State of California
AIR RESOURCES BOARD

Resolution 82-57

October 28, 1982

Agenda Item No. 82-23-2b1

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1162-95 entitled "Formation and Fate of Toxic Chemicals in California's Atmosphere", has been submitted by The Statewide Air Pollution Research Center, University of California, Riverside;

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1162-95 entitled "Formation and Fate of Toxic Chemicals in California's Atmosphere", submitted by The Statewide Air Pollution Research Center, University of California, Riverside, for a total amount not to exceed $195,104;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1162-95 entitled "Formation and Fate of Toxic Chemicals in California's Atmosphere", submitted by The Statewide Air Pollution Research Center, University of California, Riverside, for a total amount not to exceed $195,104.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $195,104.

I certify that the above is a true and correct copy of Resolution 82-57 as passed by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO.: 82-23-2b1
DATE: October 28, 1982

ITEM: Research Proposal No. 1162-95 entitled "Formation and Fate of Toxic Chemicals in California's Atmosphere"

RECOMMENDATION: Adopt Resolution 82-57 approving Research Proposal No. 1162-95 for funding in an amount not to exceed $195,104.

SUMMARY: At the present time, a multitude of reactive and/or toxic organic compounds are in use and are being emitted into the atmosphere during manufacture, as a result of use, or after being discarded into toxic waste dumps. In order to assess the present and future health effects of these compounds, detailed information is needed as to their atmospheric lifetimes, decomposition intermediates and ultimate fates. This research project consists of a three-element program to study the photolysis of selected reactive organic compounds in polluted air.

The first element involves a detailed study of specific halogenated compounds, including vinyl chloride, a known carcinogen, and trichloroethane and tetrachloroethane, widely used solvents which are known or suspected carcinogens.

Elements 2 and 3 are concerned with photolytic decomposition of the higher alkanes, which are the principal components of diesel fuel, and of aromatic hydrocarbons, which are important components in unleaded gasoline. Because both diesel fuel and unleaded gasoline are used in large quantities throughout the state it is important to clearly understand the photochemical decomposition mechanisms. Accurate kinetic data concerning their chemical reactions in the atmosphere are needed so that their impact on air quality can be accurately assessed by photochemical modeling. This study will, in combination with an ARB project currently in progress at SAPRC, provide information for an assessment of the potential health risk due to atmospheric formation of organic nitrates from commercial fuels.

State of California

Memorandum

To : Mary D. Nichols, Chairwoman
Laurence S. Caretto, Ph.D., Vice-Chairman
Alvin F. Gordon, Ph.D.
Sam T. Chapman
James G. Leathers
Alfred McCandless
Gary A. Patton

Date : October 28, 1982

Subject : Mail Ballot

From : Air Resources Board

John R. Holmes, Ph.D.
Chief, Research Division

attached are 4 yes votes. That is all we needed for unanimous vote.

At its October 26, 1982 meeting, the Research Screening Committee reviewed and recommended six proposals for funding. These were:

1. "Formation and Fate of Toxic Chemicals in California's Atmosphere", by Statewide Air Pollution Research Center, University of California, Riverside, $195,104;

2. "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use", by University of California, Riverside, $60,297;

3. "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity", by University of California, Davis, $129,698;

4. "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California", by Energy Resources Consultants, $172,941;

5. "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California", by Meteorology Research, Inc., $84,606; and

6. "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin", by TRC Environmental Consultants, $95,759.

Because of the time constraints during the hearings on the toxics policy and motorcycle emission standards, we were unable to present these proposals to the Board for your consideration. Because another "freeze" appears to be in the offing, it is important to begin immediately to move these contracts through the appropriate State agencies for their approval. Accordingly, I would appreciate very much your reviewing the attached summaries and associated resolutions as soon as possible.

Please record your vote on the attached ballot, sign it and return it to us as soon as possible. In addition, I should appreciate your telephoning Laura Kinney collect at (916) 323-1524 to inform her of your decision so she can prepare the necessary documents and transmit the contracts as soon as the Board reaches a decision.

If you have questions regarding any of these projects or require further information, please feel free to call me at (916) 445-0753. Thank you very much for your assistance in this matter.

Attachments

cc: James D. Boyd

AIR RESOURCES BOARD BALLOT

1. "Formation and Fate of Toxic Chemicals in California's Atmosphere"

[X] Approved [ ] Disapproved

2. "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use"

[X] Approved [ ] Disapproved

3. "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity"

[X] Approved [ ] Disapproved

4. "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California"

[X] Approved [ ] Disapproved

5. "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California"

[X] Approved [ ] Disapproved

6. "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin"

[X] Approved [ ] Disapproved

Mary D. Nichols
Signature

Nov. 3, 1982
Date

AIR RESOURCES BOARD BALLOT

1. "Formation and Fate of Toxic Chemicals in California's Atmosphere"

   [✓] Approved [ ] Disapproved

2. "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use"

   [✓] Approved [ ] Disapproved

3. "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity"

   [✓] Approved [ ] Disapproved

4. "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California"

   [✓] Approved [ ] Disapproved

5. "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California"

   [✓] Approved [ ] Disapproved

6. "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin"

   [✓] Approved [ ] Disapproved

L. L. Cadle
Signature

11/2/82
Date

AIR RESOURCES BOARD BALLOT

1. "Formation and Fate of Toxic Chemicals in California's Atmosphere"

   ☑ Approved ☐ Disapproved

2. "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use"

   ☑ Approved ☐ Disapproved

3. "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity"

   ☑ Approved ☐ Disapproved

4. "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California"

   ☑ Approved ☐ Disapproved

5. "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California"

   ☑ Approved ☐ Disapproved

6. "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin"

   ☑ Approved ☐ Disapproved

G. M. Gordon
Signature

Nov. 1, 1982
Date

AIR RESOURCES BOARD BALLOT

1. "Formation and Fate of Toxic Chemicals in California's Atmosphere"

☒ Approved ☐ Disapproved

2. "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use"

☒ Approved ☐ Disapproved

3. "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity"

☒ Approved ☐ Disapproved

4. "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California"

☒ Approved ☐ Disapproved

5. "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California"

☒ Approved ☐ Disapproved

6. "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin"

☒ Approved ☐ Disapproved

Signature

11/5/80
Date

State of California
AIR RESOURCES BOARD

Resolution 82-58

October 28, 1982

Agenda Item No. 82-23-2b2

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1181-97 entitled: "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use", has been submitted by the University of California, Riverside, to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1181-97 entitled "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use", submitted by the University of California, Riverside, for an amount not to exceed $60,297;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1181-97 entitled "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use", submitted by the University of California, Riverside, for an amount not exceed $60,297.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate adminstrative procedures and execute all necessary documents and contracts for the research effort proposed in an amount not to exceed $60,297.

I certify that the above is a true and correct copy of Resolution 82-58 as passed by the Air Resources Board.

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO: 82-23-2b2
DATE: October 28, 1982

ITEM: Research Proposal No. 1181-97 entitled "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use".

RECOMMENDATION Adopt Resolution 82-58 approving Research Proposal No. 1181-97 for funding in an amount not to exceed $60,297.

SUMMARY: Air pollution damage to the state's crops, native plants and ornamental plants is a continuing concern of the Air Resources Board. To address this concern, the ARB contracted with the proponent and the Statewide Air Pollution Research Center to construct, operate and maintain 20 plant fumigation chambers at U.C. Riverside during 1981. The proponent has constructed and operated an excellent facility for studying air pollution effects on plants since that time. It has been used continuously since that time to study various tree and agricultural crops.

Past experience has demonstrated the need for competent technical people to maintain and operate the chambers for investigators who may not be familiar with the complex aspects of fumigation systems and air pollutant measurement. This proposal will continue the operation and maintenance of the chamber facility for investigators during 1983.

The proponent will provide day-to-day operation and/or supervision of the fumigation facility for investigators using the chambers to determine the effects of air pollution on plants. The ozone and sulfur dioxide analyzers as well as the gas dispensing system will be maintained and calibrated regularly. Dust and charcoal filters will be checked and replaced as necessary. The plastic walls of the fumigation chambers will be cleaned, repaired or replaced as necessary.

To help insure quality research, it is necessary to retain someone with technical expertise to operate the fumigation facility for plant scientists unfamiliar with the chambers.

State of California
AIR RESOURCES BOARD

Resolution 82-59

October 28, 1982

Agenda Item No. 82-23-2b3

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1182-97 entitled "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity", has been submitted by the University of California, Davis, to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1182-97 entitled "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity", submitted by the University of California, Davis, for an amount not to exceed $129,698;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1182-97 entitled "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity", submitted by the University of California, Davis, for an amount not exceed $129,698.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate adminstrative procedures and execute all necessary documents and contracts for the research effort proposed in an amount not to exceed $129,698.

I certify that the above is a true and correct copy of Resolution 82-59 as passed by the Air Resources Board.

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO: 82-23-2b3
DATE: October 28, 1982

ITEM: Research Proposal No. 1182-97 entitled "Effects of Ozone and Sulfur Dioxide on Crop Physiology and Productivity".

RECOMMENDATION Adopt Resolution 82-59 approving Research Proposal No. 1182-97 for funding in an amount not to exceed $129,698.

SUMMARY: Much of the work that makes up our current understanding of how air pollution affects plants is derived from the study of rather simple end points such as visible foliar injury or the reduction in the overall weight of plant material at the end of the growing season. More recently, we and others, have tried to consider more subtle factors like protein or carbohydrate content. This proposal would attempt to identify plant cultivars sensitive to ozone or SO_2 through the measurement of selected physiological responses and correlate these responses with plant productivity and yield. This is the third year of a projected three year study.

The proposal is in two parts, each part to be guided by a different investigator. The first part of the proposal is a study of the feasibility of using leaf water potential, stomatal conductance and ion leakage from cell membranes to identify ozone- and SO_2-sensitive bean cultivars under controlled environment conditions. The bean cultivars would also be grown and exposed to ozone field fumigation chambers and the yield correlated with the physiological measurements. This research could lead to a method that would quickly identify sensitive cultivars through a simple physiological measurement that correlated well with the effect of air pollution on yield without testing the cultivar under field conditions. The second part of the proposal will investigate the effect of ozone and water stress on nutrient uptake and yield of beans. Plants will be exposed to .08 ppm ozone every day, 5 hours per day throughout the life cycle of the plants. Plants will be grown under either optimum moisture conditions or water stress to determine what effect water stress has on the plants' response to ozone. Nutrient uptake and composition of phosphorous, potassium and nitrate will be assessed to determine the adverse effects ozone may have on the nutrient status of beans at pre-bloom, bloom and post-bloom stage. Fresh and dry weight of the plants at each stage will also be correlated with nutrient status.

State of California
AIR RESOURCES BOARD

Resolution 82-60

October 28, 1982

Agenda Item No. 82-23-2b4

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, a solicited research Proposal Number 1177-97 entitled "Quantitative Assessment of the Effects of Not Controlling Air Pollution In California ", has been submitted by Energy Resources Consultants, Inc. to the Air Resources Board, and

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1177-97 entitled "Quantitative Assessment of the Effects of Not Controlling Air Pollution", submitted by Energy Resources Consultants, Inc., for a total amount not to exceed $172,941;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1177-97 entitled "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California", submitted by Energy Resources Consultants, Inc., for a total amount not to exceed $172,941.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $172,941.

I certify that the above is a true and correct copy of Resolution 82-60 as passed by the Air Resources Board.

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO.: 82-23-2b4
DATE: October 28, 1982

ITEM: Research Proposal No. 1177-97 entitled "Quantitative Assessment of the Effects of Not Controlling Air Pollution in California"

RECOMMENDATION: Adopt Resolution 82-60 approving Research Proposal No. 1177-97 for funding in an amount not to exceed $172,941.

SUMMARY: As prescribed in the Clean Air Act, primary federal standards are to be achieved by 1982 or 1987; State standards and secondary federal standards require reasonable efforts towards attainment and maintenance. Evaluating the effectiveness of past efforts and maximizing the effectiveness of current efforts to improve air quality is a major concern to government, industry, and to the general public. However, such examination is limited by a lack of detailed information as to the current and future air quality effects and benefits of controlling air pollution.

The purpose of this project is to assess the air quality effects and the specific economic costs if air pollution controls were reduced or eliminated in 1979 and in 1987, years for which detailed emission inventory estimates or projections are available or can be estimated. Ambient pollution levels shall be projected to 1987, and air pollution effects shall be evaluated for each of three emission control scenarios: 1) no emission controls, 2) curtailed emission controls, and 3) implementation of planned emission controls. An identical analysis shall be performed for 1979, but only under scenario (1).

This project consists of four main tasks: 1) estimation of annual average and maximum daily emission rates, 2) estimation of ambient pollution levels and comparison with State and federal ambient air quality standards, 3) comprehensive identification and quantification to the maximum extent possible of the various types of air pollution-induced damage, and 4) monetary evaluation of the pollution damage (in constant dollars) for each of emission control scenarios.

State of California
AIR RESOURCES BOARD

Resolution 82-61

October 28, 1982

Agenda Item No. 82-23-2b5

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, a solicited research Proposal Number 1167-96 entitled "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California", has been submitted by Meteorology Research, Inc. to the Air Resources Board; and

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1167-96 entitled "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California", submitted by Meteorology Research, Inc., for a total amount not to exceed $84,606;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1167-96 entitled "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California", submitted by Meteorology Research, Inc., for a total amount not to exceed $84,606.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $84,606.

I certify that the above is a true and correct copy of Resolution 82-61 as passed by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO.: 82-23-2b5
DATE: October 28, 1982

ITEM: Research Proposal No.1167-96 entitled "The Application of Climatological Analysis to Minimize Air Pollution Impacts in California"

RECOMMENDATION: Adopt Resolution 82-61 approving Research Proposal No. 1167-96 for funding in an amount not to exceed $84,606.

SUMMARY: The air quality effects of emissions in various regions of California are influenced by the relatively large variability of geographical and climatological factors within the state. Detailed studies to improve emission inventories have received major funding from both the Air Resources Board and local air pollution control districts. However, relatively little attention has been given to understanding and documenting the large geographical variations in air quality which are due to differences in air pollution climatology.

The objective of this research project is to develop, through literature review and through statistical and meteorological analyses, a detailed air pollution climatology for California.

Tasks 1 and 2 of this study are a detailed literature review and analysis of available climatological data and information, including analysis of the influence of climatology on air quality.

Tasks 3 and 4 will be the determination and graphical presentation of climatological pollution potential throughout California with respect to both primary, i.e., directly-emitted, pollutants and for secondary pollutants, such as ozone, which are formed in the atmosphere from gaseous pollutant precursors. Pollution potential will be calculated separately for ground-based and elevated emissions, and multi-day episodes will be considered explicitly. In addition, long-range transport patterns including interbasin transport patterns will be determined and documented on the basis of both climatological data and tracer studies.

Task 5 will provide for the determination and characterization of critical emission source areas. Such areas shall be determined on the basis of relative contribution of potential emissions to: 1) air quality

which now violates ambient air quality standards, 2) sensitive areas with respect to population density 3) sensitive areas with respect to potential for direct crop damage or potential for damage to surface waters or soil as a result of acid-deposition, and 4) sensitive areas with respect to visibility protection.

The geographical scope of this study shall include all of California as well as California Coastal Waters, as has been defined by the Board.

State of California
AIR RESOURCES BOARD

Resolution 82-62

October 28, 1982

Agenda Item No. 82-23-2b6

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, a solicited research Proposal Number 1180-97 entitled "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin", has been submitted by TRC Environmental Consultants to the Air Resources Board, and

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1180-97 entitled "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin", submitted by TRC Environmental Consultants, for a total amount not to exceed $95,759;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1180-97 entitled "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin", submitted by TRC Environmental Consultants, for a total amount not to exceed $95,759.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $95,759.

