State of California
AIR RESOURCES BOARD

Resolution 76-38

October 5, 1976

WHEREAS, Section 39601 of the Health and Safety Code authorizes the Air Resources Board to adopt standards, rules. and regulations necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, Sections 43101 and 43104 of the Health and Safety Code authorize the Board to adopt vehicle emission standards and test procedures in order to control or eliminate air pollution caused by motor vehicles;

WHEREAS, the Board has found that more stringent heavy-duty engine exhaust emission standards for hydrocarbons and oxides of nitrogen are needed to achieve the ambient air quality standards in the South Coast Air Basin and in other areas of the State;

WHEREAS, on August 27, 1976 the Air Resources Board staff met with representatives of the major heavy-duty engine manufacturers to discuss the costs and technological feasibility of more stringent exhaust emission standards for heavy-duty engines;

WHEREAS, based on information presented at the August 27 meetings and on information previously submitted to the Board and to the U. S. Environmental Protection Agency the Board has found that more stringent heavy-duty engine emission standards are both technologically feasible and cost/effective;

WHEREAS, on May 24, 1976 the U.S. Environmental Protection Agency proposed revisions to its exhaust emission standards and test procedures for heavy-duty engines and vehicles to be effective beginning with the 1979 model year; and

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of the Administrative Procedure Act (Government Code, Title 2, Division 3, Part 1, Chapter 4.5);

NOW, THEREFORE, BE IT RESOLVED, that the Board hereby amends its regulations in Article 2, Subchapter 1, Chapter 3 of Title 13, California Administrative Code as follows:

1. Amend Section 1956(d) to read:

   (d) Exhaust emissions from new 1978 model-year gasoline-fueled heavy-duty engines and vehicles, except medium-duty vehicles, shall not exceed:

(1) Hydrocarbons plus oxides of nitrogen (as $NO_2$) - 5 grams per brake horsepower hour

(2) Carbon monoxide - 25 grams per brake horsepower hour

or

(1) Hydrocarbons - 1.0 gram per brake horsepower hour

(2) Carbon monoxide - 25 grams per brake horsepower hour

(3) Oxides of nitrogen (as $NO_2$) - 7.5 grams per brake horsepower hour

These two sets of standards shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

The test procedures for determining compliance with these standards are those set forth in "California Exhaust Emission Standards and Test Procedures for 1975 to 1978 Model-Year Gasoline-Fueled Heavy-Duty Engines and Vehicles," dated February 19 1975, amended April 16, 1975, July 15, 1975, March 31, 1976, and October 5, 1976.

2. Adopt a new section 1956.5 as follows:

1956.5 Exhaust Emission Standards and Test Procedures - 1979 and Subsequent Model-Year Heavy-Duty Vehicles.

(a) The exhaust emissions from new 1979 and subsequent model-year heavy-duty engines and vehicles, except medium-duty vehicles, shall not exceed:

Exhaust Emission Standards
(grams per brake horsepower hour)

| Model Year | Hydrocarbons | Carbon Monoxide | Oxides of Nitrogen ($NO_2$) | Hydrocarbons plus Oxides of Nitrogen ($NO_2$) |
|---|---|---|---|---|
| 1979 | 1.5 | 25 | 7.5 | - |
| 1979 OR* | - | 25 | - | 5 |
| 1980 | 1.0 | 25 | - | 6.0 |
| 1980 OR* | - | 25 | - | 5 |
| 1981 | 1.0 | 25 | - | 6.0 |
| 1981 OR* | - | 25 | - | 5 |
| 1982 | 1.0 | 25 | - | 6.0 |
| 1982 OR* | - | 25 | - | 5 |
| 1983 and subsequent | 0.5 | 25 | - | 4.5 |

*The two sets of standards for each model year shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

(b) The test procedures for determining compliance with these standards are set forth in "California Exhaust Emission Standards and Test Procedures for 1979 and Subsequent Model-Year Heavy-Duty Engines and Vehicles," adopted October 5, 1976.

(c) A manufacturer may elect to certify heavy-duty vehicles of less than 10,000 pounds maximum gross vehicle weight rating as medium-duty vehicles under Section 1959 of this chapter, in which event heavy-duty emission standards and test procedures shall not apply.

