MAIL OUT #96-02

State of California
**AIR RESOURCES BOARD**

Second Notice of Public Availability of Modified Text

# PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE CERTIFICATION REQUIREMENTS AND PROCEDURES FOR LOW-EMISSION PASSENGER CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES

Public Hearing Date: September 28, 1995
First Public Availability Date: October 20, 1995
Second Public Availability Date: February 13, 1996
Deadline for Public Comment: February 29, 1996

On September 28, 1995 the Air Resources Board (the Board) considered amendments to certification requirements and test procedures for low-emission passenger cars, light-duty trucks and medium-duty vehicles. Included in that rulemaking were modifications to the California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles as incorporated by reference in California Code of Regulations, (CCR) Title 13 section 1956.8; the California Non-Methane Organic Gas Test Procedures as incorporated by reference in CCR, Title 13, section 1960.1; the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles as incorporated by reference in CCR, Title 13, sections 1956.8 and 1960.1; and to the California Motor Vehicle Emission Control and Smog Index Label Specifications as incorporated by reference in CCR Title 13 section 1965.

At the hearing the Board approved the regulatory amendments proposed by the staff with various modifications to the originally proposed regulatory language. In accordance with section 11346.8 of the Government Code, the Board directed the Executive Officer to adopt the proposed amendments after making the modified regulatory language available to the public for comment for a period of at least 15 days, provided that the Executive Officer is to consider such written comments as may be submitted during this period, make such modifications as may be appropriate in light of the comments received, and present the regulations to the Board for further consideration if he determines that this is warranted.

The modified text was made available for public comments on October 12, 1995. In light of the comments submitted by industry during that comment period, it has been determined that further modifications to the certification requirements and test procedures are appropriate to clarify and improve various provisions including various editorial corrections for typographical and grammatical errors. The originally proposed amendments were described in the Initial Statement

of Reasons (Staff Report) released on August 11, 1995. A discussion of the initially proposed modifications was included in the first Notice of Public Availability of Modified Text (Mail-Out #95-36) released on October 12, 1995. Attachment I to this Second Notice of Public Availability of Modified Text contains excerpted portions of the pertinent test procedures. Additions to the originally noticed text are shown in ***underlined bold italics*** and ~~***underlined bold italic strikeout***~~.

For all persons who testified at the hearing, submitted written comments at the hearing or during the public comment period, or requested notification of the availability of the modifications to the originally proposed text, Attachment I to this notice includes the complete texts of the test procedures being amended in this rulemaking, with the modifications to the originally proposed texts clearly indicated. For the other recipients of this notice, Attachment I contains only the text being modified in this notice of public availability. Copies of the complete Test Procedures showing the modifications to the original proposal may be requested from Ms. Donna Barragan, Mobile Source Division, California Air Resources Board, 9528 Telstar Avenue, El Monte, California 91731, fax no. (818) 575-6699. The complete text of these documents will also be available on the Air Resources Board Information System (ARBIS) electronic bulletin board. The documents may be found in the "LEV Program" menu item in the "System Features" menu. The ARBIS may be accessed via modem by calling (916) 322-2826. Please make sure your communications parameters are set to 8-N-1. If you have a 9600 Baud modem or greater, use the ANSI capabilities that are provided by the more recent modem software packages. Modems slower than 9600 will work with VT-100 or TTY terminal emulation. If you have questions regarding access to the ARBIS, please contact the Business Assistance Hot Line at 1-800-ARB-HLP2 (in California) or (916) 323-3336.

Written comments on the proposed modifications and the information in Attachment I must be submitted to the Board Secretary, Air Resources Board, Post Office Box 2815, Sacramento, California 95812, no later than the deadline for public comments identified above, for consideration by the Executive Officer prior to final action. Only comments pertaining to the modifications will be considered by the Executive Officer.

Sincerely,

K. D. Drachand, Chief
Mobile Source Division

Attachment

ATTACHMENT I

Summary of Proposed Modified Text

The following is a summary of the changes staff is proposing pursuant to comments received from industry following the first notice of public availability of modified text released on October 12, 1995. Modifications to the originally noticed text are designated by ***underlined bold italics*** and ~~***underlined bold strikeout***~~ to represent additions and deletions, respectively.