I certify that the above is a true and correct copy of Resolution 82-62 as passed by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO.: 82-23-2b6
DATE: October 28, 1982

ITEM: Research Proposal No. 1180-97 entitled "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin"

RECOMMENDATION: Adopt Resolution 82-62 approving Research Proposal No. 1180-97 for funding in an amount not to exceed $95,759

SUMMARY: Studies have shown that air pollution accelerates the corrosion and soiling of steel, zinc, masonry, painted surfaces and other materials; these effects place an economic burden on California. Accurate estimates of the costs of soiling and air pollution damage to materials (and the benefits of avoiding such damage) are difficult to obtain. The objective of this study is to provide a methodology for and an estimate of the annual cost of materials damage due to air pollution in the South Coast Air Basin (SCAB) for the period 1978-80. In order to determine the costs associated with the exposure of materials to ambient pollution levels, the contractor will carry out the following tasks: 1) identify materials and products susceptible to damage in the South Coast Air Basin; 2) review the damage literature and recommend the most reliable damage functions; 3) determine the amount and location of exposed materials in the South Coast Air Basin; 4) estimate the physical damage occurring in the South Coast Air Basin; and 5) estimate the aggregate monetary loss resulting from materials damage in 1980.

State of California
AIR RESOURCES BOARD

Resolution 82-63

December 9, 1982

Agenda Item No.: 82-24-4
82-28-1

WHEREAS, Health and Safety Code Section 39601 requires the Air Resources Board (the "Board") to adopt rules and regulations necessary for the proper execution of the powers and duties granted to and imposed upon the state board;

WHEREAS, Health and Safety Code Section 39606(b) requires the Board to adopt standards of ambient air quality for the protection of the public health, safety and welfare, including but not limited to health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy;

WHEREAS, Health and Safety Code Section 39606(b) provides that standards relating to health effects shall be based upon the recommendation of the State Department of Health Services;

WHEREAS, the current statewide ambient air quality standards for particulate matter of 100 ug/m^3 (24-hour average) and 60 ug/m^3 (annual geometric mean), set forth in Title 17, California Administrative Code, Section 70200, apply to all suspended particles regardless of size;

WHEREAS, the Board staff has proposed that air pollution control efforts be redirected to focus on the health-related size range of particulate matter, and that the current standards for particulate matter be redefined to apply only to "inhalable" particles, i.e., those particles less than 10 micrometers aerodynamic diameter (PM_{10});

WHEREAS, the Board has received and considered a recommendation from the Department of Health Services, dated October 15, 1982, for PM_{10} standards of 50 ug/m^3 24-hour average and 30 ug/m^3 annual geometric mean;

WHEREAS, the Board has held a duly-noticed public hearing at which it has received and considered a substantial body of evidence, both written and oral, presented to it by staff, other scientists, industry representatives, and other members of the public relating to the proposed amendment of the standard;

WHEREAS, the California Environmental Quality Act and Board regulations require that action not be taken as proposed if feasible mitigation measures or alternatives exist which would substantially reduce any significant adverse environmental effects of the proposed action; and

WHEREAS, the Board finds that:

The current ambient air quality standards for total suspended particulate matter are not related precisely to adverse health effects because they include a substantial and variable fraction of particles larger in size than is considered "inhalable" by humans;

Laboratory studies in both animals and humans demonstrate that inhaled particulate matter impairs lung function. Inhaled particulate matter can increase airway resistance and result in increased mortality in laboratory animals;

Human epidemiological studies demonstrate that exposure to inhalable particulate matter is associated with adverse health effects including increased risk of asthma attack, reduced pulmonary function in children, increased risk of respiratory illness in children, worsening condition in bronchitis patients, and increased mortality;

It is not now possible to identify precisely the level at which these adverse health effects occur and below which they do not occur in all segments of the population. Evidence shows increased mortality associated with concentrations of PM_{10} of 60 ug/m^3 and suggests adverse health effects at levels of 41 ug/m^3 or below;

A standard for particulate matter which specificially addresses the inhalable fraction of total suspended particles will provide greater protection to the public health than the present standard, which applies to all particles regardless of size. Morever, such a standard will ensure that control efforts will be directed to address inhalable particles;

A 24-hour standard of 50 ug/m^3 PM_{10} and of a 30 ug/m^3 PM_{10} annual geometric mean are necessary to protect the public health from both acute and chronic health effects;

The PM_{10} standards set forth above are reasonably equivalent to the current standards for total particulate matter of 100 ug/m^3 (24 hours) and 60 ug/m^3 (annual geometric mean) and are an expression of the current standards in a form more relevant to human health;

The availability of improved methods of measurement affords the opportunity to express a standard for inhalable particles;

Proven sampling methods, for example the dichotomous sampler and the high-volume sampler with size-selective inlet, for monitoring attainment of a thoracic (i.e., less than 10 micrometers aerodynamic diameter) particle standard with a 50 percent cut point at 10 micrometers aerodynamic diameter are available;

The U.S. Environmental Protection Agency is also establishing performance criteria for sampling methods for thoracic particle monitoring;

Natural sources of inhalable particles fall into two categories, controllable and uncontrollable, and natural sources which are uncontrollable may cause or contribute to exceedances of the 24-hour standard for PM_{10};

Both natural and anthropogenic sources contribute to ambient levels of inhalable suspended particles and particles of less than 10 micrometers aerodynamic diameter, regardless of origin in excess of the PM_{10} standards, are injurious to the public health;

The annual geometric mean standard for PM_{10} recommended by the Department of Health Services is an appropriate precautionary standard to protect the public health; and

The standards adopted by this resolution will have a beneficial effect on air quality and will have no adverse environmental impacts.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves amendment of the regulations contained in Title 17, California Administrative Code, as set forth in Attachment A and directs the Executive Officer to adopt such amendments, and any other necessary conforming changes, after making them available to the public for at least fifteen days. It is the intent of the Board that the 24-hour PM_{10} standard and the annual PM_{10} standard be severable, and the validity or invalidity of one have no legal effect on the other.

BE IT FURTHER RESOLVED that the Board directs the staff to establish performance criteria for sampling equipment to collect suspended particulate matter 10 micrometers or less in aerodynamic diameter which shall be, to the maximum extent feasible, identical to the criteria established by the U.S. Environmental Protection Agency.

BE IT FURTHER RESOLVED that the Board directs the staff, in cooperation with the state's Air Monitoring Technical Advisory Committee and local districts, to determine PM_{10} levels in each of the state's air basins through a network of approved samplers. It is the intent of the Board that the most cost-effective means possible be utilized, including the modification of existing equipment and the use of available federal funds subsequent to EPA adoption of a PM_{10} standard.

BE IT FURTHER RESOLVED that the Board directs the staff, in cooperation with the local districts and the Air Monitoring Technical Advisory Committee, to develop uniform procedures for determining the relative contributions of emissions from "natural and uncontrollable" as opposed to "controllable" (both natural and anthropogenic) sources of PM_{10} and that the ARB staff and the districts shall consider such contributions to total PM_{10} concentrations when determining attainment and developing control strategies and specific control measures.

PROPOSED AMENDMENT TO TITLE 17, CALIFORNIA ADMINISTRATIVE CODE

Amend Section 70100(j), Title 17, California Administrative Code, to read as follows:

70100. Definitions.

(j) Suspended Particulate Matter. Suspended particulate matter refers to atmospheric particles, sold and liquid, except uncombined water. Atmospheric suspended particulate matter is to be measured by the high volume sampler method or by an equivalent method for purposes of determining total suspended particulate and by a PM_{10} sampler for purposes of monitoring for compliance with the Suspended Particulate Matter standard (PM_{10}).

Amend Section 70200, Title 17, California Administrative Code, to read as follows:

70200. Table of Standards, Applicable Statewide.

Substance	Concentration and Methods*	Duration of Averaging Periods	Most Relevant Effects	Comments
Oxidant (as ozone)	0.10 ppm ultraviolet photometry	1 hour	Aggravation of respiratory diseases	This level is below that associated with aggravation of respiratory diseases.
Carbon Monoxide	10 ppm NDIR	12 hours	2-2 1/2% COHb	This level is below those associated with impairment in time discrimination, visual function, and psychomotor performance.
	40 ppm NDIR	1 hour	2-2 1/2% COHb	
Carbon Monoxide (Applicable only in the Lake Tahoe Air Basin)	6 ppm NDIR	8 hours	Will increase COHb by 1-1 1/2%	At altitude the lowered oxygen tension leads to greater absorption of CO. Persons participating in strenuous recreational activities at higher altitudes are often unacclimated.
Sulfur Dioxide (SO_2)	0.5 ppm conductimetric method	1 hour	a. Approximate odor threshold. b. Possible alteration in lung function.	Alteration in lung function was found at this level in only one study. Other studies reported higher concentrations to cause this effect.
	0.05 ppm conductimetric method with oxidant, (ozone) equal to or greater than the state standard, or with suspended particulate matter equal to or greater than the state 24-hour suspended particulate matter standard.****	24 hours	a. Will help prevent respiratory disease in children b. Higher concentrations associated with excess mortality.	a. Further studies on cocarcinogenic role are necessary. b. Does not include effects on vegetation, ecosystems and materials. c. May not include a margin of safety.
Visibility Reducing Particles	In sufficient amount to reduce visibility*** to less than 10 miles when relative humidity is less than 70%	1 observation	Visibility impairment on days when relative humidity is less than 70%.	
Visibility Reducing Particles (Applicable only in Lake Tahoe Air Basin)	In sufficient amount to reduce the prevailing visibility*** to less than 30 miles when relative humidity is less than 70%	1 observation	Reduction in scenic quality on days when the relative humidity is less than 70%	

Suspended Particulate Matter (PM_{10})	~~60 µg/m3 high volume sampling~~	~~24 hour samples, annual geometric mean~~	~~Long continued exposure may be associated with increase in chronic respiratory disease.~~	~~This standard applies to suspended particulate matter in general. It is not intended to be a standard for toxic particles such as asbestos, lead, or beryllium. Because size distribution influences the effect of particulate matter on health, the standard will be reevaluated as data on health effects related to size distribution become available.~~
	~~100 µg/m3 high volume~~	~~24 hour sample~~	~~Exposure with SO_2 may produce acute illness.~~	
	50 µg/m3 PM_{10}**	24 hour sample	Prevention of excess deaths from short-term exposures and of exacerbation of symptoms in sensitive patients with respiratory disease. Prevention of excess seasonal declines in pulmonary function, especially in children.	This standard applies to suspended matter as measured by PM_{10} sampler, which collects 50% of all particles of 10 µm aerodynamic diameter and collects a declining fraction of particles as their diameter increases, reflecting the characteristic of lung deposition.
	30 µg/m3 PM_{10}**	24 hour samples, annual geometric mean		
Lead (Particulate)	1.5 µg/m3 AIHL Method No. 54, or equivalent	30 day average	Increased body burden, impairment of blood formation and nerve conduction	
Hydrogen Sulfide	0.03 ppm cadmium hydroxide STRactan Method	1 hour	Exceeds the odor threshold	
Nitrogen Dioxide	0.25 ppm, Saltzman	1 hour	a. At slightly higher dosage effects are observed in experimental animals, which imply a risk to the public health. b. Produces atmospheric discoloration.	
Sulfates	25 µg/m3 total sulfates, AIHL #61	24 hours	a. Decrease in ventilatory function b. Aggravation of asthmatic symptoms c. Aggravation of cardiopulmonary disease d. Vegetation damage e. Degradation of visibility f. Property damage	This standard is based on a Critical Harm Level, not a threshold value.

* Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

** These standards are violated when concentrations exceed those set forth in the body of the regulation.

*** Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

****The standard referred to is that adopted by the Board in 1969, of 100 µg/m3 as measured by high volume sampler.

NOTE: Authority cited: Sections 39600, 39601(a), and 39606(b), Health and Safety Code. Reference: Sections ~~70200~~, 39014, 39606(b), 39701, and 39703(g), Health and Safety Code.

State of California

Memorandum

To : Gordon Van Vleck
Secretary
Resources Agency

Date : May 5, 1983

Subject: Filing of Notice of Decisions of the Air Resources Board

From : Harold Holmes
Board Secretary
Air Resources Board

Pursuant to Title 17, Section 60007 (b), and in compliance with Air Resources Board certification under section 21080.5 of the Public Resources Code, the Air Resources Board hereby forwards for posting the attached notice of decision and response to environmental comments raised during the comment period.

Attachments
Resolution 82-63
Resolution 83-4

State of California
AIR RESOURCES BOARD

Resolution 82-64

December 2, 1982

Agenda Item No.: 82-24-3

WHEREAS, the Board is authorized, pursuant to the authority set forth in Health and Safety Code Sections 39600, 39601, 43013, and 43101, to adopt regulations governing the composition of motor vehicle fuels as they affect motor vehicle emissions; and such regulations are necessary in order to implement, interpret, or make specific Health and Safety Code Sections 39000, 39001, 39002, 39006, 43000, 43013, and 43101, and Western Oil and Gas Ass'n v. Orange County APCD, 14 Cal.3d 411 (1975);

WHEREAS, the Air Resources Board (the "Board") adopted in 1970 and affirmed in 1976 a state ambient air quality standard for lead of 1.5 ug/m^3, computed on a 30-day average;

WHEREAS, in 1976 the Board adopted Section 2253 of Title 13, California Administrative Code, limiting the maximum average lead content of all gasoline (leaded and unleaded) produced in a calendar quarter by a refiner for sale in California;

WHEREAS, on July 22, 1982, the Board directed staff to evaluate whether the current state ambient standard for lead adequately protects the public health;

WHEREAS, on July 22, 1982, the Board appointed a committee of two of its members, L. S. Caretto and Gary Patton, to conduct a public hearing to consider proposed changes to the Board's regulation of the lead content of gasoline;

WHEREAS, on November 10 and 11, 1982, the committee of the Board conducted a duly-noticed public hearing regarding amendments proposed by staff and has heard and considered the comments of the Board staff and the public;

WHEREAS, the committee of the Board presented its recommendations to the full Board at a public hearing on December 1, 1982;

WHEREAS, the Board has received and reviewed the substantial body of comments and testimony from its staff, representatives of affected industry and environmental groups, and other interested persons;

WHEREAS, on October 27, 1982, the United States Environmental Protection Agency (EPA) issued amendments to its regulations governing the lead content of gasoline, establishing a maximum average lead content standard for all leaded gasoline produced by a refiner or sold by an importer in a calendar quarter;

WHEREAS, the California Environmental Quality Act and Board regulations require that action not be taken as proposed if feasible mitigation measures or alternatives exist which would substantially reduce any significant adverse environmental effects of the proposed action; and

WHEREAS, the Board finds with respect to issues raised in hearings on the regulations:

A. Health Issues

Studies completed since the state's ambient air quality standard for lead was adopted and affirmed have correlated adverse health effects of lead, including deficits in intelligence and abnormal brain-wave patterns, with lower blood lead levels than were believed to be the case when the standard was adopted and affirmed and appear to indicate that there is no threshold level below which these effects are not found;

The effects of lead are most damaging to children because they absorb more lead and retain more lead in the bloodstream than do adults;

Recent studies establish a correlation between a decrease in gasoline lead usage and a decrease in body lead levels;

It is necessary to reduce the concentration of lead permitted in motor vehicle gasoline as rapidly as feasible by an amount sufficient to assure that the state ambient standard is attained and maintained in all areas of the state and to assure that the public health is adequately protected from adverse effects of exposure to lead;