3. Amend Section 1957(d) to read:

(d) Exhaust emissions from new 1978 model-year Diesel-fueled heavy-duty engines and vehicles, except medium-duty vehicles, shall not exceed:

(1) Hydrocarbons plus oxides of nitrogen (as $NO_2$) - 5 grams per brake horsepower hour

(2) Carbon monoxide - 25 grams per brake horsepower hour

or

(1) Hydrocarbons -1.0 gram per brake horsepower hour

(2) Carbon monoxide - 25 grams per brake horsepower hour

(3) Oxides of nitrogen (as $NO_2$) - 7.5 grams per brake horsepower hour

These two sets of standards shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

The test procedures for determing compliance with these standards are those set forth in "California Exhaust Emission Standards and Test Procedures for 1975 to 1978 Model-Year Diesel-Fueled Heavy-Duty Engines and Vehicles," dated December 19, 1973, test amended October 5, 1976.

A manufacturer may elect to certify heavy-duty vehicles of less than 10,000 pounds maximum gross vehicle weight rating as medium-duty vehicles under Section 1959 of this chapter, in which event heavy-duty emission standards and test procedures shall not apply.

BE IT FURTHER RESOLVED, that the Board hereby adopts the "California Exhaust Emission Standards and Test Procedures for 1975 and 1978 Model-Year Gasoline-Fueled Heavy-Duty Engines and Vehicles," dated February 19, 1975, amended April 16, 1975, July 15, 1975, March 31, 1976, and October 5, 1976; "California Exhaust Emission Standards and Test Procedures for 1979 and Subsequent Model-Year Heavy-Duty Engines and Vehicles," dated October 5, 1976; and "California Exhaust Emission Standards and Test Procedures for 1975 to 1978 Model-Year Diesel-Fueled Heavy-Duty Engines and Vehicles," dated December 19, 1973, last amended October 5, 1976.

STATE OF CALIFORNIA

AIR RESOURCES BOARD

# CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1975 ~~AND SUBSEQUENT~~ TO 1978 MODEL-YEAR GASOLINE-FUELED HEAVY-DUTY ENGINES AND VEHICLES

*Note: These procedures are printed in a style to indicate the adopted changes. New text is underlined and deleted portions are noted.*

ADOPTED: December 19, 1973
AMENDED: June 12, 1974
AMENDED: August 8, 1974
AMENDED: February 19, 1975
AMENDED: April 16, 1975
AMENDED: July 15, 1975
AMENDED: March 31, 1976
AMENDED: October 5, 1976

CALIFORNIA EXHAUST EMISSION STANDARDS
AND TEST PROCEDURES
FOR 1975 ~~AND SUBSEQUENT~~ TO 1978 MODEL-YEAR GASOLINE-FUELED
HEAVY-DUTY ENGINES AND VEHICLES

The provisions of Subpart H, Emission Regulations for new Gasoline-Fueled Heavy-Duty Engines, Part 85, Title 40, Code of Federal Regulations, as they existed on January 1, 1975, are hereby adopted as California's Exhaust Emission Standards and Test ~~and Approval~~ Procedures for 1975 ~~and Subsequent~~ to 1978 Model-Year Gasoline-Fueled Heavy-Duty Engines and Vehicles with the following exceptions and additions:

1. This procedure is applicable to new ~~gasoline-fueled heavy-duty engines and vehicles beginning with the~~ 1975 to 1978 engine model-year gasoline fueled heavy-duty engines and vehicles. Beginning with the 1978 model year, this procedure shall not be applicable to medium-duty vehicles. A manufacturer may elect to certify heavy-duty vehicles 10,000 pounds maximum gross vehicle weight rating or less as medium-duty vehicles, in which event heavy-duty standards and test procedures will not apply.

2. Definitions.

   Any applicable definition in the California Health and Safety Code, Division 26, or in the California Vehicle Code as incorporated into Division 26, shall apply, and if inconsistent with any definition in these test procedures these Codes shall take precedence.

   a. "Administrator" means the Executive Officer of the Air Resources Board.

   b. "Certificate of Conformity" means "Executive Order" certifying vehicles for sale in California.

   c. "Certification" means certification as defined in Section 39018 of the Health and Safety Code.

   d. "Heavy-duty engine" means an engine which is used to propel a heavy-duty vehicle.

   e. "Heavy-duty vehicle" means any motor vehicle having a manufacturer's gross vehicle weight rating greater than 6,000 pounds, except passenger cars.

   f. "Medium-duty vehicle" means any heavy-duty vehicle having a manufacturer's gross vehicle weight rating of 8500 pounds or less.

