and CP-902." Proposed amendments to sections 2400, 2401, 2403,

2404, 2405, 2407, 2408, and 2409, title 13, CCR. Proposed amendments to the incorporated "California Exhaust Emission Standards and Test Procedures for 1995 and later Small Off-Road Engines," as last amended January 28, 2000, title 13, CCR.

**Background:** Health and Safety Code sections 43013 and 43018 direct the ARB to set emission control requirements for off-road mobile source categories. These categories include marine vessels, locomotives, utility engines, off-road motorcycles, and off-highway vehicles. The small engine category is covered by this mandate.

Small off-road spark-ignition engines run on gasoline or an alternative fuel such as liquefied petroleum gas (LPG) or compressed natural gas (CNG), and are rated at or below 19 kilowatts (25 horsepower). Small off-road engines are used to power a broad range of lawn and garden equipment including lawn mowers, leaf blowers, and lawn tractors, as well as generators and other small industrial equipment.

In December 1990, the Board approved exhaust emission control regulations for small off-road engines. (See title 13, CCR, sections 2400-2409 and the documents incorporated therein). The small off-road engine category was the first off-road category subject to emission control regulations because its emissions impact was significant and because a court order required Board action on the category by January 1991. The small off-road engine regulations apply to engines produced on or after January 1, 1995. On July 5, 1995, the United States Environmental Protection Agency (U.S. EPA) approved California's authorization request; approval allows the state to enforce the regulations.

The current small off-road engine regulations include exhaust emission standards, test procedures, and provisions for warranty and production engine compliance programs. Since its initial adoption the small off-road engine regulations have been amended several times, with the most recent amendment occurring in 1998. The current regulations consist of two tiers of emission standards. Tier 1 standards became effective in 1995, and Tier 2 standards began implementation with the 2000 model year. Exhaust emission standards have been established for hydrocarbons (HC), oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), and particulate matter (PM) (for two-stroke engines only). Additionally, the regulations separate small engines into three displacement categories: up to and including 65 cubic centimeters (cc), >65 to <225 cc, and 225 cc and above. Engines 65 cc and below are typically used in handheld applications, such as chainsaws and trimmers. Because of their unique operation, engine weight and size limitations, these engines are allowed to comply with a less stringent set of emission standards. Engines above 65 cc are typically used in nonhandheld applications, such as lawn mowers and portable generators. These engines meet more stringent emission levels due to the engine designs and available emission control systems.

**Proposed Actions:** Staff is proposing to amend the existing California exhaust emission regulations for small off-road spark-ignition engines to include more stringent exhaust standards as well as proposing new regulations to control evaporative emissions from small engine equipment.

Currently the small off-road engine regulations apply to engines below 25 horsepower (hp). The staff proposes to revise the regulations to harmonize with the U.S. EPA unit power designation and adopt the use of kilowatt (kW) as the unit of power for small off-road engines. The result is that the small off-road engine regulations would apply to engines that produce a gross power at or below 19 kW.

The original 65 cc engine class cut point was based upon the product line and market demands for handheld engines at the time the displacement categories were proposed (i.e., 1998). However, the natural progression of the product for handheld engines is moving toward larger displacement handheld engines. To address this market shift, staff proposes to modify the upper boundary of this smaller engine class to include engines up to and including 80 cc, beginning in 2005.

Staff proposes a new set of exhaust emission standards (Tier 3) for new small off-road spark-ignition engines. The Tier 3 standards would further limit exhaust emissions and are based on available engine designs and the most technologically feasible and cost-effective control strategies.

In March 2000, the U.S. EPA finalized new federal exhaust emission standards for handheld small off-road engines. The federal rule for handheld small engines includes a HC+NOx emission standard for engines below 50 cc that becomes more stringent over several years and, beginning with the 2005 model year, is more stringent than the current California HC+NOx emission standard for these same engines. Staff thus recommends adopting the federal HC+NOx exhaust emission standard for engines below 50 cc.

The staff also proposes to adopt new Tier 3 standards for engines above 80 cc. These new exhaust emission standards are based on reductions achievable with the use of a catalyst that would reduce HC+NOx by 50 percent at the end of useful life. Staff proposes to implement the new catalyst-based standards with the 2007 model year for engines >80 - <225 cc, and with the 2008 model year for engines 225 cc and above.

The proposed exhaust emissions standards are presented in Table 1, as are the existing standards for comparative purposes.

Table 1  
Adopted & Proposed Exhaust Emissions Standards for Small Off-Road Engines

Year	Displacement	Standards g/kW-hr [g/bhp-hr]		
		HC+NOx	CO	PM*
Adopted Tier 2	≤ 65 cc	72 [54]	536 [400]	2.0 [1.5]
Adopted Tier 2	> 65 to < 225 cc	16.1** [12.0]	549 [410]	N/A
	≥ 225 cc	12.1 [9.0]	549 [410]	N/A
2005 and later (Proposed Tier 3)	≤ 50 cc	50 [37]	536 [400]	2.0 [1.5]
	> 50 to ≤ 80 cc	72 [54]	536 [400]	2.0 [1.5]
2007 and later (Proposed Tier 3)	> 80 to < 225 cc	8.0 [6.0]	549 [410]	N/A
2008 and later (Proposed Tier 3)	≥ 225 cc	6.0 [4.5]	549 [410]	N/A

\*Applicable to two-stroke engines only.