B. Need for Further Reduction

Although ambient lead concentrations have decreased significantly since the Board's gasoline lead content regulation was adopted, the state ambient standard for lead continues to be exceeded;

Further reduction in the amount of lead emissions is needed to achieve and maintain the air quality standard in all areas of the state;

Approximately 90 percent of all airborne lead in California comes from the combustion of motor vehicle gasoline which contains lead;

The anticipated decline in lead use under the existing regulation is not likely to result in attainment of the state ambient standard for lead until sometime after 1990;

Based on the 30-day average concentration of 3.44 ug/m^3 recorded at Lennox in December 1980, a 56 percent reduction from the volume of lead used in the fourth quarter of 1980 in the production of gasoline is necessary to achieve the state ambient standard for lead;

C. Misfueling Issues

Misfueling of motor vehicles is currently a small problem but one which could become significant even at present levels as more stringent standards for hydrocarbons and carbon monoxide come into effect;

A limitation of the lead and phosphorus content of unleaded gasoline by the Board is necessary and appropriate to help assure that vehicle exhaust emissions do not increase because of catalyst poisoning;

The prohibition of adding non-gasoline products containing lead to gasoline after the gasoline is sold at retail, and selling products advertised for such use, is necessary and appropriate to help assure that the state ambient standard for lead is achieved and maintained, and that vehicle exhaust emissions do not increase because of catalyst poisoning;

A total ban on lead in gasoline would provide maximum protection to the public health and would eliminate vehicle misfueling, but such a ban is currently not feasible because of economic considerations and the need of numerous vehicles for leaded fuel;

D. Form of Regulation

A single gasoline lead content standard applicable to all producers of gasoline is equitable because it is less likely to provide an unfair economic advantage to any class of producers;

If a single gasoline lead content standard is applied to all producers of gasoline, then a standard that applies to the leaded gasoline pool only is the least costly, particularly to small producers;

Data in the record do not demonstrate that the incidence of misfueling is dependent upon the choice of either a leaded pool average or a total pool average lead content standard;

A leaded pool gasoline lead content standard is parallel to the current EPA regulations and is favored by the majority of the regulated community;

E. Specific Regulatory Provisions

The regulations set forth in Attachment A will likely result by 1985 in the 56 percent reduction in lead emissions from the fourth quarter 1980 level necessary to assure expeditious attainment of the state ambient standard for lead and will provide protection to the public from the severe adverse health effects of lead in 1985 and thereafter;

A gasoline lead content regulation applying standards in the summer months or in various regions of the state less stringent than those contained in Attachment A would not adequately protect public health;

The variance procedures and the modified effective date for the lead content standards for leaded gasoline set forth in Attachment A adequately accommodate the special economic needs of small producers;

F. Enforcement Issues

The provisions of Section 2253.2(c) set forth in Attachment A are necessary and appropriate to enhance enforcement of the gasoline lead content standards by permitting detection of potential violators by sampling of gasoline sold or to be sold;

Specific procedures regarding Section 2253.2(c) should be developed with regard to circumstances of individual refiners;

The provisions of Section 2253.2(e) set forth in Attachment A are necessary and appropriate to assure that statutory remedies are applicable to the gasoline lead content standards in a manner which will adequately deter violation of the standards;

The reporting provisions contained in Attachment A are necessary and appropriate to enhance identification of persons violating the gasoline lead content standards and to permit accurate monitoring of gasoline and lead usage trends;

G. Benefits and Costs

The regulatory action set forth in Attachment A will achieve a reduction in lead emissions from the 1980 baseline levels of over 3200 tons per year statewide and of over 1200 tons per year in the South Coast Air Basin in 1985;

The regulatory action set forth in Attachment A will have an annual cost of about 70 million dollars to the oil industry in California in 1985, and will result in an industry-wide average cost of approximately 0.7 cents per gallon of gasoline produced or imported for consumption in California;

The regulatory action is necessary and technologically and economically feasible to fulfill the purposes of Division 26 of the Health and Safety Code;

The economic costs associated with the regulatory action set forth in Attachment A are fully justified by the substantial health benefits which will result from the regulations; and

No significant adverse environmental impacts are likely to result from the adoption and implementation of the proposed regulations.

NOW, THEREFORE, BE IT RESOLVED that the Board approves the amendment to Title 13, California Administrative Code, Chapter 3, Subchapter 5, Section 2253 and adoption of Section 2253.2, as set forth in Attachment A, and directs the Executive Officer to adopt the proposed regulations, with such technical changes as he may deem necessary, after assuring that the regulations have been available to the public for at least 15 days.

BE IT FURTHER RESOLVED that the Board recognizes the need for eliminating lead from gasoline. The Board directs the Executive Officer to now begin development of a regulation which eliminates lead from gasoline as expeditiously as feasible.

BE IT FURTHER RESOLVED that the staff is directed to consult with gasoline producers to develop the most appropriate procedures for compliance with Section 2253.2(c).

I hereby certify that the above is a true and correct copy of Resolution 82-64, as adopted by the Air Resources Board.

Harold Holmes, Board Secretary

Attachment A

State of California
AIR RESOURCES BOARD

PROPOSED AMENDMENTS TO TITLE 13, CALIFORNIA ADMINISTRATIVE CODE

Lead in Gasoline

November 24, 1982

The attached document contains modifications to the originally noticed staff proposal. Section 2253 includes, in double underline and strike-out form, changes from the original proposal noticed on September 17, 1982. Section 2253.2 includes, in underline and strike-out form, changes from the original proposal.

PROPOSED AMENDMENTS TO TITLE 13,

CALIFORNIA ADMINISTRATIVE CODE

Amend Section 2253 of Title 13, California Administrative Code, by amending the title and adding subdivision (j) to read as follows:

2253. Average Lead Content of Gasoline Manufactured Before ~~April~~ July 1, 1983.

...

(j) This section shall not apply to gasoline manufactured after the ~~first~~ second three-month period (~~January-March~~ April-June) of 1983.

Add Section 2253.2 of Title 13, California Administrative Code, to read as follows:

2253.2. Lead in Gasoline. (a) For the purpose of this section, the following definitions shall apply:

(2) "Calendar quarter" means each of the following three-month periods: January-March, April-June, July-September, and October-December.

(3) "California gasoline" means gasoline sold or intended for sale as a motor vehicle fuel in California.

(4) "California gasoline production facility" means a facility in California at which gasoline is produced, including a facility at which any combination of gasoline, blending stock, and/or lead additives are blended to produce gasoline. "California gasoline production facility" does not include a facility whose sole operation is to transfer gasoline or to blend non-lead additives, including alcohol, into purchased gasoline.

(5) "Gasoline" means any fuel which is commonly or commercially known or sold as gasoline, or which is a mixture of any fuel, commonly or commercially known or sold as gasoline, and alcohol.

(~~4~~5) "Gasoline Bblending stock" means any liquid compound which is blended~~,~~ with other liquid compounds or with lead additives~~,~~ to produce gasoline.

(6) "Importer" means any person who first accepts delivery in California of California gasoline or gasoline blending stocks imported from a foreign country or another state.

(7) "Lead additive" means any substance containing lead or lead compounds.

(8) "Leaded gasoline" means gasoline which is produced with the use of any lead additive or which contains more than 0.05 gram of lead per gallon, or more than 0.005 gram of phosphorus per gallon.

(9) "Leaded high octane gasoline" means leaded gasoline having and represented as having an Antiknock Index of at least ninety-two. The Antiknock Index is the sum of the research octane number, as determined by American Society for Testing and Materials (ASTM) Test Method D2699-81, plus the motor octane number, as determined by ASTM Test Method D2700-81, divided by two.

(10) "Produce" means to manufacture gasoline at a California gasoline production facility.

(11) "Producer" means any person who owns, leases, operates, controls, or supervises a California gasoline production facility.

(12) "Unleaded gasoline" means gasoline to which lead has not been purposefully added and which contains not more than 0.05 gram of lead per gallon, and not more than 0.005 gram of phosphorus per gallon.

(13) "Wholesale purchaser-consumer" means an organization that is an ultimate consumer of gasoline and which purchases or obtains gasoline from a non-retail supplier for use in motor vehicles.

(~~4~~5) "Gasoline Bblending stock" means any liquid compound which is blended~~,~~ with other liquid compounds or with lead additives~~,~~ to produce gasoline.

(6) "Importer" means any person who first accepts delivery in California of California gasoline or gasoline blending stocks imported from a foreign country or another state.

(7) "Lead additive" means any substance containing lead or lead compounds.

(8) "Leaded gasoline" means gasoline which is produced with the use of any lead additive or which contains more than 0.05 gram of lead per gallon, or more than 0.005 gram of phosphorus per gallon.

(9) "Leaded high octane gasoline" means leaded gasoline having and represented as having an Antiknock Index of at least ninety-two. The Antiknock Index is the sum of the research octane number, as determined by American Society for Testing and Materials (ASTM) Test Method D2699-81, plus the motor octane number, as determined by ASTM Test Method D2700-81, divided by two.

(10) "Produce" means to manufacture gasoline at a California gasoline production facility.

(11) "Producer" means any person who owns, leases, operates, controls, or supervises a California gasoline production facility.

(12) "Unleaded gasoline" means gasoline to which lead has not been purposefully added and which contains not more than 0.05 gram of lead per gallon, and not more than 0.005 gram of phosphorus per gallon.

(13) "Wholesale purchaser-consumer" means an organization that is an ultimate consumer of gasoline and which purchases or obtains gasoline from a non-retail supplier for use in motor vehicles.

(b) No person shall sell, offer for sale, or deliver for sale any California gasoline represented as unleaded unless such gasoline meets the definition of unleaded gasoline set forth in paragraph (a)(12).

(c) No person shall sell, offer for sale, or deliver for sale any California leaded gasoline which exceeds the lead content per gallon specified below:

Effective Date of Limitation	Maximum Lead Content (grams per gallon)	
	Leaded Gasoline Other than Leaded High Octane Gasoline	Leaded High Octane Gasoline
~~April~~ July 1, 1983 through September 30, 1984	~~1.6~~ 1.1	~~2.1~~ 1.4
After September 30, 1984	~~1.2~~ 0.8	~~1.6~~ 1.0

However, a person may sell, offer for sale, or deliver for sale California leaded gasoline which exceeds the lead content specified above if the following conditions are satisfied, and the lead content of the gasoline does not exceed the lead content reported pursuant to the following conditions:

(1) A producer or importer shall notify the executive officer or his or her designee of the estimated or actual volume (in gallons) of the gasoline, the estimated or actual lead content (in grams per gallon) of the gasoline, and whether the gasoline to be sold is leaded high octane gasoline or leaded gasoline other than leaded high octane gasoline. This notification shall be received at least 24 hours prior to the start of physical transfer of the gasoline from the California gasoline production facility. If actual values are later determined to be different from the estimated values reported,

follow-up notification of the actual values shall occur within 24 hours after the start of physical transfer of the gasoline from the California gasoline production facility.

(2) Within 90 days of the notification pursuant to paragraph (1) above, the producer or importer shall sell California leaded gasoline in sufficient quantity and at a lead content below the applicable maximum lead content limit set forth in the table in paragraph (c) to offset the total grams of lead reported in excess of the maximum limit. The producer or importer shall notify the executive officer or his or her designee of the estimated or actual volume (in gallons) of the gasoline, the estimated or actual lead content (in grams per gallon) of the gasoline, and whether the gasoline to be sold is leaded high octane gasoline or leaded gasoline other than leaded high octane gasoline. This notification shall be received at least 48 hours prior to the start of physical transfer of the gasoline from the California gasoline production facility. If actual values are later determined to be different from the estimated values reported, follow-up notification of the actual values shall occur within 24 hours after the start of physical transfer of the gasoline from the California gasoline production facility.

(d) No producer shall sell, offer for sale, or deliver for sale California leaded gasoline which the producer has produced during ~~any~~ calendar quarter and which exceeds the average lead content, for the~~at~~ calendar quarter, specified in the table below. No importer shall ~~first~~ sell, offer for sale, or deliver for sale, California leaded gasoline which has been imported into California, which the importer first sells or transfers during a calendar quarter, and which exceeds ~~during-any-calendar-quarter~~ the average lead content, for that calendar quarter, specified in the table below.

follow-up notification of the actual values shall occur within 24 hours after the start of physical transfer of the gasoline from the California gasoline production facility.

(2) Within 90 days of the notification pursuant to paragraph (1) above, the producer or importer shall sell California leaded gasoline in sufficient quantity and at a lead content below the applicable maximum lead content limit set forth in the table in paragraph (c) to offset the total grams of lead reported in excess of the maximum limit. The producer or importer shall notify the executive officer or his or her designee of the estimated or actual volume (in gallons) of the gasoline, the estimated or actual lead content (in grams per gallon) of the gasoline, and whether the gasoline to be sold is leaded high octane gasoline or leaded gasoline other than leaded high octane gasoline. This notification shall be received at least 48 hours prior to the start of physical transfer of the gasoline from the California gasoline production facility. If actual values are later determined to be different from the estimated values reported, follow-up notification of the actual values shall occur within 24 hours after the start of physical transfer of the gasoline from the California gasoline production facility.

(d) No producer shall sell, offer for sale, or deliver for sale California leaded gasoline which the producer has produced during ~~any~~ calendar quarter and which exceeds the average lead content, for the~~at~~ calendar quarter, specified in the table below. No importer shall ~~first~~ sell, offer for sale, or deliver for sale~~,~~ California leaded gasoline which has been imported into California, which the importer first sells or transfers during a calendar quarter, and which exceeds ~~during-any-calendar-quarter~~ the average lead content, for that calendar quarter, specified in the table below.

Effective Date of Limitation	~~Maximum~~ Lead Content (grams per gallon)
~~April~~ July 1, 1983 through September 30, 1984	1.1
After September 30, 1984	0.8

(e) (1) For the purposes of paragraphs (c) and (d), each sale at retail for use in a motor vehicle, and each delivery to an individual motor vehicle by a wholesale purchaser-consumer, shall be deemed a sale by the producer or importer required under paragraph (h) to include the gasoline in its average lead content computation for a calendar quarter.

(2) Where the California leaded gasoline produced by a producer during a calendar quarter, or the imported California leaded gasoline first sold or transferred by an importer during a calendar quarter, exceeds the maximum average lead content specified in paragraph (d), each sale, offer for sale or delivery for sale of such California leaded gasoline shall be a violation of paragraph (d) regardless of the lead content of the gasoline involved in any individual sale, offer or delivery.

(ef) No person shall add a product, other than gasoline, containing lead ~~additive~~ to California gasoline after the gasoline has been sold at retail or purchased by a wholesale purchaser-consumer.

(~~f~~g) No person shall sell or offer for sale a product containing lead ~~additive~~ which is advertised for use as an additive to California gasoline at or after the time the gasoline is sold at retail or purchased by a wholesale purchaser-consumer.

(~~g~~h) The average lead content of California leaded gasoline attributable to a producer and/or importer in a calendar quarter under paragraph (d) shall be determined by the methods set forth below. For persons who are both

producers and importers, all of the California leaded gasoline attributable under paragraph (d) to such person in a calendar quarter as a producer and an importer shall be combined and the average lead content shall be computed as the weighted (by volume) average lead content ~~(by volume)~~ of all such gasoline.

(1) The producer or importer who first produces or imports a volume of California leaded gasoline meeting the definition set forth in paragraph (a)(~~5~~4) shall include the volume of California leaded gasoline and lead contained in such gasoline in its computation of average lead content, unless that producer or importer agrees in writing with another producer who subsequently processes the gasoline that the subsequent producer will count the volume attributable to the gasoline and lead contained in the gasoline as part of the subsequent producer's computation of average lead content, and the lead contained in the gasoline is included in the average lead content ~~report~~ computation of such subsequent producer~~.~~, as reflected in a report filed pursuant to paragraph (i).