3. Any reference to vehicle or engine sales throughout the United States shall mean vehicle or engine sales in California.

4. Regulations concerning EPA hearings, EPA inspections and specific language on the Certificate of Conformity shall not be applicable to this procedure.

5. Durability data submitted pursuant to subparagraph 85.774-5(e) may be from engines previously certified or approved by EPA or ARB.

6. The requirements in subparagraphs 85.774-28(c)(1)(ii) (durability engines must meet emission standards) shall refer to Federal emission standards.

7. Labeling required pursuant to paragraph 85.774-35 shall also conform to Section 43200 of the California Health and Safety Code, and to Section 1965 of Title 13, California Administrative Code.

8. A statement must be supplied that the production engines shall be in all material respects the same as those for which ~~approval~~ certification was granted.

9. If an engine manufacturer requires the use of unleaded fuel, a statement will be required that the engine and transmission combinations for which ~~approval~~ certification is requested are designed to operate satisfactorily on a gasoline having a research octane number not greater than 91.

10. The average brake horsepower at each mode shall be reported for all emission tests.

11. A vehicle manufacturer shall provide the following in his application:

    a. Identification and description of the vehicle models for which ~~approval~~ certification is requested.

    b. Identification and description of the engines to be used in these vehicle models.

    c. References to the engine manufacturer's Executive Order ~~approving~~ certifying these engines.

12. The following standards represent the maximum projected exhaust emissions for new gasoline-fueled heavy-duty engines.

| Engine Model Year | Exhaust Emission Standards (grams/brake-horsepower hour) Hydrocarbons plus Oxides of Nitrogen (as $NO_2$) | Carbon Monoxide |
|---|---|---|
| 1975 | 10 | 30 |
| 1976 | 10 | 30 |
| 1977* - subsequent years | 5 | 25 |

| Alternate Standards | Hydrocarbons | Oxides of Nitrogen | Carbon Monoxide |
|---|---|---|---|
| 1977* - Subsequent Years | 1.0** | 7.5** | 25** |

*These two sets of standards shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

**The projected exhaust emissions values for these optional standards shall be determined from separate deterioration factors for Hydrocarbons, Carbon Monoxide and Oxides of Nitrogen.

STATE OF CALIFORNIA

AIR RESOURCES BOARD

# CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 1975 ~~AND SUBSEQUENT~~ TO 1978 MODEL-YEAR DIESEL-FUELED HEAVY-DUTY ENGINES AND VEHICLE

*Note: These procedures are printed in a style to indicate the adopted changes. New text is underlined and deleted portions are noted.*

ADOPTED: December 19, 1973
AMENDED: August 8, 1974
AMENDED: April 16, 1975
AMENDED: July 15, 1975
AMENDED: March 31, 1976
AMENDED: October 5, 1976

CALIFORNIA EXHAUST EMISSION STANDARDS
AND TEST PROCEDURES FOR
1975 ~~AND SUBSEQUENT~~ TO 1978 MODEL-YEAR DIESEL-FUELED
HEAVY-DUTY ENGINES AND VEHICLES

The provisions of Subpart J, Engine Exhaust Emission Regulations for New Diesel Heavy-Duty Engines, Part 85, Title 40, Code of Federal Regulations (40 CFR 85), as they existed on May 24, 1974, are hereby adopted as California Exhaust Emission Standards and Test Procedures for 1975 to 1978 ~~and Subsequent~~ Model-Year Diesel-Fueled Heavy-Duty Engines and Vehicles with the following exceptions and additions:

85.901 General applicability.

Not adopted. This procedure is applicable to new ~~diesel fueled heavy-duty engines and vehicles beginning with the~~ 1975 to 1978 engine model year Diesel fueled heavy duty engines and vehicles. Beginning with the 1978 model-year, this procedure shall not be applicable to medium-duty vehicles.

A manufacturer may elect to certify heavy-duty vehicles 10,000 pounds maximum gross vehicle weight rating or less as medium-duty vehicles, in which event heavy-duty emission standards and test procedures will not apply.