**I. Title 13, California Code of Regulations Section 1956.8(c); California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles, Section 86.098-10(f)(1).**

A. Pursuant to the Advanced Notice of Proposed Rulemaking (ANPRM) issued by the United States Environmental Protection Agency (U.S. EPA) in 1995, staff proposed that the California standards for 2004 and subsequent model medium-duty vehicles and heavy-duty Otto-cycle engines be adjusted to conform to the proposed federal standards. Staff made such conforming adjustments in the first notice of public availability of modified text; however, pursuant to comments from industry staff is proposing further adjustment of the carbon monoxide standard for heavy-duty Otto-cycle engines to be fully consistent with the ANPRM. The proposed carbon monoxide standard would be 37.1 grams per brake horsepower-hour (g/bhp-hr) rather than the originally proposed 14.4 g/bhp-hr. The proposed modified text in Title 13, CCR, Section 1956.8(c) is as follows:

**1956.8 Exhaust Emission Standards and Test Procedures - 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.**

(c) (1) [No Change]
(2) [No Change]
***(3) The exhaust emissions from new 2004 and subsequent model heavy-duty Otto-cycle engines shall not exceed:***

***(a) Non-Methane Hydrocarbons plus Oxides of Nitrogen: 2.5 grams per brake horsepower-hour with non-methane hydrocarbons not to exceed 0.5 grams per brake horsepower-hour; or 2.4 grams per brake horsepower-hour;***
***(b) Carbon Monoxide: ~~14.4~~ 37.1 grams per brake horsepower-hour.***

(d) through (h) [No Change]

The same change was made to the California Exhaust Emission Standards and Test Procedures for 1987 and Subsequent Model Heavy-Duty Otto-Cycle Engines and Vehicles.

(B) When staff initially proposed that the heavy- and incomplete medium-duty engine standards be aligned with the federal standards for 2004 and subsequent model years, staff also added language at the request of industry that would ensure that the ARB would review California requirements for consistency with the federal standards subsequent to their adoption by the U.S. EPA. Staff added such language for incomplete medium-duty vehicles; however, a like statement was inadvertently omitted for heavy-duty Otto-cycle engines. Since it is clear that this language should apply to both vehicle categories, staff is proposing that it also be added to section 1956.8(c)(3) as follows:

> ***(3) The exhaust emissions from new 2004 and subsequent model heavy-duty Otto-cycle engines shall not exceed[A]:***
>
> ***(a) Non-Methane Hydrocarbons plus Oxides of Nitrogen: 2.5 grams per brake horsepower-hour with non-methane hydrocarbons not to exceed 0.5 grams per brake horsepower-hour; or 2.4 grams per brake horsepower-hour;***
> ***(b) Carbon Monoxide: ~~14.4~~ 37.1 grams per brake horsepower-hour.***
>
> *A.* ***The U.S. EPA is considering the adoption of federal emission standards for heavy-duty Otto-cycle engines. If the U.S. EPA promulgates a Final Rule establishing emission standards for this category, the ARB will hold a noticed public hearing within one year of such promulgation to consider the adoption of similar or identical standards in California.***

(C) In the initial statement of rulemaking, the formaldehyde standard for medium-duty ULEVs was proposed to be increased from 0.025 to 0.050 g/bhp-hr for 2004 and subsequent model year medium-duty vehicles. The current ULEV formaldehyde standard for 1992 through 2003 ULEVs remained unchanged at 0.025 g/bhp-hr. In light of the modification to the formaldehyde standard for 2004 and subsequent model incomplete medium-duty vehicles, it is inappropriate that the ULEV formaldehyde standard for 1992 through 2003 model medium-duty vehicles be more stringent. Therefore, staff is proposing that the 1992 through 2003 ULEV formaldehyde standard be aligned with the 2004 and subsequent model standards. The proposed text is as follows (the italicized revisions to the title of the chart were part of the first set of 15-day changes):

(h) The exhaust emissions from new 1992 and subsequent model-year engines used in incomplete medium-duty low-emission vehicles, ***and*** ultra-low-emission vehicles, ***and super-ultra-low-emission vehicles,*** and for diesel engines used in medium-duty low-emission vehicles, ***and*** ultra-low-emission vehicles ***and super-ultra-low-emission vehicles*** shall not exceed:

**Exhaust Emission Standards for Engines Used in Incomplete Medium-Duty Low-Emission Vehicles, ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles, and for Diesel Engines Used in Medium-Duty Low-Emission Vehicles, ~~and~~ Ultra-Low-Emission Vehicles, and Super *Ultra*-Low-Emission Vehicles[A,F]**
(grams per brake horsepower-hour)

| Model Year | Vehicle Emissions Category[B] | Carbon Monoxide | Non-Methane Hydrocarbons and Oxides of Nitrogen[C] | | Formaldehyde | Particulates[D] |
|---|---|---|---|---|---|---|
| 1992[E] ~~and subsequent~~ - 2001 | LEV | 14.4 | 3.5 | | 0.050 | 0.10 |
| 2002-2003[E,H] | LEV | 14.4 | 3.0 | | 0.050 | 0.10 |
| *1992-2003[E,H]* | ULEV | ~~7.2~~ 14.4 | 2.5 | | ~~*0.025*~~ ***0.050*** | ~~0.05~~ 0.10 |
| ~~*2004 and subsequent[G]*~~ | ~~*ULEV*~~ | ~~*14.4*~~ | ~~*NMHC*~~ ~~*0.5*~~ | ~~*NOx*~~ ~~*2.0*~~ | ~~*0.050*~~ | ~~*0.10*~~ |
| ***2004 and subsequent*** | ***ULEV - Opt A.*** | ***14.4*** | ***2.5[G,I]*** | | ***0.050*** | ***0.10*** |
| ***2004 and subsequent*** | ***ULEV - Opt. B*** | ***14.4*** | ***2.4[G,I]*** | | ***0.050*** | ***0.10*** |
| 1992 and subsequent | SULEV | 7.2 | 2.0 | | 0.025 | 0.05 |