(2) The average lead content of all California leaded gasoline produced in a calendar quarter shall be determined by dividing the total grams of lead used by a producer in the production of California leaded gasoline by the total gallons of California leaded gasoline produced.

(A) The total grams of lead used by a producer includes [i] the lead in lead additives used by the producer in the production of California leaded gasoline, ~~and~~ [ii] the lead in gasoline blending stocks received by the producer from another person and used by the producer in the production of California leaded gasoline, and [iii] the lead in ~~unless such~~ gasoline received from another person and further processed by the producer, unless such gasoline ~~blending stock constitutes gasoline as defined in paragraph (a)(5) and~~

producers and importers, all of the California leaded gasoline attributable under paragraph (d) to such person in a calendar quarter as a producer and an importer shall be combined and the average lead content shall be computed as the weighted (by volume) average lead content ~~(by volume)~~ of all such gasoline.

(1) The producer or importer who first produces or imports a volume of California leaded gasoline meeting the definition set forth in paragraph (a)(~~5~~4) shall include the volume of California leaded gasoline and lead contained in such gasoline in its computation of average lead content, unless that producer or importer agrees in writing with another producer who subsequently processes the gasoline that the subsequent producer will count the volume attributable to the gasoline and lead contained in the gasoline as part of the subsequent producer's computation of average lead content, and the lead contained in the gasoline is included in the average lead content ~~report~~ computation of such subsequent producer, as reflected in a report filed pursuant to paragraph (i).

(2) The average lead content of all California leaded gasoline produced in a calendar quarter shall be determined by dividing the total grams of lead used by a producer in the production of California leaded gasoline by the total gallons of California leaded gasoline produced.

(A) The total grams of lead used by a producer includes [i] the lead in lead additives used by the producer in the production of California leaded gasoline, ~~and~~ [ii] the lead in gasoline blending stocks received by the producer from another person and used by the producer in the production of California leaded gasoline, and [iii] the lead in ~~unless such~~ gasoline received from another person and further processed by the producer, unless such gasoline ~~blending stock constitutes gasoline as defined in paragraph (a)(5) and~~

is included in the average lead content ~~report~~ computation of another producer or of an importer~~.~~, as reflected in a report filed pursuant to paragraph (i). The lead in gasoline and gasoline blending stocks received by a producer from another person shall be determined by performance by the producer of ~~the~~ an applicable test method set forth in paragraph (m) ~~Appendix-B-of-40-Code-of-Federal-Regulations-Part-80,-as-it-existed-on-July-1,-1982,~~ upon a representative sample of each shipment of gasoline or gasoline blending stocks which the producer knows or reasonably should know contains lead, and multiplying the lead content of each shipment by the total gallons of the shipment.

(B) The total gallons of California leaded gasoline produced shall not include the volume of any ~~California~~ leaded gasoline, as defined in paragraphs (a)(4) and (a)(8), ~~attributable-to-gasoline-blending-stock~~ received by a producer from another person, unless such ~~gasoline-blending-stock constitutes-gasoline-as-defined-in-paragraph-(a)(5),-and~~ volume has not been and will not be included in the average lead content ~~report~~ computation of another producer or of an importer~~.~~, as reflected in a report filed pursuant to paragraph (i). In any instance in which production of a volume of gasoline is reported by more than one producer and importer, the volume shall be deemed excluded from the production of the subsequent producer in determining compliance with paragraph (d).

(3) The average lead content of California leaded gasoline first sold~~,~~ or transferred ~~offered-for-sale,-or-delivered-for-sale~~ during a calendar quarter, which has been imported into California, shall be determined by calculating:

(A) the lead content of each shipment of imported California leaded gasoline any portion of which is first sold, or transferred ~~offered-for-sale or-delivered-for-sale~~ by the importer during the calendar quarter, determined by performance by the importer of ~~the~~ an applicable test method set forth in paragraph (m) ~~Appendix-B-of-40,-Code-of-Federal-Regulations-Part-80,-as-it existed-on-July-1,-1982,~~ upon a representative sample of gasoline in the shipment;

(B) the total gallons of California leaded gasoline in each such shipment;

(C) for each such shipment, the total gallons of California leaded gasoline which are first sold or transferred during the calendar quarter;

(~~B~~D) the total grams of lead contained in the volume of California leaded gasoline identified in paragraph (h)(3)(C), ~~each-such-shipment,~~ computed by multiplying the lead content of the shipment, as determined pursuant to paragraph (~~g~~h)(3)(A), by the total gallons of leaded gasoline identified in paragraph (h)(3)(C); ~~in-the-shipment-which-is-first-sold,-offered-for-sale-or delivered-for-sale-during-the-calendar-quarter;~~

(~~C~~E) the total grams of lead contained in the volume of all such shipments first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ during the calendar quarter;

(~~D~~F) the total gallons of leaded gasoline in all such shipments first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ by the importer during the calendar quarter; and

(~~E~~G) the average lead content of all imported leaded gasoline first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ by the importer during during the calendar quarter, determined by dividing the total in paragraph (~~g~~h)(3)(~~C~~E) by the total in paragraph (~~g~~h)(3)(~~D~~F).

(A) the lead content of each shipment of imported California leaded gasoline any portion of which is first sold, or transferred ~~offered-for-sale or-delivered-for-sale~~ by the importer during the calendar quarter, determined by performance by the importer of ~~the~~ an applicable test method set forth in paragraph (m) ~~Appendix-B-of-40,-Code-of-Federal-Regulations-Part-80,-as-it existed-on-July-1,-1982,~~ upon a representative sample of gasoline in the shipment;

(B) the total gallons of California leaded gasoline in each such shipment;

(C) for each such shipment, the total gallons of California leaded gasoline which are first sold or transferred during the calendar quarter;

(~~B~~D) the total grams of lead contained in the volume of California leaded gasoline identified in paragraph (h)(3)(C), ~~each-such-shipment,~~ computed by multiplying the lead content of the shipment, as determined pursuant to paragraph (~~g~~h)(3)(A), by the total gallons of leaded gasoline identified in paragraph (h)(3)(C); ~~in-the-shipment-which-is-first-sold,-offered-for-sale-or delivered-for-sale-during-the-calendar-quarter;~~

(~~C~~E) the total grams of lead contained in the volume of all such shipments first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ during the calendar quarter;

(~~D~~F) the total gallons of leaded gasoline in all such shipments first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ by the importer during the calendar quarter; and

(~~E~~G) the average lead content of all imported leaded gasoline first sold, or transferred ~~offered-for-sale-or-delivered-for-sale~~ by the importer during during the calendar quarter, determined by dividing the total in paragraph (~~g~~h)(3)(~~C~~E) by the total in paragraph (~~g~~h)(3)(~~D~~F).

(~~h~~i) For each calendar quarter commencing with the quarter from ~~April~~ July 1, 1983 through ~~June~~ September 30, 1983, each producer who has produced leaded gasoline, and each importer who has first sold~~,~~ or transferred ~~offered for sale or delivered for sale~~ leaded gasoline or gasoline blending stocks which has been imported into California, shall, within ~~15~~ 30 days after the close of the reporting period, submit to the executive officer a report on forms supplied by the executive officer upon request. The report shall be executed in California under penalty of perjury, and shall contain the following information:

(1) For each California gasoline production facility, and for the total of all California gasoline production facilities of a producer:

(A) the total grams of lead in lead additive inventory on the first day of the calendar quarter;

(B) the total grams of lead in lead additives received during the calendar quarter, the name and address of each person from whom the lead additive was received, and the total grams of lead received from each person;

(C) the total grams of lead shipped from the lead additive inventory to other persons during the calendar quarter, the name and address of each person to whom the lead additive was shipped and the total grams of lead shipped to each person;

(D) the total grams of lead in lead additive inventory on the last day of the calendar quarter;

(E) for each shipment of gasoline and gasoline blending stocks~~,~~ received by the producer from another person, any portion of which is used by the producer in the production of leaded gasoline during the calendar quarter, which contains lead that must be included in the determination of average lead

content of the producer's leaded gasoline under paragraph (~~g~~h)(2)(A)[ii] or [iii], and which the producer knows or reasonably should know contains lead:

[i] the lead content of each shipment, as determined by performance of an applicable test method set forth in paragraph (m) on a representative sample of gasoline or gasoline blending stocks in the shipment; ~~the method set forth in paragraph (g)(2)(A);~~

[ii] the total gallons received in each shipment;

[iii] the total gallons ~~of~~ from each shipment used by the producer in the production of leaded gasoline during the calendar quarter;

[iv] the total grams of lead contained in the volume identified pursuant to paragraph (i)(1)(E)[iii];

[~~iii~~iv] the total grams of lead in the volume of all such shipments used by the producer in the production of leaded gasoline during the calendar quarter;

[~~iv~~vi] the name and address of the person from whom such shipment was received; and

[~~v~~vii] documentation clearly showing that the volume and lead content of ~~the~~ any gasoline ~~blending stock~~ has not been and will not be included in another producer's or an importer's average lead content ~~report~~ computation, as reflected in a report filed pursuant to this paragraph (i);

(F) the total grams of lead used in the production of California leaded gasoline during the calendar quarter, except for the lead in any California leaded gasoline not required by paragraph (h)(1) to be included in the producer's computation of lead content;

content of the producer's leaded gasoline under paragraph (~~g~~h)(2)(A)[ii] or [iii], and which the producer knows or reasonably should know contains lead:

[i] the lead content of each shipment, as determined by performance of an applicable test method set forth in paragraph (m) on a representative sample of gasoline or gasoline blending stocks in the shipment; ~~the method set forth in paragraph (g)(2)(A);~~

[ii] the total gallons received in each shipment;

[iii] the total gallons ~~of~~ from each shipment used by the producer in the production of leaded gasoline during the calendar quarter;

[iv] the total grams of lead contained in the volume identified pursuant to paragraph (i)(1)(E)[iii];

[~~iii~~v] the total grams of lead in the volume of all such shipments used by the producer in the production of leaded gasoline during the calendar quarter;

[~~iv~~vi] the name and address of the person from whom such shipment was received; and

[~~v~~vii] documentation clearly showing that the volume and lead content of ~~the~~ any gasoline ~~blending stock~~ has not been and will not be included in another producer's or an importer's average lead content ~~report~~ computation, as reflected in a report filed pursuant to this paragraph (i);

(F) the total grams of lead used in the production of California leaded gasoline during the calendar quarter, except for the lead in any California leaded gasoline not required by paragraph (h)(1) to be included in the producer's computation of lead content;

(G) the total gallons of California leaded gasoline produced during the calendar quarter, except for the gallons of any California leaded gasoline not required by paragraph (h)(1) to be included in the producer's computation of lead content;

(H) the average lead content of each gallon of California leaded gasoline produced during the calendar quarter, determined by dividing the total in paragraph (i)(1)(F) by the total in paragraph (i)(1)(G);

(I) the total gallons of California leaded high octane gasoline produced during the calendar quarter;

(J) the total gallons of California unleaded gasoline produced during the calendar quarter;

(K) the total grams of lead used in the production during the calendar quarter of products other than California gasoline, including gasoline which is not California gasoline, by type of product;

(L) the total gallons of products described in paragraph (hi)(1)(K) in which lead was used that were produced during the calendar quarter, by type of product;

(M) if any of the products listed in paragraph (i)(1)(K) was sold or otherwise transferred, directly, or indirectly, to another California gasoline production facility during the calendar quarter:

[i] the total gallons and lead content of each transfer, identified by type of product;

[ii] the name and address of the California gasoline production facility to which each transfer was made; and

[iii] the date of each transfer.

(MN) for each shipment of California leaded gasoline produced in the calendar quarter which ~~or gasoline blending stock containing lead~~ the producer delivers to another person, and which ~~gasoline or stock~~ the producer knows or reasonably should know will be processed or further processed by another producer to produce California leaded gasoline:

[i] the total gallons and lead content of each delivery;

[ii] the name and address of the person first accepting delivery;

[iii] the date of initial delivery;

[~~i~~iv] The name and address of the producer subsequently processing such gasoline or blending stocks to produce gasoline; and

[~~ii~~v] whether the producer making the shipment is including the volume and lead content of the shipment in its ~~determination~~ computation of the average lead content of California leaded gasoline it produces during the calendar quarter.

(NO) such other information as may be required by the executive officer to ascertain the average lead content of California leaded gasoline.

(2) For each importer:

(A) the information described in paragraphs (~~g~~h)(3)(A) through (EG);

(B) the lead content of each shipment of imported gasoline blending stocks any portion of which is first sold or transferred by the importer during the calendar quarter, determined by performance by the importer of an applicable test method set forth in paragraph (m) upon a representative sample of gasoline blending stocks in the shipment;

(C) the total gallons of gasoline blending stocks in each such shipment;

[iii] the date of each transfer.

(MN) for each shipment of California leaded gasoline produced in the calendar quarter which ~~or gasoline blending stock containing lead~~ the producer delivers to another person, and which ~~gasoline or stock~~ the producer knows or reasonably should know will be processed or further processed by another producer to produce California leaded gasoline:

[i] the total gallons and lead content of each delivery;

[ii] the name and address of the person first accepting delivery;

[iii] the date of initial delivery;

[~~i~~iv] The name and address of the producer subsequently processing such gasoline or blending stocks to produce gasoline; and

[~~ii~~v] whether the producer making the shipment is including the volume and lead content of the shipment in its ~~determination~~ computation of the average lead content of California leaded gasoline it produces during the calendar quarter.

(~~N~~O) such other information as may be required by the executive officer to ascertain the average lead content of California leaded gasoline.

(2) For each importer:

(A) the information described in paragraphs (~~g~~h)(3)(A) through (~~E~~G);

(B) the lead content of each shipment of imported gasoline blending stocks any portion of which is first sold or transferred by the importer during the calendar quarter, determined by performance by the importer of an applicable test method set forth in paragraph (m) upon a representative sample of gasoline blending stocks in the shipment;

(C) the total gallons of gasoline blending stocks in each such shipment;

(D) the total grams of lead in each such shipment, determined by multiplying the lead content of the shipment by the total gallons of gasoline blending stocks in the shipment;

(~~B~~E) for each shipment of imported California leaded gasoline or gasoline blending stocks ~~sold~~ received by the importer during the calendar quarter ~~reporting period~~: the name and address of the ~~importer~~ person from whom the gasoline or gasoline blending stocks was received; the name and address of any consignee; the date of entry; the vessel or carrier or other means of importation; the port or point of entry; the entry number (where applicable); and the total gallons of leaded gasoline in the shipment.

(~~C~~F) for any shipment of imported leaded gasoline or gasoline blending stocks containing lead the importer delivers to another person during the calendar quarter, which gasoline or gasoline blending stocks the importer knows or reasonably should know will be processed by a producer to produce California leaded gasoline:

[i] the total gallons and lead content of each delivery, identified by type of product;

[ii] the name and address of the person first accepting delivery;

[iii] the date of initial delivery;

[~~i~~iv] The name and address of the producer subsequently processing such gasoline or gasoline blending stocks to produce gasoline; and

[~~ii~~v] for any such delivery of gasoline, whether the importer making the shipment is including the volume of the shipment in its determination of the average lead content of imported California leaded gasoline it sells, offers for sale or delivers for sale.

(G) Such other information as may be required by the executive officer to ascertain the average lead content of California leaded gasoline.

(~~i~~j) For each calendar quarter commencing with ~~April~~ July 1 through ~~June~~ September 30, 1983, each lead additive manufacturer shall submit to the executive officer a report showing the total grams of lead shipped to each California gasoline production facility by such lead additive manufacturer during the calendar quarter. Reports shall be certified under penalty of perjury and submitted within ~~15~~ 30 days after the close of the reporting period, on forms supplied by the executive officer upon request.