85.902 Definitions.

Adopted, except as follows:

(a)(2) "Administrator" means the Executive Officer of the Air Resources Board.

(3) "Engine model year" means the manufacturer's annual production period of new motor vehicle engines (as determined by the Executive Officer) which includes January 1 of such year; provided, that if the manufacturer has no annual production period, the term "engine model year" shall mean the calendar year.

Additional Definitions:

(i) "Certificate of Conformity" means "Executive Order" certifying engines or vehicles for sale in California.

(ii) "Certification" means certification as defined in Section 39018 of the Health and Safety Code.

(iii) "Maximum rated horsepower" means the maximum brake horsepower output of an engine as stated by the manufacturer in his sales and service literature and his application for ~~approval~~ certification.

(iv) "Exhaust emission control system" means an exhaust emission control component as indicated in Appendix VI of the Federal Register plus all controls used as additional sensing devices.

(v) "Auxiliary emission control device" means any element of design which senses temperature, pressure, vehicle speed, engine speed, transmission gear, engine or carburetor vacuum or any other parameter to activate, modulate, delay or deactivate the operation of any part of an emission control system.

(vi) "Subpart" means this Test Procedure.

(vii) "Heavy-duty engine" means an engine which is used to propel a heavy-duty vehicle.

(viii) "Heavy-duty vehicle" means any motor vehicle having a manufacturer's gross vehicle weight rating greater than 6,000 pounds, except passenger cars.

(ix) "Medium-duty vehicle" means any heavy-duty vehicle having a manufacturer's gross vehicle weight rating of 8500 pounds or less.

(x) Any applicable definition in the California Health and Safety Code, Division 26, or in the California Vehicle Code as incorporated into Division 26, shall apply, and if inconsistent with any definition in this Test Procedure, shall take precedence.

85.903 Abbreviations

Adopted.

85.904 General Standards: increase in emissions, unsafe conditions.

Adopted except as follows:

(a)(1) No new heavy duty motor vehicle may be sold in California unless it is equipped with an engine certified by the Executive Officer.

85.905 Hearings on certification.

Not adopted.

85.906 Maintenance of records, submittal of information; right of entry.

Adopted except for (a)(5), (durability engine fleet not required).

85.974-1 Exhaust gaseous emission standards for 1975 and subsequent model year engines.

(a)(1) Not adopted.

Exhaust gaseous emissions from new 1975 and 1976 heavy-duty diesel engines shall not exceed:

Hydrocarbons plus oxides of nitrogen (as $NO_2$) - 10 grams per brake horsepower hour.
Carbon Monoxide - 30 grams per brake horsepower hour.

Exhaust gaseous emissions from 1977* and subsequent heavy duty diesel engines shall not exceed:

Hydrocarbons plus oxides of nitrogen (as $NO_2$) - 5 grams per brake horsepower hour.
Carbon Monoxide - 25 grams per brake horsepower hour.

or

Hydrocarbons - 1.0 grams per brake horsepower hour
Carbon Monoxide - 25 grams per brake horsepower hour
Oxides of Nitrogen (as $NO_2$) - 7.5 grams per brake horsepower hour.

(a)(2) Adopted.

85.974-2 Application for certification.

Adopted for engine manufacturers with the following exception: "Projected U. S. sales data" in (a)(2) shall mean "projected California sales data".

The vehicle manufacturer shall provide the following in his application:

i) Identification and description of the vehicle models with respect to which ~~approval~~ certification is requested.

ii) Identification and description of the engines to be used in these vehicle models.

iii) The engine manufacturer's Executive Order certifying these engines shall be referenced.

No durability fleet or smoke emission tests will be required and any reference to durability testing shall be optional. No deterioration factors shall be used for calculating the emission test results.

Evidence must be submitted to the Executive Officer to demonstrate the durability of the emission control system. Such evidence may include durability test data and/or an engineering evaluation of the system. This evaluation will be based on previous experience and/or similarity to previously approved systems.

85.974-3 Approval of procedure and equipment; test fleet selection.

Adopted.

85.974-4 Required data.

Adopted, except for (a).

*These two sets of standards shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

85.974-5 Test engines.