**II. Title 13, CCR Section 1960.1 and the California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles (the "Light- and Medium-Duty Vehicle Test Procedures).**

(A) Footnote (4) of section 3.d of the Light- and Medium-Duty Vehicle Test Procedures contains the formaldehyde in-use exhaust emission standards for light- and medium-duty vehicles. The originally proposed modifications to footnote (4) of the Light- and Medium-Duty Vehicle Test Procedures were made in error. The text should not have been amended. For this reason, staff is proposing that the text be returned to its original form.

In addition, although there are in-use standards for SULEVs listed in the table at the beginning of both section (e)(3) of section 1960.1 and section 3.f of the Light- and Medium-Duty Test Procedures, there is no time limit for in-use compliance as is the case for TLEVs, LEVs and ULEVs. Therefore, staff is incorporating a time limit similar to that adopted for medium-duty LEVs and ULEVs for in-use compliance.

(4) The standards in parentheses are intermediate in-use compliance standards for 50,000 miles.

a. For PCS and LDTs from 0-5750 lbs. LVW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to TLEVs through the 1995 model year, ~~and~~ ***to and*** LEVs ~~***and ULEVs***~~ ***and ULEVs*** through the 1998 model year. ~~***and to ULEVs through the 2000 model year.***~~ In-use compliance with standards beyond 50,000 miles shall be waived through the 1995 model year for TLEVs, and through the 1998 model year for LEVs and ULEVs.

b. For MDVs from 0-14,000 lbs. TW, including fuel-flexible and dual-fuel vehicles, intermediate in-use compliance standards shall apply to LEVs, ***ULEVs and SULEVs*** ~~and ULEVs~~ through the 1999 model year. ~~***and to ULEVs through the 2000 model year.***~~ In-use compliance with standards beyond 50,000 miles shall be waived through the 1999 model year for LEVs, ~~***and***~~ ULEVs ***and SULEVs***.

(B) Based on a review of the regulations, staff has made several additional editorial corrections to section 3.g of the above-referenced test procedures and to Title 13, CCR section 1960.1 section (g)(1) in order to conform the text of the two documents. The affected sections concern the methodology for reactivity adjustment of fuel-flexible and dual fuel vehicles and also the reactivity adjustment methodology for in-use compliance. The affected sections in Title 13 are (g)(1) footnote 4(a) and section 3.g footnote (4)a. and (6)a. of the light- and medium-duty test procedures.

**Title 13, CCR, Section 1960.1(g)(1)(4)a.:**

a. *Reactivity Adjustment*. For TLEVs, LEVs, and ULEVs, when certifying for operation on a fuel other than gasoline, manufacturers shall multiply exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG certification levels by the applicable reactivity adjustment factor, ***exhaust methane certification levels for*** natural gas vehicles shall ***be multiplied*** ~~***multiply the exhaust methane certification level***~~ by the applicable methane reactivity adjustment factor and ***the resulting value shall be added*** ~~***add that value***~~ to the reactivity-adjusted NMOG value. The exhaust NMOG certification levels for fuel-flexible or dual-fuel vehicles when certifying on gasoline shall not be multiplied by a reactivity adjustment factor.

**Light- and Medium-Duty Test Procedures, section 3.g(4)a.**

a. Reactivity Adjustment. For TLEVs, LEVs, and ULEVs, when certifying for operation on a fuel other than gasoline, manufacturers shall multiply the exhaust NMOG certification levels by the applicable reactivity adjustment factor. In addition to multiplying the exhaust NMOG ~~*emission results*~~ ***certification levels*** by the applicable reactivity adjustment factor, ~~NG vehicles shall multiply~~ the exhaust methane certification level for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added ~~add that value~~ to the reactivity-adjusted NMOG value. The ***exhaust NMOG*** certification levels for fuel-flexible or dual-fuel vehicles when certifying on gasoline shall not be multiplied by a reactivity adjustment factor.