(~~j~~k)(1) Any producer who cannot comply with the requirements set forth in paragraphs (c) or (d) because of extraordinary reasons beyond the reasonable control of the producer may apply to the executive officer for a variance. The application shall set forth:

(A) The specific grounds upon which the variance is sought;

(B) The proposed date(s) by which compliance with the lead content limitations in paragraphs (c) and (d) will be achieved; and

(C) A plan reasonably detailing the method by which compliance will be achieved.

(2) Upon receipt of an application for a variance containing the information required in paragraph (~~j~~k)(1), the executive officer shall hold a hearing to determine whether, and under what conditions and to what extent, a variance from the requirements established by paragraphs (c) or (d) is necessary and will be permitted. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 20 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Administrative Notice Register and ~~shall be~~ sent to every

(G) Such other information as may be required by the executive officer to ascertain the average lead content of California leaded gasoline.

(~~i~~j) For each calendar quarter commencing with ~~April~~ July 1 through ~~June~~ September 30, 1983, each lead additive manufacturer shall submit to the executive officer a report showing the total grams of lead shipped to each California gasoline production facility by such lead additive manufacturer during the calendar quarter. Reports shall be certified under penalty of perjury and submitted within ~~15~~ 30 days after the close of the reporting period, on forms supplied by the executive officer upon request.

(~~j~~k)(1) Any producer who cannot comply with the requirements set forth in paragraphs (c) or (d) because of extraordinary reasons beyond the reasonable control of the producer may apply to the executive officer for a variance. The application shall set forth:

(A) The specific grounds upon which the variance is sought;

(B) The proposed date(s) by which compliance with the lead content limitations in paragraphs (c) and (d) will be achieved; and

(C) A plan reasonably detailing the method by which compliance will be achieved.

(2) Upon receipt of an application for a variance containing the information required in paragraph (~~j~~k)(1), the executive officer shall hold a hearing to determine whether, and under what conditions and to what extent, a variance from the requirements established by paragraphs (c) or (d) is necessary and will be permitted. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 20 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Administrative Notice Register and ~~shall be~~ sent to every

person who requests such notice, not less than 20 days prior to the hearing.

(3) At least 20 days prior to the hearing, the application for the variance shall be made available to the public for inspection. Interested members of the public shall be allowed a reasonable opportunity to testify at the hearing and their testimony shall be considered.

(4) No variance shall be granted unless all of the following findings are made:

(A) that, because of reasons beyond the reasonable control of the applicant, requiring compliance with paragraphs (c) and (d) would [i] result in an extraordinary economic hardship, or [ii] result, for an applicant meeting the definition of small refiner established by the United States Environmental Protection Agency in Title 40, Code of Federal Regulations, Section 80.2(p), as it existed on December 1, 1982, in operation of the applicant's California gasoline production facility at a financial loss for the twelve-month period following the beginning date of the variance sought by the applicant;

(B) that the granting of a variance will not result in substantial increases in ambient concentrations of lead; and

(C) that the compliance plan proposed by the applicant can reasonably be implemented and will achieve compliance as expeditiously as possible.

(5) Any variance order shall specify a final compliance date by which the lead content limitations in paragraphs (c) and (d) will be achieved. Any variance order shall also contain a condition that specified increments of progress necessary to assure timely compliance be achieved, and such other conditions, including limitations on the lead content of California leaded gasoline, that the executive officer, as a result of the testimony received at

the hearing, finds necessary to carry out the purposes of Division 26 of the Health and Safety Code.

(6) The executive officer shall require, as a condition of granting a variance, that a cash bond, or a bond executed by two or more good and sufficient sureties or by a corporate surety, be posted by the party to whom the variance was granted to assure performance of any construction, alteration, repair, or other work required by the terms and conditions of the variance. Such bond may provide that, if the party granted the variance fails to perform such work by the agreed date, the cash bond shall be forfeited to the state board, or the corporate surety or sureties shall have the option of promptly remedying the variance default or paying to the state board an amount, up to the amount specified in the bond, that is necessary to accomplish the work specified as a condition of the variance.

(7) No variance based on a plan for compliance which includes the installation of major additional equipment shall have a duration of more than three years or shall have a final compliance date later than December 31, 1987.

(8) No variance which is issued due to conditions of breakdown, repair, or malfunction of equipment shall have a duration, including extensions, of more than six months.

(9) Each variance order shall provide that the producer may not produce California gasoline exceeding the applicable lead content standards established by the United States Environmental Protection Agency in Title 40, Code of Federal Regulations, Part 80.

(10) The executive officer may, after holding a hearing without complying with the provisions of paragraphs (jk)(2) and (3), issue an emergency variance to a producer from the requirements of paragraphs (c) or (d) upon a showing of

the hearing, finds necessary to carry out the purposes of Division 26 of the Health and Safety Code.

(6) The executive officer shall require, as a condition of granting a variance, that a cash bond, or a bond executed by two or more good and sufficient sureties or by a corporate surety, be posted by the party to whom the variance was granted to assure performance of any construction, alteration, repair, or other work required by the terms and conditions of the variance. Such bond may provide that, if the party granted the variance fails to perform such work by the agreed date, the cash bond shall be forfeited to the state board, or the corporate surety or sureties shall have the option of promptly remedying the variance default or paying to the state board an amount, up to the amount specified in the bond, that is necessary to accomplish the work specified as a condition of the variance.

(7) No variance based on a plan for compliance which includes the installation of major additional equipment shall have a duration of more than three years or shall have a final compliance date later than December 31, 1987.

(8) No variance which is issued due to conditions of breakdown, repair, or malfunction of equipment shall have a duration, including extensions, of more than six months.

(9) Each variance order shall provide that the producer may not produce California gasoline exceeding the applicable lead content standards established by the United States Environmental Protection Agency in Title 40, Code of Federal Regulations, Part 80.

(10) The executive officer may, after holding a hearing without complying with the provisions of paragraphs (~~j~~k)(2) and (3), issue an emergency variance to a producer from the requirements of paragraphs (c) or (d) upon a showing of

reasonably unforseeable extraordinary hardship and good cause that a variance is necessary. In connection with the issuance of an emergency variance, the executive officer may waive the requirements of paragraph (k)(6). No emergency variance may extend for a period of more than 45 days. If the applicant for an emergency variance does not demonstrate that he or she can comply with the provisions of paragraphs (c) or (d) within such 45-day period, an emergency variance shall not be granted unless the applicant makes a prima facie demonstration that the findings set forth in paragraph (4) should be made. The executive officer shall maintain a list of persons who have informed the executive officer in writing of their desire to be notified by telephone in advance of any hearing held pursuant to this paragraph (jk)(10), and shall provide advance telephone notice to any such person.

(11) A variance shall cease to be effective upon failure of the party to whom the variance was granted substantially to comply with any condition.

(12) Upon the application of any person, the executive officer may review and for good cause modify or revoke a variance from the requirements of paragraphs (c) and (d) after holding a hearing in accordance with the provisions of paragraphs (jk)(2) and (3).

(kl)(1) The executive officer may grant a producer, for a calendar quarter, or any remaining portion thereof, a waiver of the requirements of paragraphs (c) or (d) if:

(A) A state of emergency in gasoline supply for the State or any portion thereof has been declared by the Governor, and

(B) The executive officer determines that the granting of waivers to all producers who would be eligible for such waivers would not interfere with the attainment and maintenance of the State or National Ambient Air Quality Standards for lead for the period of the waiver.

(2) Prior to taking action pursuant to paragraph (k)(1), the executive officer shall consult with the Department of Health Services regarding the ambient concentrations of lead which the executive officer predicts will occur as a result of such action.

(3) The executive officer may require conditions on a waiver to enable the executive officer to determine the effect of the granting of the waiver and to minimize the adverse effects of the use of higher lead content gasoline.

(4) If a waiver is granted from the requirements of paragraph (d) for a portion of a calendar quarter, the average lead content standard in paragraph (d) shall apply to the entire portion of the quarter not covered by the waiver.

(l) The lead content of gasoline and gasoline blending stocks shall be determined in accordance with the test methods set forth in Appendix B ("Tests for Lead in Gasoline by Atomic Absorption Spectrometry") of Title 40, Code of Federal Regulations, Part 80, as it existed on July 1, 1982. The phosphorus content of gasoline shall be determined in accordance with ~~American Society for Testing and Materials~~ ASTM Test Method D3231-73. An equivalent test method for determining lead or phosphorus content of gasoline may be used after the executive officer reasonably determines that such test method provides equivalent results to the test method designated in this paragraph.

(m) Whenever a numerical limit is set forth in this section for the lead content, or average lead content, of leaded gasoline, the Absolute Method as set forth in ASTM Standard Recommended Practice E 29-67 shall be used in determining the specified limit.

(n) Each paragraph of this section shall be deemed severable, and in the event that any paragraph of this section is held to be invalid, the remainder of the section shall continue in full force and effect.

(2) Prior to taking action pursuant to paragraph (kl)(1), the executive officer shall consult with the Department of Health Services regarding the ambient concentrations of lead which the executive officer predicts will occur as a result of such action.

(3) The executive officer may require conditions on a waiver to enable the executive officer to determine the effect of the granting of the waiver and to minimize the adverse effects of the use of higher lead content gasoline.

(4) If a waiver is granted from the requirements of paragraph (d) for a portion of a calendar quarter, the average lead content standard in paragraph (d) shall apply to the entire portion of the quarter not covered by the waiver.

(~~l~~m) The lead content of gasoline and gasoline blending stocks shall be determined in accordance with the test methods set forth in Appendix B ("Tests for Lead in Gasoline by Atomic Absorption Spectrometry") of Title 40, Code of Federal Regulations, Part 80, as it existed on July 1, 1982. The phosphorus content of gasoline shall be determined in accordance with ~~American Society for Testing and Materials~~ ASTM Test Method D3231-73. An equivalent test method for determining lead or phosphorus content of gasoline may be used after the executive officer reasonably determines that such test method provides equivalent results to the test method designated in this paragraph.

(~~m~~n) Whenever a numerical limit is set forth in this section for the lead content, or average lead content, of leaded gasoline, the Absolute Method as set forth in ASTM Standard Recommended Practice E 29-67 shall be used in determining the specified limit.

(~~n~~o) Each paragraph of this section shall be deemed severable, and in the event that any paragraph of this section is held to be invalid, the remainder of the section shall continue in full force and effect.

TOTAL LEAD EMISSIONS TRIGGER

Renumber §2253.2(d)(2) and (d)(3) as (d)(3) and (d)(4), respectively, and add a new section 2253.2(d)(2) which reads as follows:

(2) If, during any calendar year from 1985 to 1990, the reports required by subparagraph (h) indicate that the total grams of lead contained in all California leaded gasoline exceed the amounts shown in the table below, the limitation in subparagraph (d)(1) shall be reduced by the percent of excess lead. The revised limitation shall be calculated and rounded to the same number of significant figures as the original limitation, and shall become effective October 1 of the year following the year in which the excess was observed.

Calendar Year	Total Lead (10^3 Kilograms)
1985	2,367
1986	2,035
1987	1,704
1988	1,467
1989	1,227
1990	991

Note: Values in the above table are based on the assumption that the leaded gasoline standard is 0.8 grams per gallon. Adjustments are required if the standard adopted by the Board is different from 0.8.

State of California
AIR RESOURCES BOARD

Executive Order G-160

WHEREAS, on October 27 and 28, 1982, the Air Resources Board (the "Board") conducted a public hearing to consider the adoption of regulations regarding toxic air contaminants;

WHEREAS, at the close of the hearing, the Board adopted Resolution 82-52, in which the Board approved Subchapter 7, "Toxic Air Contaminants", for incorporation into Chapter 1, Part III of Title 17, California Administrative Code, commencing with Section 93000; directed the Executive Officer to make the regulations available for at least 15 days prior to adoption and to accept and consider further written comment; and delegated to the Executive Officer the authority to adopt the regulations with nonsubstantive changes;

WHEREAS, following the public hearing, the approved regulations were made available to the public for a period exceeding 15 days, with the changes to the originally proposed text clearly indicated; and

WHEREAS, the Board at a further hearing held December 1, 1982, affirmed its directive to the Executive Officer to adopt the regulations.

NOW, THEREFORE, IT IS HEREBY ORDERED that the recitals and findings contained in Resolution 82-52 are incorporated herein.

IT IS FURTHER ORDERED that Subchapter 7, "Toxic Air Contaminants", Chapter 1, Part III of Title 17, California Administrative Code, commencing with Section 93000, is adopted, as set forth in Attachment A.

Executed this 1st day of December, 1982.

James D. Boyd
Executive Officer

State of California
AIR RESOURCES BOARD

Response to Significant Environmental Issues

Item: Public Hearing to Consider Amendments to Section 2253 and Adoption of Section 2253.2 of Title 13, California Administrative Code, Regarding Lead in Gasoline

Agenda Item No.: 82-24-3

Public Hearing Dates: November 10 and 11, 1982 and December 1, 1982

Response Date: December 1, 1982

Issuing Authority: Air Resources Board

Comment: Tosco Corporation asserted that a leaded pool average gasoline lead content standard would cause a greater incidence of misfueling of unleaded only motor vehicles than a total pool standard.

Response: The Board has determined that data in the record do not demonstrate that such a result is likely to occur.

CERTIFIED: Harold Holmes
Board Secretary

Date: 12/2/82

State of California

Memorandum

To : Gordon Van Vleck
Secretary
Resources Agency

Date : January 7, 1983

Subject: Filing of Notice of Decisions of the Air Resources Board

From : Air Resources Board

Pursuant to Title 17, Section 60007 (b), and in compliance with Air Resources Board certification under section 21080.5 of the Public Resources Code, the Air Resources Board hereby forwards for posting the attached notice of decision and response to environmental comments raised during the comment period.

Harold Holmes
Board Secretary

attachments
Resolution 82-52/Executive Order
[redacted]

STATE OF CALIFORNIA

AIR RESOURCES BOARD

Resolution 82 - 65

December 1, 1982

WHEREAS, Senators Mills, Rains and Sieroty, and Assembly members Berman, Bosco, Cramer, Imbrecht, Ingalls, Kapiloff, Lehman, Levine, McCarthy and Ryan will be leaving the Legislature in 1982; and

WHEREAS, these members of the Legislature have been especially supportive of air quality programs in California; and

WHEREAS, a review of legislative history shows that these members have, in legislative committee and floor votes, made an important and effective public commitment to improving air quality; and

WHEREAS, each of these members have made such contributions over a tenure of several years; and

WHEREAS, legislative support for improving air quality is essential to success in cleaning up the air in California;

NOW THEREFORE BE IT RESOLVED, that these members be commended and paid special tribute to thank them for all their efforts on behalf of the cause of clean air; and

BE IT FURTHER RESOLVED, that the Board through its Chairperson, transmit a letter of appreciation to these legislators thanking them for their efforts to improve air quality in California.

STATE OF CALIFORNIA
AIR RESOURCES BOARD
1102 Q STREET
P. BOX 2815
CRAMENTO, CA 95812

EDMUND G. BROWN JR., Governor

TO BE WANGED

To be Sent to:

Senate	Assembly	
Mills	Berman	Lehman
Rains	Bosco	Levine
Sieroty	Cramer	McCarthy
	Imbrecht	Ryan
	Ingalls	
	Kapiloff	

Dear Assemblyman/Senator:

The Air Resources Board has voted unanimously to express its appreciation to you for your support of air quality programs during your tenure in the Legislature. The Board has reviewed voting records in committee and floor votes, as well as bills carried by members. Based on this review, the Board finds that you have been one of the strongest advocates of better air quality in California.