Adopted for emission test engines. (Reference 85.874-5(a,b))

85.974-6 Maintenance.

Adopted, except for (a)(1).

85.974-7 Service accumulation and emission measurements.

Adopted except for (b).

85.974-8 Special test procedures.

Adopted.

85.974-9 Test procedures.

Adopted.

85.974-10 Diesel fuel specifications.

Adopted.

85.974-11 through 85.974-18 Relating to testing.

Adopted.

85.974-28 Compliance with emission standards.

Not adopted. The 125 hour test shall be the acceptable emission test. No deterioration factors shall be used.

85.974-29 Testing by the Administrator.

Adopted, except for durability data requirement (b)(4).

85.974-30 through 85.974-31 Relating to Certification.

Adopted, except 85.974-30(c). A statement must be supplied that the production engines shall be in all material respects the same design as those for which ~~approval~~ certification was granted. Section 85.905 (hearing) not applicable. Language specified for certificate of conformity not applicable.

85.974-32 Addition of an engine after certification.

Adopted.

85.974-33 Changes to an engine covered by certification.

Adopted.

85.974-34 Alternative procedure for notification of additions and changes.

Adopted.

85.974-35 Labeling.

Adopted. Labeling shall also conform to Section 43200, Health and Safety Code and Section 1967, Title 13, California Administrative Code.

85.974-37 Production engines.

Adopted. Except that under (2) the "number of engines produced for sale in the United States" shall be replaced by that "number of engines produced for sale in California".

85.974-38 Maintenance instructions.

Adopted.

85.974-39 Submission of maintenance instructions.

Adopted.

California Exhaust Emission Standards and Test Procedures
For 1979 and Subsequent Model Year Heavy Duty
Engines and Vehicles

The heavy duty provisions of Subpart A, Part 86, Title 40, Code of Federal Regulations (40 CFR 86), as they existed on June 30, 1975, are hereby adopted as California Exhaust Emission Standards and Test Procedures for 1979 and Subsequent Model Year Heavy Duty Engines and Vehicles with the following additions and exceptions:

86.077-1 General applicability

Not adopted. This procedure is applicable to heavy duty engines and vehicles beginning with the 1979 model year except medium duty vehicles. A manufacturer may elect to certify heavy-duty vehicles of 10,000 pounds maximum gross vehicle weight rating or less as medium duty vehicles, in which event heavy duty standards and test procedures will not apply

86.077-2 Definition.

Adopted with the following additions:

The proposed amendments specified by 86.079-2 of the Federal Register (Vol. 41, No. 101-Monday, May 24, 1976).

Any applicable definition in the California Health and Safety Code, Division 26, or in the California Vehicle Code as incorporated into Division 26, shall apply, and if inconsistent with any definition in these test procedures these Codes shall take precedence.

a. "Administrator" means the Executive Officer of the Air Resources Board.

b. "Certificate of Conformity" means "Executive Order" certifying vehicles for sale in California.

c. "Certification" means "~~approval~~" certification as defined in Section 39018 of the Health and Safety Code.

d. "Heavy-duty engine" means an engine which is used to propel a heavy duty vehicle.

e. "Heavy duty vehicle" means any motor vehicle having a manufacturer's gross vehicle weight rating greater than 6,000 pounds, except passenger cars.

f. "Medium duty vehicle" means any heavy duty vehicle having a manufacturer's gross vehicle weight rating of 8500 pounds or less.

g. "Projected United States sales" means projected California sales.

86.077-3 Abbreviations.

Adopted.

86.077-4 Section numbering; consturction.

Not adopted.

86.077-5 General standards; increase in emissions; unsafe conditions.

Adopted except for 86.077(a)(2) which is replaced by:

No new heavy duty vehicles may be sold in California unless it is equipped with an engine certified by the Executive Officer.

86.077-6 Hearings on certification.

Not adopted.

86.077-7 Maintenance of records; submittal of information; right of entry.

Adopted except those sections pertaining to EPA inspections and diesel smoke emissions.

86.077-8 Emission standards for 1977 light duty vehicles.

Not adopted.

86.077-9 Emission standards for 1977 light duty trucks.

Not adopted.

86.077-10 Emission standards for 1977 gasoline-fueled heavy duty engines.

Not adopted.