\*\*For 2002-2005 model years, vertical shaft engines are allowed to meet 16.1 g/kW-hr HC+NOx and 467 g/kW-hr CO emission standards without a durability demonstration.

In addition to new exhaust emission requirements, staff is proposing new regulations to control evaporative emissions from small off-road equipment less than or equal to 19 kW. Currently, there are no regulations that control evaporative emissions from small off-road equipment. If left uncontrolled, it is estimated that the statewide evaporative emissions from all small engine equipment will be 52 tons per day of HC in 2010.

The proposed evaporative emission standards are presented in Table 2 below.

Table 2  
Proposed Evaporative Emission Standards for Small Off-Road Engine  
Equipment

Year	Displacement	Standard(s)
2007 and later	Small Engine Equipment = 80 cc	Fuel tank permeation emissions shall not exceed 2.0 grams per square meter per day. Equipment that uses a structurally integrated nylon tank is exempt.
2007 and later	All Walk-Behind Mowers > 80 cc to < 225 cc	Diurnal emissions shall not exceed 1.0 gram hydrocarbons per day.
2007 and later	All Small Engine Equipment > 80 cc to < 225 cc	Diurnal emissions shall not exceed 0.21* $Tank\ Volume + 0.95$ grams hydrocarbons per day.
2008 and later	All Small Engine Equipment $\geq 225$ cc	Diurnal emissions shall not exceed 2.0 grams hydrocarbons per day.

The staff proposal establishes performance standards for engines and equipment. Staff is proposing to set one permeation performance standard applicable to fuel tanks on all small off-road engine equipment less than or equal to 80 cc. Staff is also proposing three diurnal evaporative emission performance standards for small off-road engine equipment with displacements greater than 80 cc. The proposed evaporative regulations also include:

- options that allow engine or equipment manufacturers to certify evaporative emission control systems;
- labeling requirements to allow for the quick identification of equipment subject to the proposed regulations; and
- test methods that ARB and industry would use to determine compliance with the permeation and diurnal evaporative emission performance standards.

To continue support of incentive programs that encourage the use of engines that go beyond mandatory emission standards, the staff proposes to implement voluntary optional low exhaust emission standards for small engines. An engine certified to these standards will be classified as a "Blue Sky Series" Engine. The optional standards represent a reduction of approximately 50 percent below the proposed Tier 3 levels for HC+NOx.

The ARB and U.S. EPA each have exhaust emissions test procedures in place which manufacturers must adhere to when certifying to the applicable State or federal exhaust emission standards for small engines. In order to ease the burden of certifying engine families with multiple units to both the federal and California emission standards, staff proposes to more fully harmonize with the federal small engine test procedures (40 Code of Federal Regulations, part 90, subparts A, B, D, and E and corresponding appendices) to be used for 2005 and later model year engines when certifying to California's exhaust emission standards. The current small engine exhaust emission regulations require that manufacturers conduct a durability demonstration as part of the certification process. For each engine family manufacturers are able to choose an emissions durability period of either 125, 250, or 500 hours for the larger (nonhandheld) engines. The federal rule also includes a 1000 hour durability option for nonhandheld engines greater than or equal to 225 cc, and in the spirit of alignment, staff proposes to adopt the 1000 hour durability option. Also, the federal rule requires manufacturers to report emission-related defects. Staff proposes a similar requirement such that a manufacturer must report to ARB emission-related defects affecting a given class or category of engines. If ARB determines that a substantial number of any class or category of engines do not conform to the regulations when in actual use, ARB will notify the manufacturer and require the manufacturer to submit a plan to resolve the nonconformity of the engines.

The staff also proposes to make other non-substantive modifications to the regulations and test procedures to clarify or simplify existing language.

### **COMPARABLE FEDERAL REGULATIONS**

The U.S. EPA has exhaust emission control regulations for small off-road engines (Title 40, Code of Federal Regulations, Part 90). Those regulations are similar to the California regulations that predated them. The staff has made every effort to minimize conflicts with the current U.S. EPA rule, while retaining specific features needed by California. Those efforts include aligning the structure of the exhaust emission test procedures wherever justifiable. However, the proposal includes several differences from the current U.S. EPA regulations, including more stringent exhaust emissions standards, and evaporative emission standards.

The staff analysis of the proposed regulations indicates that they will reduce emissions from ozone precursors in a cost-effective manner, beyond what would be accomplished by the existing federal regulations. Thus, the cost of the separate California program is justified by the benefit to human health, public welfare, and the environment. In addition, Health and Safety Code sections 43013 and 43018 authorize the differences from the federal program.