As Chairperson, it is my pleasure to convey these thanks to you and wish you every success in the future.

Best regards,

Mary D. Nichols
Chairperson

State of California
AIR RESOURCES BOARD

Resolution 82-67

December 9, 1982

Agenda Item No.: 82-27-3

WHEREAS, Sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the "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 43013, 43101, and 43104 of the Health and Safety Code authorize the Board to adopt emissions standards and test procedures to control air pollution caused by motor vehicles;

WHEREAS, Section 43100 of the Health and Safety Code authorizes the Board to certify new motor vehicles, and Section 43102 provides that no new motor vehicle shall be certified unless it meets the emissions standards and test procedures adopted by the Board;

WHEREAS, the certification procedures require a demonstration that the vehicle complies with the applicable emission standards throughout the vehicle's certified useful life;

WHEREAS, manufacturers of new motor vehicles intended for sale in California have demonstrated, through the certification procedure, compliance with the applicable emissions standards throughout the useful life of the motor vehicle;

WHEREAS, Section 43106 of the Health and Safety Code requires that each new motor vehicle required to meet the emissions standards established pursuant to Section 43101 be, in all material respects, substantially the same in construction as the test motor vehicle certified by the Board;

WHEREAS, Section 43105 of the Health and Safety Code authorizes the Board, pursuant to regulations adopted by the Board, to require a manufacturer to recall vehicles which violate applicable emissions standards or test procedures;

WHEREAS, the Board has adopted recall regulations, contained in Title 13, California Administrative Code, Section 2109; however, manufacturers have asserted that these regulations apply only to new vehicles and cannot be used by the Board to order recall of in-use vehicles;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project having significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of Chapter 3.5 (commencing with Section 11340), Part 1, Division 3, Title 2 of the Government Code; and

WHEREAS, the Board finds that:

Although test vehicles comply with the applicable emissions standards throughout the certification period, in-use vehicles often fail to meet emissions standards during their certified useful lives, despite proper use and maintenance;

Failure of a vehicle to meet emissions standards is often not apparent to the vehicle owner;

The failure of in-use vehicles to comply with applicable emissions standards during their useful lives results in a substantial increase in emissions;

Monitoring motor vehicles in the hands of consumers is an effective procedure for determining compliance with applicable laws and regulations;

Procedures for emissions-related defects reporting, in-use vehicle recall, and in-use vehicle enforcement testing will enable the Board to effect emission reductions in noncomplying in-use vehicles;

A recall program is both an effective emissions control strategy and an incentive to manufacturers to design and build durable emissions control systems;

The regulations approved herein are necessary to clarify the procedures for recall of in-use vehicles; and

The regulations approved herein will have no significant adverse environmental impacts but will have significant beneficial environmental impacts.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves:

Title 13, Sections 2100 through 2113, California Administrative Code, as set forth in Attachment A;

"California Vehicle Emissions-Related Defects Reporting Procedures for 1978 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium and Heavy-Duty Vehicles, and Motorcycles", as set forth in Attachment B; and

"California In-Use Vehicle Emissions-Related Recall Procedures and In-Use Vehicle Enforcement Test Procedures for 1978 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium and Heavy-Duty Vehicles, and Motorcycles", as set forth in Attachment C.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to adopt Attachments A, B, and C after making them available to the public for a period of 15 days.

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations and procedures approved herein are individually and in the aggregate at least as protective of public health and welfare as comparable federal regulations and are consistent with Sections 202(a) and (b) of the Clean Air Act.

BE IT FURTHER RESOLVED that, to the extent a waiver is necessary, the Executive Officer shall forward the adopted and amended regulations to the Environmental Protection Agency with a request for a waiver of federal preemption or for confirmation that they are within the scope of an existing waiver, pursuant to Section 209(b)(1) of the Clean Air Act.

BE IT FURTHER RESOLVED that each part of the regulations and procedures approved herein shall be deemed severable, and in the event that any part of these regulations and procedures is held to be invalid, the remainder of the regulations and procedures shall continue in full force and effect.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to continue to work with other state agencies, especially the Department of Motor Vehicles and Bureau of Automotive Repair, to coordinate and integrate in-use vehicle recall campaigns with the state's vehicle registration and inspection and maintenance programs.

BE IT FURTHER RESOLVED that the Board delegates authority to the Executive Officer to develop and adopt appropriate procedures for the conduct of any necessary adjudicatory proceedings under the Board's programs, regulations, or other statutory authority.

I hereby certify that the above is a true and correct copy of Resolution 82-67, as adopted by the Air Resources Board.

Harold Holmes, Board Secretary

Article 2. ENFORCEMENT OF NEW AND IN-USE VEHICLE STANDARDS

2100. Purpose.

(a) It is the purpose of this article to implement authority granted the Board in Part 5, Division 26 of the Health and Safety Code in order to monitor vehicles from manufacture through distribution, to and in the hands of consumers, to determine compliance with applicable laws.

(b) This section shall apply to 1977 and subsequent model-year vehicles.

2100.5 Purpose.

(a) It is the purpose of this article to implement authority granted the Board in Part 1, Division 26 of the Health and Safety Code in order to monitor motor vehicles from manufacture through distribution, to and in the hands of consumers, to determine compliance with applicable laws.

(b) This section shall apply to 1976 and previous model-year vehicles only.

NOTE: Authority cited: Section 39601, Health and Safety Code. Reference: Section 43210, Health and Safety Code.

2100.6. Purpose.

(a) It is the purpose of this article to implement authority granted the Board in Part 5, Division 26 of the Health and Safety Code in order to monitor motor vehicles that, although properly maintained and used, are not in compliance with applicable laws and regulations.

(b) This section shall apply to 1978 and subsequent model-year passenger cars, light-duty trucks, medium and heavy-duty vehicles, and motorcycles.

NOTE: Authority Cited: Sections 39601, 43105, 43213, Health and Safety Code. Reference: Sections 43000, 43105, 43106, 43211 - 43213, Health and Safety Code.

2101. Compliance Testing and Inspection - New Vehicle Selection, Evaluation, and Enforcement Action.

(a) The Executive Officer may, with respect to any new vehicle engine family or subgroup being sold, offered for sale, or manufactured for sale in California, order a vehicle manufacturer to make available for compliance testing and/or inspection a reasonable number of vehicles, and may direct that the vehicles be delivered to the Board at the Haagen-Smit Laboratory, 9528 Telstar Avenue, El Monte, California. Vehicles shall be selected at random from sources specified by the Executive Officer according to a method approved

by him or her, which insofar as practical shall exclude (1) vehicles manufactured pursuant to the specific order of an ultimate purchaser or (2) vehicles, the selection of which, if not excluded, would result in an unreasonable disruption of the manufacturer's distribution system.

A subgroup may be selected for compliance testing only if the Executive Officer has reason to believe that the emissions characteristics of that subgroup are substantially in excess of the emissions of the engine family as a whole.

(b) If the vehicles are selected for compliance testing, the selection and testing of vehicles and the evaluation of data shall be made in accordance with the "California New Vehicle Compliance Test Procedures", adopted by the Board on June 24, 1976, and amended May 9, 1979. Motorcycles scheduled for compliance testing shall be selected, tested, and evaluated in accordance with the "California New Motorcycle Compliance Test Procedures," adopted by the Board on June 30, 1977 and amended November 24, 1981.

(c) If the Executive Officer determines, in accordance with the "California New Vehicle Compliance Test Procedures" or the "California New Motorcycle Compliance Test Procedures", that an engine family, or any subgroup within an engine family, exceeds the emission standards for one or more pollutants, the Executive Officer shall notify the manufacturer and may invoke Section 2109. Prior to invoking Section 2109, the Executive Officer shall consider quality audit test results, if any, and any additional test data or other information provided by the manufacturer.

(d) Vehicles selected for inspection shall be checked to verify the presence of those emissions-related components specified in the manufacturer's application for certification, and for the accuracy of any adjustments, part numbers and labels specified in that application. If any vehicle selected for inspection fails to conform to any applicable law in Part 5 (commencing with Section 43000) of Division 26 of the Health and Safety Code, or any regulation adopted by the Board pursuant thereto, other than an emissions standard applied to new vehicles to determine "certification" as specified in Subchapter 1, Article 2 of this Chapter, the Executive Officer shall notify the manufacturer and may invoke Section 2109. Prior to invoking Section 2109, the Executive Officer shall consider any information provided by the manufacturer.

NOTE: Authority cited: Section 39601, Health and Safety Code. Reference: Sections 43000, 43106 and 43210, Health and Safety Code.

2102. Selection of Vehicles.

(a) The Executive Officer may, with respect to any vehicle being sold, offered for sale, or manufactured for sale in California, order a vehicle manufacturer to make available inspection up to three vehicles, and may direct that the vehicles be delivered to the Board at its laboratory. If the vehicles are selected for evaluation pursuant to Section 2103, the Executive Officer shall select three vehicles from each engine family to be evaluated.

Vehicles shall be selected at random from sources specified by the Executive Officer according to a method approved by him which insofar as practical shall exclude (1) vehicles manufactured pursuant to the specific order of an ultimate purchaser or (2) vehicles the selection of which, if not excluded, would result in an unreasonable disruption of manufacturer's distribution system.

The vehicles shall not receive any mechanical, electrical or other adjustment or alteration of any kind after their selection, without the written consent of the Executive Officer, which consent shall not be unreasonably withheld where such adjustment or alteration is required to conform the vehicle to the manufacturer's written instructions for predelivery preparation.

(b) This section shall apply to 1976 and previous model-year vehicles only.

2103. Evaluation

(a) If the Executive Officer determines, by tests of three vehicles of the same engine family selected pursuant to Section 2102, that two of such vehicles exceed one or more individual standards per vehicle by 15% or that one vehicle exceeds all standards for each pollutant by 15%, he shall promptly notify the manufacturer. The manufacturer may at that time supply the Board with two additional vehicles of the same engine family which have been selected in accordance with Section 2102. The Executive Officer shall then conduct the same tests on the two additional vehicles. In determining whether a vehicle exceeds a standard, three or more official approval tests shall be performed on the vehicle and the average of the emissions obtained shall be used. Manufacturer's representatives shall be permitted to observe all tests and may, for good cause shown, request one retest of each of the original three vehicles, which retest shall be averaged with the other tests.

(b) This shall apply to 1976 and previous model-year vehicles only.

2104. Action 2103.

(a) Pursuant to Section 2103, if (a) a majority of the vehicles tested exceeds by 15% one or more individual standards or (b) one vehicle where only three were tested or two vehicles where five were tested each exceeds by 15% all standards for each pollutant, the Executive Officer shall notify the manufacturer and may invoke Section 2109.

(b) This section shall apply to 1976 and previous model-year vehicles only.

2105. Compliance With Applicable Laws.

(a) With respect to any applicable law, other than a standard as defined in subdivision (f) of Section 2100 and an assembly-line test procedure specified in Article 1 of Subchapter 2, the Executive Officer shall evaluate vehicles selected pursuant to Section 2102 to determine their compliance. If any vehicle selected fails to comply with any applicable law other than a standard or an assembly-line test procedure, the Executive Officer shall notify the manufacturer and may invoke Section 2109.

(b) This section shall apply to 1976 and previous model-year vehicles only.

2106. New Vehicle Assembly-Line Inspection Testing. If reports required by an assembly-line test procedure under Article 1 of Subchapter 2 are not in accordance with reporting requirements or if surveillance under Article 2 or Article 3 of Subchapter 2 indicates that assembly-line inspection testing is being improperly performed, or that vehicles are being manufactured which do not comply with the assembly-line emission standards or functional test requirements, the Executive Officer may order corrections of reporting or test procedures, and may, in accordance with Section 2109 or 2110, as applicable, order correction of vehicles not in compliance with applicable laws, emission standards, or test procedures.

2107. Assembly-Line Quality Audit Testing. If any official test procedure adopted by the Board specifies that the Board may find a violation of Section 43105 or 43106, of the Health and Safety Code or of this Article when a specified percentage of assembly-line vehicles exceeds a standard and when data submitted by the manufacturer indicates such percentage is being exceeded or if surveillance under Article 2 or Article 3 of Subchapter 2 indicates that assembly-line quality audit testing is being improperly performed, the Executive Officer may invoke the provisions of Section 2109 or 2110, as applicable.

2108. Order of Executive Officer. Failure to comply with any order of the Executive Officer issued pursuant to this article may result in the revocation or conditioning of certification in the manner specified in Section 2109 or 2110, as applicable.

2109. New Vehicle Recall Provisions.

(a) When this section is invoked pursuant to other sections of this Article or Health and Safety Code Section 43105, the Executive Officer shall require the manufacturer to submit a plan within 30 calendar days of receipt of the invocation order to bring all vehicles into compliance. The Executive Officer shall order execution of the plan with such changes and additions as he or she determines to be necessary. The plan may include measures to identify the cause of vehicle noncompliance and to correct noncomplying

conditions, correction of vehicles under manufacture, correction of vehicles in the possession or control of the manufacturer and dealers, and correction of vehicles in the possession of consumers (by correction upon service whether or not by warranty, by correction following notification of recall by mail, or by correction following efforts actively to locate and correct all such vehicles). The plan may include the temporary cessation of sales to dealers by the manufacturer and efforts by the manufacturer to prevent the sale of vehicles in possession or control of dealers, until the vehicles are corrected. The Executive Officer may order any one or more of the foregoing actions, or any other action reasonably necessary to bring all vehicles into compliance.

(b) The plan shall specify the percentage of vehicles subject to recall which must actually be corrected.

If, after good faith efforts, the manufacturer cannot correct the percentage of vehicles specified in the plan by the applicable deadlines, the manufacturer may request the Executive Officer to modify the percentage of vehicles specified in the plan, setting out in full the good faith efforts of the manufacturer to comply with the original plan, and the reasons it has been unable to comply. The Executive Officer shall, on the basis of this request, modify the percentage of vehicles which must actually be corrected if he or she finds in writing that the manufacturer has made a good faith effort and has shown good cause for the modification. If the manufacturer so requests, the plan shall specify the maximum incentives (such as a tune-up or specified quantity of gasoline), if any, the manufacturer must offer to vehicle owners to induce them to present their vehicles for repair, as a condition of showing that the manufacturer has made a good faith effort to repair the percentage of vehicles specified in the plan. The plan shall also include a schedule for implementing actions to be taken including, identified increments of progress towards implementation, and deadlines for completing each such increment.

(c) If a vehicle is recalled pursuant to this section, the manufacturer shall make all necessary corrections specified in the plan without charge to the registered owner of the vehicle or, at the manufacturer's election, shall reimburse the registered owner for all costs (except incidental and consequential damages) of making such necessary corrections.

The term "all costs" shall not include incidental or consequential damages, except that the manufacturer shall reimburse the registered owner for any damage to the vehicle's emissions control system proximately caused by a defect subject to a recall action under this subsection or an action by a manufacturer taken pursuant to a plan under this subsection.

(d) If the plan ordered by the Executive Officer pursuant to this subsection includes a recall, the manufacturer may, within 20 calendar days of its receipt of the plan ordered by the Executive Officer, notify the Executive Officer of its desire to contest the necessity for or scope of that order. Any such notification shall specify the basis of the manufacturer's objections. Upon receipt of such notification, the Executive Officer shall

stay the recall until the Board affords the manufacturer the opportunity, at a public hearing to be scheduled no less than 30 calendar days and no more than 60 calendar days after receipt of such notification, to present evidence in support of its objections.

A stay of a recall shall not, unless otherwise ordered, stay any other portion of a plan required herein or any other order issued pursuant to this Article.