**Light- and Medium-Duty Test Procedures, section 3.g(6)a.**

a. Reactivity Adjustment. For TLEVs, LEVs, and ULEVs designed to operate on a fuel other than conventional gasoline, including fuel-flexible and dual-fuel vehicles when operating on a fuel other than ~~conventional~~ gasoline, exhaust NMOG emission results shall be multiplied by the ***applicable*** reactivity adjustment factor to determine compliance with intermediate in-use compliance standards for NMOG. In addition to multiplying the exhaust NMOG emission results by the applicable reactivity adjustment factor, ~~NG vehicles shall multiply~~ the exhaust methane emission results for natural gas vehicles shall be multiplied by the applicable methane reactivity adjustment factor and the resulting value shall be added ~~add that value~~ to the reactivity-adjusted NMOG value. ***Exhaust NMOG mass emissions from fuel-flexible or dual-fuel vehicles when operating on gasoline shall not be multiplied by a reactivity adjustment factor.***

(C) Finally, staff is removing some of the originally proposed editorial modifications to footnote (9) of Title 13, CCR, section 1960.1(g)(2). In March 1996, staff will be proposing a change in the ZEV requirements which would make it inappropriate to propose the current modification in this rulemaking. Therefore staff is re-inserting the originally deleted text and deleting the table.

(9) *ZEV Requirements*. While meeting the fleet average requirements, each manufacturer shall certify, produce, and deliver for sale in California at least ~~*the percentages of ZEVs set forth in the table below.*~~ ~~2% ZEVs each model year from 1998 through 2000, 5% ZEVs in 2001 and 2002, and 10% ZEVs in 2003 and subsequent model years.~~ ***2% ZEVs each model year from 1998 through 2000, 5% ZEVs in 2001 and 2002, and 10% ZEVs in 2003 and subsequent model years.*** These percentages shall be applied to the manufacturer's total production of PCS and LDTs 0-3750 lbs. LVW delivered for sale in California.

| ~~Model Year~~ | ~~Required Percentage per Model Year~~ |
|---|---|
| ~~1998~~ | ~~2~~ |
| ~~1999~~ | ~~2~~ |
| ~~2000~~ | ~~2~~ |
| ~~2001~~ | ~~5~~ |
| ~~2002~~ | ~~5~~ |
| ~~2003 and subsequent model years~~ | ~~10~~ |

This same change is being made to the Light- and Medium-Duty Vehicle Test Procedures.

## III. California Non-Methane Organic Gas Test Procedures

(A) Subsequent to the release of these Test Procedures, it was discovered that the amount of alcohol contained in the stock solution for the determination of alcohols in automotive source samples was incorrectly stated. The correct amount should have been 10 milligrams per milliliter rather than one microgram per milliliter. The proposed modified text is as follows:

5.4. A stock solution is prepared gravimetrically ***or volumetrically*** by diluting methanol and ethanol with deionized or purified water, e.g., for this method the stock solution contains ~~is~~ approximately ~~1~~ ***10*** ~~ug/mL~~ ***mg/mL*** ~~percent by volume~~ of each target alcohol.

(B) In addition, a typographical error was discovered in part G, Determination of NMOG Mass Emissions, section 5, "Carbonyl Mass Emission Calculations." $RHO_{wm}$ should be 3.2 milligrams per mile rather than the stated 3.2 grams.

$RHO_{wm}$ = ~~3.1~~ 3.2 ~~g~~ ***mg/mi*** (formaldehyde weighted mass emissions)

## IV. Title 13, California Code of Regulations, Section 1965, Emission Control and Smog Index Labels - 1979 and Subsequent Model-Year Motor Vehicles; and California Motor Vehicle Emission Control and Smog Index Label Specifications.

(A) When the first notice of public availability was released, section 43200 was proposed under the "Reference" section of the NOTE at the end of Title 13, CCR, section 1965.

However, Section 43200 should also have been proposed to be added under the "Authority cited" portion of this regulation. The proposed amendment is as follows:

> NOTE: Authority cited: Sections 39600, ~~and~~ 39601, ***43200*** and 44254, Health and Safety Code. Reference: Sections 39002, 39003, 43000, 43013, 43100, 43101, 43102, 43103, 43104, ~~and~~ 43107, ***43200,*** 43200.5, and 44254 Health and Safety Code.

(B) Pursuant to comments received from manufacturers in the first public notice of availability of modified text, staff is proposing that clarifying language be added to paragraphs 7 and 8 of the California Motor Vehicle Emission Control and Smog Index Label Specifications to clarify that these requirements apply to the emission control labels and not the smog index label.

7. The manufacturer shall obtain approval from the Executive Officer for all ***emission control*** label formats and locations prior to use. Approval of the specific tune-up settings is not required; however, the format for all such settings and tolerances, if any, is subject to review. If the Executive Officer finds that the information on the label is vague or subject to misinterpretation, or that the location does not comply with these specifications, he or she may require that the label or its location be modified accordingly.

8. Samples of all actual production ***emission control*** labels used within an engine family shall be submitted to the Executive Officer within thirty days after the start of production.