### **BENEFITS OF THE PROPOSAL**

The intent of the proposed regulations is to reduce emissions from small engines and equipment utilizing technologies that are technologically feasible and cost-effective. By 2010, it is estimated that the proposed emission standards will result in statewide emission reductions of 3.2 tons per day of NOx emissions and 18.5 tons per day of HC emissions. In 2020, the estimated reductions increase to 7.5 and 42.0 for NOx and HC, respectively. Staff estimates that a 2010 South Coast Air Basin HC+NOx reduction of 9.0 tons per day will be realized.

### **AVAILABILITY OF DOCUMENTS AND CONTACT PERSONS**

The Board staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the Proposed Regulatory Action, which includes a summary of the environmental impacts of the proposal.

Copies of the Staff Report and the full text of the proposed regulatory language, in underline and strikethrough format to allow for comparison with the existing regulations, may be accessed on the ARB's web site listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Environmental Resources Center, 1<sup>st</sup> Floor, Sacramento, CA 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing September 25, 2003.

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on the ARB's web site listed below.

Inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons, Mr. Manjit Ahuja, at (916) 327-8528 or [mahuja@arb.ca.gov](mailto:mahuja@arb.ca.gov), or Ms. Jackie Lourenco, at (626) 575-6676 or [jlourenc@arb.ca.gov](mailto:jlourenc@arb.ca.gov).

Further, the agency representative and designated back-up contact persons to whom nonsubstantive inquiries concerning the proposed administrative action may be directed are Artavia Edwards, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-6070, or Amy Whiting, Regulations Coordinator, (916) 322-6533. The Board has compiled a record for this rulemaking action,

which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

If you are a person with a disability and desire to obtain this document in an alternative format, please contact the Air Resources Board ADA Coordinator at (916) 323-4916, or TDD (916) 324-9531, or (800) 700-8326 for TDD calls outside the Sacramento area.

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are available on the ARB Internet site for this rulemaking at [www.arb.ca.gov/regact/sore03/sore03.htm](http://www.arb.ca.gov/regact/sore03/sore03.htm).

### **COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED**

The determinations of the Board's Executive Officer concerning the costs or savings necessarily incurred by public agencies and private persons and businesses in reasonable compliance with the proposed regulations are presented below.

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action will not create costs or savings to any state agency or in federal funding to the state, costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code, or other nondiscretionary savings to state or local agencies.

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on representative private persons or businesses. The ARB is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

The Executive Officer has made an initial determination that the proposed regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action will not affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Staff Report (ISOR).



The Executive Officer has also determined, pursuant to title 1, CCR, section 4, that the proposed regulatory action will have some impact, although not significant, on small businesses that buy and sell lawn and garden equipment. During the initial years of implementation, the increased cost of equipment may lead to a slight drop in demand that could result in lower profits for small businesses.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the ARB's Executive Officer has found that the reporting requirements of the regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

Before taking final action on the proposed regulatory action, the Board must determine that no alternative considered by the agency or that has otherwise been identified and brought to the attention of the agency would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

### **SUBMITTAL OF COMMENTS**

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written submissions not physically submitted at the hearing must be received **no later than 12:00 noon, September 24, 2003**, and addressed to the following:

Postal mail is to be sent to:

Clerk of the Board  
Air Resources Board  
1001 "I" Street, 23<sup>rd</sup> Floor  
Sacramento, California 95814

Electronic mail is to be sent to: [SORE03@listserv.arb.ca.gov](mailto:SORE03@listserv.arb.ca.gov), and received at the ARB **no later than 12:00 noon, September 24, 2003**.

Facsimile transmissions are to be transmitted to the Clerk of the Board at (916) 322-3928 and received at the ARB **no later than 12:00 noon, September 24, 2003**.

The Board requests but does not require that 30 copies of any written statement be submitted and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The ARB encourages members of the public to bring to the attention

of staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

### **STATUTORY AUTHORITY AND REFERENCES**

This regulatory action is proposed under that authority granted in Health and Safety Code Sections 39600, 39601, 43013, 43018, 43101, 43102, and 43104. This action is proposed to implement, interpret, and make specific Health and Safety Code Sections 43013, 43017, 43018, 43101, 43102, 43104, 43150-43154, 43205.5 and 43210-43212.

### **HEARING PROCEDURES**

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with non substantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the proposed regulatory action; in such event the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before it is adopted.

The public may request a copy of the modified regulatory text from the ARB's Public Information Office, Air Resources Board, 1001 "I" Street, Environmental Services Center, 1<sup>st</sup> Floor, Public Information Office, Sacramento, CA 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

Catherine Witherspoon  
Executive Officer

Date: July 29, 2003

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs see our Web –site at [www.arb.ca.gov](http://www.arb.ca.gov).*