The manufacturer may, within 20 calendar days of its receipt of the plan ordered by the Executive Officer, request a public hearing of the Board on the necessity for or scope of any other corrective action ordered by the Executive Officer. Such a hearing shall be held by the Board not less than 30 and no more than 60 calendar days after receipt of the manufacturer's request for such a hearing. The plan ordered by the Executive Officer shall remain in effect pending such hearing, unless otherwise ordered by the Executive Officer.

(e) Failure by a manufacturer to carry out all corrective actions or recall actions ordered by the Executive Officer pursuant to Section 2106 or to subsection (a) of this section according to the schedule included in the plan ordered by the Executive Officer shall constitute a violation of that order and of Health and Safety Code Section 43105. The Executive Officer shall extend any deadline in the plan if he or she finds in writing that a manufacturer has shown good cause for such extension.

If the manufacturer fails to correct the percentage of vehicles subject to recall specified in the recall plan issued by the Executive Officer (including any modifications made by him or her), by the deadline(s) included in that plan, each vehicle included in the number of vehicles by which the manufacturer falls short of such percentage shall constitute a separate violation of the order and of Health and Safety Code Section 43016.

The Board may hold a public hearing to consider whether approval of such vehicles shall be suspended or conditioned. The Board shall hold such a hearing if requested to do so by either the affected manufacturer or the Executive Officer.

After the hearing, the Board may suspend or condition approval if it finds that the corrective action ordered by the Executive Officer was reasonable and that the manufacturer failed to comply or to comply within the specified time period.

NOTE: Authority cited: Sections 39600, 39601, 43105, Health and Safety Code. Reference: Sections 43000, 43016, 43100-43102, 43104 and 43106, Health and Safety Code.

2110. Remedial Action for Assembly-Line Quality Audit Testing of Less than a Full Calendar Quarter of Production.

(a) When this section is invoked pursuant to other sections of this Article or Health and Safety Code Section 43105, the Executive Officer shall order the manufacturer to submit a remedial action plan to bring all vehicles in possession of the manufacturer into compliance. The manufacturer shall submit the plan within 30 calendar days after it receives the order. The Executive Officer may order execution of the plan with such changes and additions as he or she determines are necessary, including additional testing and reporting, consistent with the applicable assembly-line test procedures, to verify acceptability of the plan. The plan shall include a schedule for implementing actions to be taken, including identified increments of progress towards implementation, and deadlines for completing each such increment. The Executive Officer may not order a recall pursuant to this section.

(b) The manufacturer may, within 20 calendar days of its receipt of order for remedial action, request a public hearing of the Board on the necessity for or scope of any corrective action ordered by the Executive Officer. Such a hearing shall be held by the Board not less than 30 nor more than 60 calendar days after receipt of the manufacturer's request for such a hearing. The plan ordered by the Executive Officer shall remain in effect pending such hearing, unless otherwise ordered by the Executive Officer.

(c) Failure by a manufacturer to carry out all corrective actions ordered by the Executive Officer shall constitute a violation of that order and of Health and Safety Code Section 43105. The Executive Officer shall extend any deadline in the plan if he or she finds in writing that a manufacturer has shown good cause for such extension. Each vehicle required by the plan issued by the Executive Officer (including any modifications made by him or her) to receive remedial action which does not receive such action by the deadline(s) included in the plan shall constitute a separate violation of the order and of Health and Safety Code Section 43106.

The Board may hold a public hearing to consider whether approval of such vehicles shall be suspended or conditioned.

The Board shall hold such a hearing if requested to do so by either the affected manufacturer or the Executive Officer.

After such hearing, the Board may suspend or condition approval if it finds that the corrective action ordered by the Executive Officer was reasonable and that the manufacturer failed to comply or to comply within the specified time period.

NOTE: Authority cited: Sections 39600, 39601, and 43105, Health and Safety Code. Reference: Sections 43000, 43016, 43100-43102, 43104 and 43106, Health and Safety Code.

2111. In-Use Vehicle Emissions-Related Defects Reporting Procedures.

All 1978 and subsequent model-year passenger cars, light-duty trucks, medium and heavy-duty vehicles, and motorcycles, certified for sale and registered in California, shall be subject to the "California Vehicle Emissions-Related Defects Reporting Procedures for 1978 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium and Heavy-Duty Vehicles, and Motorcycles", adopted . ~~Failure to report as required in these procedures shall subject the manufacturer to the penalties provided in Health and Safety Code Section 43016.~~

NOTE: Authority Cited: Sections 39601, 43105, 43213, Health and Safety Code. Reference: Sections 43000, ~~43016~~, 43105, 43106, 43211 - 43213, Health and Safety Code.

2112. In-Use Vehicle Emissions-Related Recall Regulations.

All 1978 and subsequent model-year passenger cars, light-duty trucks, medium and heavy-duty vehicles, and motorcycles, certified for sale and registered in California, shall be subject to the "California In-Use Vehicle Emissions-Related Recall Procedures and In-Use Vehicle Enforcement Test Procedures for 1978 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium and Heavy-Duty Vehicles, and Motorcycles", adopted .

NOTE: Authority Cited: Sections 39601, 43105, 43213, Health and Safety Code. Reference: Sections 43000, 43105, 43106, 43211 - 43213, Health and Safety Code.

2113. In-Use Vehicle Recall Provisions.

A manufacturer shall be subject to Section 2112 and to all appropriate penalties whenever:

(a) a substantial number of a class or category of vehicles or engines contain a defect in an emissions-related component within their useful lives which is likely to result in increased emissions and which, if uncorrected, ~~may~~ is likely to result in failure to meet applicable standards; or

(b) a class or category of vehicles or engines, within their useful lives, does not conform to the applicable emission standards, on average.

NOTE: Authority Cited: Sections 39601, 43105, 43213, Health and Safety Code. Reference: Sections 43000, 43105, 43106, 43211 - 43213, Health and Safety Code.

2114. Severability.

Each part of this article shall be deemed severable, and in the event that any part of this article is held to be invalid, the remainder of this article shall continue in full force and effect.

NOTE: Authority Cited: Section 39601, Health and Safety Code. Reference: Sections 43000, 43100 - 43102, 43104 - 43106, 43210 - 43213, Health and Safety Code.

State of California
AIR RESOURCES BOARD

CALIFORNIA VEHICLE EMISSIONS-RELATED DEFECTS REPORTING PROCEDURES FOR 1978 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, MEDIUM AND HEAVY-DUTY VEHICLES, AND MOTORCYCLES

A. GENERAL PROVISIONS

(1) These procedures shall apply to:

(a) California certified 1978 and subsequent model-year passenger cars, light-duty trucks, medium-duty and heavy-duty vehicles, and motorcycles.

(b) California certified motor vehicle engines used in such vehicles.

(2) The requirement to report emissions-related defects affecting a given class or category of vehicles or engines shall remain applicable for the useful life of the vehicles or engines.

(3) For the purposes of these procedures, the following definitions shall apply:

(a) "Useful Life" means:

(i) In the case of Class I motorcycles and motorcycle engines (50 to 169 cc or 3.1 to 10.4 cu. in.), a period of use of five years or 12,000 kilometers (7,456 miles), whichever first occurs.

(ii) In the case of Class II motorcycles and motorcycle engines (170 to 279 cc or 10.4 to 17.1 cu. in.), a period of use of five years or 18,000 kilometers (11,185 miles), whichever first occurs.

(iii) In the case of Class III motorcycles and motorcycle engines (280 cc and larger or 17.1 cu. in. and larger), a period of use of five years or 30,000 kilometers (18,641 miles), whichever first occurs.

(iv) In the case of diesel-powered heavy-duty vehicles (except medium-duty vehicles), and motor vehicle engines used in such vehicles, a period of use of five years, 100,000 miles, or 3000 hours of operation, whichever first occurs.

(v) In the case of light-duty and medium-duty vehicles certified under the Optional 100,000 Mile Certification Procedure, and motor vehicle engines used in such vehicles, a period of use of ten years or 100,000 miles, whichever first occurs.

(vi) In the case of all other light-duty, medium-duty and heavy-duty vehicles, and motor vehicle engines used in such vehicles, a period of use of five years or 50,000 miles, whichever first occurs. For those passenger cars, light-duty trucks and medium-duty vehicles certified pursuant

to Title 13, California Administrative Code, Section 1960.15, the useful life shall be seven years, or 75,000 miles, whichever first occurs; however, the manufacturer's reporting and recall responsibility beyond 5 years or 50,000 miles shall be limited, as provided in Section 1960.15.

(b) "Emissions-Related Defect" shall mean a defect in design, materials, or workmanship in a device, system, or assembly described in the approved application for certification which affects any parameter, specification, or component enumerated in Appendix A. Excepted are defects in devices, systems and assemblies which the Executive Officer has deleted from the manufacturer's list of warranted parts pursuant to Section 2036(f), Title 13, California Administrative Code.

(c) Quarterly reports shall refer to the following calendar periods: January 1 - March 31, April 1 - June 30, July 1 - September 30, October 1 - December 31.

(d) "Days" shall mean normal working days when computing any period of time, unless otherwise noted.

(e) "Vehicle or engine manufacturer" means the manufacturer granted certification for a motor vehicle or motor vehicle engine. In the case of motor vehicles for which certification of the exhaust and evaporative emission control systems is granted to different manufacturers, the defect reporting responsibility shall be assigned accordingly.

(f) "Voluntary Emissions Recall" shall mean an inspection, repair, adjustment, or modification program voluntarily initiated and conducted by a manufacturer to remedy any emissions-related defect or nonconformity for which direct notification of vehicle or engine owners has been provided.

(g) "Ordered Emissions Recall" shall mean an inspection, repair, adjustment, or modification program required by the Board and conducted by the manufacturer to remedy any emissions-related defect or nonconformity for which direct notification of vehicle or engine owners has been provided.

(h) "Ultimate purchaser" shall be defined as provided in Section 39055.5 of the Health and Safety Code.

B. DEFECT INFORMATION REPORTS

(1) A manufacturer shall file a defect information report whenever:

(a) On the basis of date obtained subsequent to the effective date of these regulations, the manufacturer determines in accordance with procedures established by the manufacturer to identify safety-related defects (pursuant to 15 U.S.C. 1381 et seq., as amended) that a specific emissions-related defect exists in twenty-five or more vehicles or engines of the same model year; or

(b) The Executive Officer, with cause, requests such report, irrespective of when the defects were detected.

(2) No report shall be filed under these procedures for any emissions-related defect corrected prior to the sale of the affected vehicles or engines to an ultimate purchaser.

(3) Defect information reports required under subsection B.(1)(a) of these procedures shall be submitted not more than 15 working days after an emissions-related defect is found to affect twenty-five vehicles or engines of the same model year. Defect information reports requested under subsection B.(1)(b) of these procedures shall be submitted not more than 30 working days after the request is received. Items of information required by subsection B.(4) of these procedures that are either not available within that period or are significantly revised shall be submitted as they become available.

(4) Except as provided in subsection B.(3) of these procedures, each defect report shall contain the following information in substantially the format outlined below:

(a) The manufacturer's corporate name.

(b) A description of the defect.

(c) A description of each class or category of vehicles or engines potentially affected by the defect including make, model, model year, and such other information as may be required to identify the vehicles or engines affected.

(d) For each class or category of vehicle or engine described in response to subsection B.(4)(c) of these procedures, the following shall also be provided:

(i) The number of vehicles or engines known or estimated to have the defect and an explanation of the means by which this number was determined.

(ii) The address of the plant(s) at which the potentially defective vehicles or engines were produced.

(e) An evaluation of the emissions impact of the defect and a description of any driveability problems which a defective vehicle might exhibit.

(f) Available emissions data which relate to the defect.

(g) An indication of any anticipated manufacturer follow-up.

C. VOLUNTARY EMISSIONS-RELATED RECALL

(1) When any manufacturer initiates a voluntary emissions recall campaign involving twenty-five or more vehicles or engines, the manufacturer shall submit a report describing the manufacturer's voluntary emissions recall plan as prescribed by these procedures within 15 working days of the date owner notification was begun. The report shall contain the following:

(a) A description of each class or category of vehicle or engine recalled including the number of vehicles to be recalled, the model year, the make, the model, and such other information as may be required to identify the vehicles or engines recalled.

(b) A description of the specific modifications, alterations, repairs, corrections, adjustments, or other changes to be made to correct the vehicles or engines affected by the emissions-related defect.

(c) A description of the method by which the manufacturer will determine the names and addresses of vehicle or engine owners and the method by which they will be notified.

(d) A description of the procedure to be followed by vehicle or engine owners to obtain correction of the nonconformity. This shall include designation of the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to perform the labor to remedy the defect, and the designation of facilities at which the defect can be remedied.

(e) If some or all of the nonconforming vehicles or engines are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of the class of persons other than dealers and authorized warranty agents of the manufacturer who will remedy the defect.

(f) Three copies of the letters of notification to be sent to vehicle or engine owners.

(g) A description of the system by which the manufacturer will assure that an adequate supply of parts will be available to perform the repair under the remedial plan including the date by which an adequate supply of parts will be available to initiate the repair campaign, the percentage of the total parts requirement of each person who is to perform the repair under the remedial plan to be shipped to initiate the campaign, and the method to be used to assure the supply remains both adequate and responsive to owner demand.

(h) Three copies of all necessary instructions to be sent to those persons who are to perform the repair under the remedial plan.

(i) A description of the impact of the proposed changes on fuel consumption, driveability, and safety of each class or category of vehicles or engines to be recalled.

~~(j)~~ (2) The manufacturer shall not condition eligibility for repair on the proper maintenance or use of the vehicle except for strong and compelling reasons and with approval of the Executive Officer; however, the manufacturer shall not be obligated to repair a component which has been removed or ~~rendered unrepairable~~ altered so that the remedial action cannot be performed without additional cost.

~~(k)~~ (3) The manufacturer shall require those who perform the repair under the voluntary recall to affix a label to each vehicle or engine repaired, or, when required, inspected under the voluntary recall.

~~(1)~~ (a) The label shall be placed in such location as approved by the Executive Officer consistent with State law and shall be fabricated of a material suitable for the location in which it is installed and which is not readily removable intact.

~~(m)~~ (b) The label shall contain:

(i) the voluntary recall campaign number; and

(ii) A code designating the campaign facility at which the repair, or inspection for repair, was performed.

~~(n)~~ (4) The notification of vehicle or engine owners shall contain the following statement, "Your (vehicle or engine) (is or may be) releasing air pollutants which exceed (California or California and federal) standards. ~~These standards were established to protect your health and welfare from the dangers of air pollution," will be included in the owner notification letter.~~

~~(2)~~ (5) Unless otherwise specified by the Executive Officer, the manufacturer shall report on the progress of the voluntary recall campaign by submitting subsequent reports for six consecutive quarters commencing with the quarter after the voluntary emissions recall campaign actually begins. Such reports shall be submitted no later than 25 working days after the close of each calendar quarter. For each class or category of vehicle or engine subject to the voluntary emissions recall campaign, the quarterly report shall contain the:

(a) Emissions recall campaign number designated by the manufacturer.

(b) Date owner notification was begun, and date completed.

(c) Number of vehicles or engines involved in the voluntary emissions recall campaign.

(d) Number of vehicles or engines known or estimated to be affected by the emissions-related defect and an explanation of the means by which this number was determined.

(e) Number of vehicles or engines inspected pursuant to the voluntary emissions recall plan.

(f) Number of inspected vehicles found to be affected by the emissions-related defect.

(g) Number of vehicles actually receiving repair under the remedial plan.

(h) Number of vehicles determined to be unavailable for inspection or repair under the remedial plan due to exportation, theft, scrapping, or for other reasons (specify).