The following standards represent the maximum projected exhaust emissions for new gasoline-fueled heavy duty engines.

| Engine Model Year | Exhaust Emission Standards (grams/brake horspower-hour) Hydrocarbon plus Oxides of Nitrogen | Carbon Monoxide |
|---|---|---|
| 1979* | 5 | 25 |
| 1980 to 1982* | 5 | 25 |

| | Alternate Exhaust Emission Standards (grams/brake horsepower-hour) Hydrocarbon | Carbon Monoxide | Hydrocarbon plus Oxides of Nitrogen | Oxides of Nitrogen |
|---|---|---|---|---|
| 1979* | 1.5** | 25** | Not applicable | 7.5** |
| 1980 to 1982* | 1.0** | 25** | 6.0 | Not Applicable |
| 1983-Subsequent Years | 0.5** | 25** | 4.5 | Not applicable |

*These two set of standards shall be alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

**The projected exhaust emissions value for these optional standards shall be determined from separate deterioration factors for hydrocarbon, carbon monoxide, and oxides of nitrogen.

The proposed amendments other than exhaust emissions and carnkcase emissions specified by 86.079-10 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976) are adopted).

86.077-11 Emissions standards for 1977 Diesel heavy duty engines.

Not adopted.

Exhaust gaseous emissions from new 1979* heavy duty engines shall not exceed:

Hydrocarbons plus oxides of nitrogen - 5 grams/brake horsepower-hour
Carbon Monoxide - 25 grams/brake horsepower-hour

or

Hydrocarbons - 1.5 grams/brake horsepower-hour
Oxides of Nitrogen - 7.5 grams/brake horsepower-hour
Carbon Monoxide - 25 grams/brake horsepower-hour

Exhaust gaseous emissions from new 1980 to 1982* heavy-duty diesel engines shall not exceed:

Hydrocarbons and oxides of nitrogen - 5 grams/brake horsepower-hour
Carbon Monoxide - 25 grams/brake horsepower-hour

or

Hydrocarbons - 1.0 grams/brake horsepower-hour
Hydrocarbons and Oxides of Nitrogen - 6.0 grams/brake horsepower-hour
Carbon Monoxide - 25 grams/brake horsepower-hour

Exhaust gaseous emissions from 1983 and subsequent heavy duty Diesel engines shall not exceed:

Hydrocarbons - 0.5 grams/brake horsepower-hour

Hydrocarbons and oxides of nitrogen - 4.5 grams/brake horsepower-hour

Carbon Monoxide - 25 grams/brake horsepower-hour

*These two sets of standards shall be alternatives. A manufacturer shall have the option of each engine family of showing compliance with either set.

The proposed amendements other than exhaust emissions and smoke emissions specified by 86.079-11 of the Federal Register (Vo. 41, No. 101 - Monday, May 24, 1976) are adopted.

86.077-12 to 86.077-20 [Reserved]

Not adopted.

86.077-21 Application for certification.

Adopted with the following addition:

The vehicle manufacturer shall provide the following in his application:

i) Identification and description of the vehicle models with respect to which certification is requested.

ii) Identification and description of the engines to be used in these vehicle models.

iii) The engine manufacturer's Executive Order certifying these engines shall be referenced.

86.077-22 Approval of application for certification; test fleet selections.

Adopted except for those sections pertaining to EPA hearing.

86.077-23 Required data.

Adopted with the following addition:

The proposed amendments specified by 86.079-23 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976).

No durability fleet or smoke emissions tests will be required for diesel-fueled engines. Evidence must be submitted to the Executive Officer to demonstrate the durability of the emission control system installed on diesel-fueled engines. Such evidence may include durability test data and/or an engineering evaluation of the system. This evaluation shall be based on previous experience and/or similarity to previous approved systems.

86.077-24 Test vehicles and engines.

Adopted with the following addition:

The proposed amendments specified by 86.079-24 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976).

Engine manufacturers will be permitted to carry over durability and/or emission test data from the 1978 to 1979 model year for similar engines notwithstanding changes to the test procedure.

86.077-25 Maintenance.

Adopted with the following addition:

The proposed amendments specified by 6.079-25 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976). Those sections pertaining to diesel durability data engines and smoke emissions are not adopted.

86.077-26 Mileage and service accumulation; emission measurements.

Adopted with the following addition:

The proposed amendments specified by 86.079-26 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976). Those sections pertaining to Diesel durability data engines are not adopted.

86.077-27 Special test procedures.

Adopted with the following addition:

The proposed amendments specified by 86.079-27 of the Federal Register (Vol. 41, No. 101- Monday, May 24, 1976). Those sections pertaining to smoke emissions are not adopted.

86.077-28 Compliance with emission standards.

Adopted with the following additions:

The proposed amendments specified by 86.079-28 of the Federal Register (Vol. 41, No. 101- Monday, May 24, 1976). Those sections pertaining to smoke emissions and Diesel durability data engine are not adopted.

The effects reported from industrial experience with human exposures to $SO_2$ are not consistent. For example, Anderson[23] reported that prolonged exposure to levels of $SO_2$ far in excess of urban concentrations caused no adverse effects. Skalpe,[22] however, found that approximately the same range of concentrations was associated with increased frequencies of cough, expectoration and dyspnea on exertion among workers in pulp mills.

This conflict in observations may be the result of the selection process that occurs in making occupational choices. Either by self-selection or by pre-placement medical examinations, persons who are specifically sensitive or persons having major respiratory impairment may have been eliminated from these industrial situations; still others may leave such work after finding themselves to be sensitive. Thus, the population at risk in the occupational environment differs markedly from the community as a whole.

As reported in the preceding discussion, synergistic effects from exposures to the mixture of $SO_2$ and a saline aerosol have been shown in the guinea pig. The data from experiments related to the effects of particulate materials on the response of human subjects to $SO_2$ are conflicting.[83] Four studies dealt with the effects of sodium chloride aerosol on the human response to $SO_2$. The results of these studies are not in agreement. There is one study that deals with the more critical question of the effects of oxidizing aerosols.[67]

Frank, et. al., [68], examined the response of a panel of 10 healthy males to 1, 5 and 15 ppm $SO_2$ with and without the addition of sodium chloride aerosol. When the agents were given in sequence it was found that the

Separate deterioration factors shall be established, where applicable, for HC, CO, NOx and/or the combined emissions of HC and NOx for gasoline-fueled engines.

The requirement in 86.079-28 (b)(4)(B) concerning interpolated 125 hour and 1500 hour values apply to Federal emission standards.

The 125 hour test for Diesel-fueled engines shall be used to determine compliance with the exhaust emission standards as set forth by 86.077-11 of this test procedure. No deterioration factors shall be used for Diesel-fueled engines.

86.077-29 Testing by the Administrator.

Adopted.

86.077-30 Certification.

Adopted except for the following:

Regulations concerning specific language on certificate of conformity, EPA hearing and EPA inspections shall not be applicable to this procedure.

In addition the following statements must accompany the application.

1. A statement must be supplied that the production engines shall be in all material respects the same as those for which certification was granted.

2. If an engine manufacturer requires the use of unleaded fuel, a statement will be required that the engine and transmission combinations for which certification is requested are designed to operate satisfactorily on a gasoline having a research octane number not greater than 91.

3. The average brake horsepower at each mode shall be reported for all emission tests.

86.077-31 Separate certification.

Adopted.

86.077-32 Addition of a vehicle or engine after certification.

Adopted.

86.077-33 Changes to a vehicle or engine covered by certification.

Adopted.

86.077-34 Alternative procedure for notification of additions and changes.

Adopted.

86.077-35 Labeling.

Adopted with the following addition:

The proposed amendments specified by 86.079-35 of the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976).

Labeling shall also conform to Section 43200 of the California Health and Safety Code and Sections 1965 or 1967, where applicable, of Chapter 3, Title 13 California Administrative Code.

86.077-36 Submission of vehicle identification numbers.

Not adopted.

86.077-37 Production vehicles and engines.

Adopted.

86.077-38 Maintenance instruction.

Adopted.

86.077-39 Submission of maintenance instructions.

Adopted.

86.078-8 Emission standards for 1978 light-duty vehicles.

Not adopted.

The provisions of Subpart D, Part 86, Title 40, Code of Federal Regulations (40 CFR 86), as proposed in the Federal Register (Vol. 41, No. 101 - Monday, May 24, 1976) are adopted with the exception of those sections pertaining to smoke emissions.