(i) Number of vehicles or engines determined to be ineligible for remedial action due to ~~a failure to properly maintain or use such vehicles or engines~~ removed or altered components.

(j) Three copies of any service bulletins transmitted to dealers which relate to the defect to be corrected and which have not previously been reported.

(k) Three copies of all communications transmitted to vehicle or engine owners which relate to the defect to be corrected and which have not previously been submitted.

~~(3)~~ (6) If the manufacturer determines that any of the information requested in B (4) of these procedures has changed or was incorrect, revised information and an explanatory note shall be submitted. Answers to paragraphs C.(5)(c), (d), (e), (f), (g), (h), and (i) of these procedures shall be cumulative totals.

~~(4)~~ (7) The manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, the names and addresses of vehicle or engine owners:

(a) To whom notification was given;

(b) Who received remedial repair or inspection under the remedial plan; and

(c) Who were determined not to qualify for such remedial action when eligibility is ~~conditioned on proper maintenance or use~~ denied due to removed or altered components.

~~(5)~~ (8) The records described in subsection C.(7) of these procedures shall be made available to the Executive Officer or his or her authorized representative upon request.

~~(6)~~ (9) The reports required by these procedures shall be sent to: Chief, Mobile Source Control Division, 9528 Telstar Avenue, El Monte, California 91731.

~~(7)~~ (10) The information gathered by the manufacturer to compile the reports required by these procedures shall be retained for not less than one year beyond the useful life of the vehicles or engines and shall be made available to authorized personnel of the Air Resources Board upon request.

~~(8)~~ (11) The filing of any report under the provisions of these procedures shall not affect a manufacturer's responsibility to file reports or applications, obtain approval, or give notice under any provisions of law.

(i) Number of vehicles or engines determined to be ineligible for remedial action due to ~~a failure to properly maintain or use such vehicles or engines~~ removed or altered components.

(j) Three copies of any service bulletins transmitted to dealers which relate to the defect to be corrected and which have not previously been reported.

(k) Three copies of all communications transmitted to vehicle or engine owners which relate to the defect to be corrected and which have not previously been submitted.

~~(3)~~ (6) If the manufacturer determines that any of the information requested in B (4) of these procedures has changed or was incorrect, revised information and an explanatory note shall be submitted. Answers to paragraphs C.(2)(c), (d), (e), (f), (g), (h), and (i) of these procedures shall be cumulative totals.

~~(4)~~ (7) The manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, the names and addresses of vehicle or engine owners:

(a) To whom notification was given;

(b) Who received remedial repair or inspection under the remedial plan; and

(c) Who were determined not to qualify for such remedial action when eligibility is ~~conditioned on proper maintenance or use~~ denied due to removed or altered components.

~~(5)~~ (8) The records described in subsection C.(4) of these procedures shall be made available to the Executive Officer or his or her authorized representative upon request.

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~~(8)~~ (11) The filing of any report under the provisions of these procedures shall not affect a manufacturer's responsibility to file reports or applications, obtain approval, or give notice under any provisions of law.

APPENDIX A

CALIFORNIA VEHICLE EMISSIONS-RELATED DEFECT REPORTING PROCEDURES FOR 1978 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, MEDIUM AND HEAVY-DUTY VEHICLES, AND MOTORCYCLES

Vehicle and Engine Parameters, Components, and Specifications

A. Passenger Car, Light-Duty Truck, Medium-Duty Vehicle and Motorcycle Parameters and Specifications

I. Basic Engine Parameters--Reciprocating Engines.

1. Compression ratio.
2. Cranking compression pressure.
3. Valves (intake and exhaust).
   a. Head diameter dimension.
   b. Valve lifter or actuator type and valve lash dimension.
4. Turbocharger calibrations.
5. Camshaft timing.
   a. Valve opening (degrees BTDC).
   b. Valve closing (degrees ATDC).
   c. Valve overlap (inch-degrees).

II. Basic Engine Parameters--Rotary Engines.

1. Intake port(s).
   a. Timing and overlap if exposed to the combustion chamber.
2. Exhaust port(s).
   a. Timing and overlap if exposed to the combustion chamber.
3. Cranking compression pressure.
4. Compression ratio.

III. Air Inlet System

1. Temperature control system calibration.

IV. Fuel System.

1. General
   a. Engine idle speed.
   b. Engine idle mixture.
2. Carburetion.
   a. Air-fuel flow calibration.
   b. Transient enrichment system calibration.
   c. Starting enrichment system calibration.
   d. Altitude compensation system calibration.
   e. Hot-idle compensation system calibration.

3. Fuel injection.
   a. Control parameters and calibrations.
   b. Fuel shutoff system calibration.
   c. Starting enrichment system calibration.
   d. Transient enrichment system calibration.
   e. Air-fuel flow calibration.
   f. Altitude compensation system calibration.
   g. Operating pressure(s).
   h. Injector timing calibrations.

V. Ignition System.

1. Control parameters and calibrations.
2. Initial timing setting.
3. Dwell setting.
4. Altitude compensation system calibration.
5. Spark plug voltage.

VI. Engine Cooling System.

1. Thermostat calibration.

VII. Exhaust Emission Control System.

1. Air injection system.
   a. Control parameters and calibrations.
   b. Pump flow rate.
2. EGR system.
   a. Control parameters and calibrations.
   b. EGR valve flow calibration.
3. Catalytic converter system.
   a. Active surface area.
   b. Volume of catalyst.
   c. Conversion efficiency.
   d. Leaded fuel restrictor or constricted fuel filler neck.
4. Backpressure.

VIII. Evaporative Emission Control System.

1. Control parameters and calibrations.
2. Fuel tank.
   a. Pressure and vacuum relief settings.
   b. Fuel fill pipe and opening specifications (Reference Section 2290, Title 13, C.A.C.).

IX. Crankcase Emission Control System.

1. Control parameters and calibrations.
2. Valve calibration(s).

X. Auxiliary Emission Control Devices (AECD).

1. Control parameters and calibrations.
2. Component calibration(s).

XI. Emission Control Related Warning Systems.

1. Control parameters and calibrations.
2. Component calibration(s).

XII. Driveline Parameters.

1. Axle ratio(s).

B. Heavy-Duty Gasoline Engine Parameters and Specifications

I. Basic Engine Parameters.

1. Compression ratio.
2. Cranking compression pressure.
3. Supercharger/turbocharger calibration.
4. Valves (intake and exhaust).
   a. Head diameter dimension.
   b. Valve lifter or actuator type and valve lash dimension.
5. Camshaft timing.
   a. Valve opening (degrees BTDC).
   b. Valve closing (degrees ATDC).
   c. Valve overlap (inch-degrees).

II. Air Inlet System.

1. Temperature control system calibration.

III. Fuel System.

1. General.
   a. Engine idle speed.
   b. Engine idle mixture.
2. Carburetion.
   a. Air-fuel flow calibration.
   b. Transient enrichment system calibration.
   c. Starting enrichment system calibration.
   d. Altitude compensation system calibration.
   e. Hot-idle compensation system calibration.
3. Fuel injection.
   a. Control parameters and calibrations.
   b. Fuel shutoff system calibration.
   c. Starting enrichment system calibration.
   d. Transient enrichment system calibration.
   e. Air-fuel flow calibration.
   f. Altitude compensation system calibration.
   g. Operating pressure(s).
   h. Injector timing calibration.

IV. Ignition System.

1. Control parameters and calibrations.
2. Initial timing setting.
3. Dwell setting.
4. Altitude compensation system calibration.
5. Spark plug voltage.

V. Engine Cooling System.

1. Thermostat calibration.

VI. Exhaust Emission Control System.

1. Air injection system.
   a. Control parameters and calibrations.
   b. Pump flow rate.
2. EGR system.
   a. Control parameters and calibrations.
   b. EGR valve flow calibration.
3. Catalytic converter system.
   a. Active surface area.
   b. Volume of catalyst.
   c. Conversion efficiency.
   d. Leaded fuel restrictor or constricted fuel filler neck.
4. Backpressure.

VII. Evaporative Emission Control System.

1. Control parameters and calibrations.
2. Fuel tank.
   a. Pressure and vacuum relief settings.
   b. Fuel fill pipe and opening specifications (Reference Section 2290, Title 13, C.A.C.).

VIII. Crankcase Emission Control System.

1. Control parameters and calibrations.
2. Valve calibration(s).

IX. Auxiliary Emission Control Devices (AECD).

1. Control parameters and calibrations.
2. Component calibration(s).

X. Emission Control Related Warning Systems.

1. Control parameters and calibrations.
2. Component calibration(s).

C. Heavy-Duty Diesel Engine Parameters and Specifications

I. Basic Engine Parameters--Four Stroke Cycle Reciprocating Engines.

1. Compression ratio.
2. Cranking compression pressure.
3. Supercharger/turbocharger calibration.
4. Valves (intake and exhaust).
   a. Head diameter dimension.
   b. Valve lifter or actuator type and valve lash dimension.
5. Camshaft timing.
   a. Valve opening (degrees BTDC).
   b. Valve closing (degrees ATDC).
   c. Valve overlap (inch-degrees).

II. Basic Engine Parameters--Two-Stroke Cycle Reciprocating Engine.

1-5. Same as Section C.I.
6. Intake port(s).
   a. Timing in combustion cycle.
7. Exhaust port(s).
   a. Timing in combustion cycle.

III. Air Inlet System.

1. Temperature control system calibration.
2. Maximum allowable air inlet restriction.

IV. Fuel System.

1. Fuel injection.
   a. Control parameters and calibrations.
   b. Transient enrichment system calibration.
   c. Air-fuel flow calibration.
   d. Altitude compensation system calibration.
   e. Operating pressure(s).
   f. Injector timing calibration.

V. Exhaust Emission Control System.

1. Maximum allowable backpressure.

VI. Crankcase Emission Control System.

1. Control parameters and calibrations.
2. Valve calibration(s).

VII. Auxiliary Emission Control Device (AECD).

1. Control parameters and calibrations.
2. Component calibration(s).

State of California
AIR RESOURCES BOARD

CALIFORNIA IN-USE VEHICLE EMISSIONS-RELATED RECALL PROCEDURES AND IN-USE VEHICLE ENFORCEMENT TEST PROCEDURES FOR 1978 AND SUBSEQUENT MODEL-YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, MEDIUM AND HEAVY-DUTY VEHICLES, AND MOTORCYCLES.

A. GENERAL PROVISIONS

Section A, "GENERAL PROVISIONS", of the "California Emissions-Related Defects Reporting Procedures for 1978 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, Medium and Heavy-Duty Vehicles, and Motorcycles" is hereby incorporated in these procedures.

B. IN-USE VEHICLE RECALL PROCEDURES

(1) A manufacturer will be notified whenever the Executive Officer has determined that a substantial number of a class or category of vehicles or engines produced by that manufacturer, although properly maintained and used, contain a defect in an emissions-related component within their useful lives which is likely to result in increased emissions and which, if uncorrected, may result in failure to meet applicable standards, or a class or category of vehicles or engines within their useful lives, on average, do not conform to the standards prescribed under Part 5, Division 26 of the Health and Safety Code and applicable to the model year of such vehicles. The notification will include a description of each class or category of vehicles or engines encompassed by the determination of nonconformity, will give the factual basis for the determination of nonconformity (except information previously provided the manufacturer by the Air Resources Board), and will designate a date, no sooner than 45 days from the date of receipt of such notification, by which the manufacturer shall have submitted a plan to remedy the nonconformity.

(2) Unless a public hearing is requested by the manufacturer, the remedial plan shall be submitted to the Executive Officer within the time limit specified in the notification, provided that the Executive Officer may grant the manufacturer an extension upon good cause shown.

(3) If the manufacturer disagrees with the Executive Officer's finding of nonconformity he may request a public hearing to contest the necessity for or the scope of any ordered corrective action. Requests for such a hearing shall be filed with the Executive Officer not later than 45 days after the receipt of the notification of nonconformity unless otherwise specified by the Executive Officer. Such a hearing shall be held by the Board not less than 30 and no more than 60 calendar days after receipt of the manufacturer's request for such a hearing.

(4) If a manufacturer requests a public hearing pursuant to subsection B.(3) of these procedures, unless as a result of such hearing the Executive Officer withdraws his determination of nonconformity, the manufacturer shall submit the remedial plan within 30 days ~~of the end of such hearing~~ after receipt of Executive Officer's decision.

(5) When a manufacturer is notified by the Executive Officer of a defect or nonconformity, the manufacturer shall submit a remedial plan to the Executive Officer which contains the following:

(a) A description of each class or category of vehicle or engine to be recalled including the model year, the make, the model, and such other information as may be required to identify the vehicles or engines to be recalled.

(b) A description of the specific modifications, alterations, repairs, corrections, adjustments or other changes to be made to bring the vehicles or engines into conformity including a brief summary of the data and technical studies which support the manufacturer's decision as to the particular remedial changes to be used in correcting the nonconformity.

(c) A description of the method by which the manufacturer will determine the names and addresses of vehicle or engine owners.

(d) A description of the procedure to be followed by vehicle or engine owners to obtain correction of the nonconformity. This shall include designation of the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to perform the labor required to correct the nonconformity, and the designation of facilities at which the nonconformity can be remedied: Provided, that repair shall be completed within a reasonable time designated by the Executive Officer from the date the owner first tenders his vehicle or engine after the date designated by the manufacturer as the date on or after which the owner can have the nonconformity remedied.

(e) If some or all of the nonconforming vehicles or engines are to be remedied by persons other than dealers or authorized warranty agents of the manufacturer, a description of the class of persons other than dealers and authorized warranty agents of the manufacturer who will remedy the nonconformity, and a statement indicating that the participating members of the class will be properly equipped to perform such remedial action.

(f) The percentage of vehicles subject to recall which must actually be corrected. If, after good faith efforts, the manufacturer cannot correct the percentage of vehicles specified in the plan by the applicable deadlines, the manufacturer may request the Executive Officer to modify the percentage of vehicles specified in the plan, setting out in full the good faith efforts of the manufacturer to comply with the original plan, and the reasons it has been unable to comply. The Executive Officer shall, on the basis of this request, modify the percentage of vehicles which must actually be corrected if he or she finds in writing that the manufacturer has made a good faith effort and has shown good cause for the modification. If the manufacturer so requests, the plan shall specify the maximum incentives (such as a tune-up or specified quantity of gasoline), if any, the manufacturer must offer to vehicle owners to induce them to present their vehicles for repair, as a condition of showing that the manufacturer has made a good faith effort

to repair the percentage of vehicles specified in the plan. The plan shall also include a schedule for implementing actions to be taken including identified increments of progress towards implementation and deadlines for completing each such increment.

(g) Three copies of the letters of notification to be sent to vehicle or engine owners.

(h) A description of the system by which the manufacturer will assure that an adequate supply of parts will be available to perform the repair under the remedial plan including the date by which an adequate supply of parts will be available to initiate the repair campaign, the percentage of the total parts requirement of each person who is to perform the repair under the remedial plan to be shipped to initiate the campaign, and the method to be used to assure the supply remains both adequate and responsive to owner demand.

(i) Three copies of all necessary instructions to be sent to those persons who are to perform the repair under the remedial plan.

(j) A description of the impact of the proposed changes on fuel consumption, driveability, and safety of each class or category of vehicles or engines to be recalled and a brief summary of the data, technical studies, or engineering evaluations which support these conclusions.

(k) Any other information, reports, or data which the Executive Officer may reasonably determine is necessary to evaluate the remedial plan.

(6) (a) Notification to vehicle or engine owners shall be made by first class mail or by such means as approved by the Executive Officer: Provided, that for good cause, the Executive Officer may require the use of certified mail to ensure an effective notification.

(b) The manufacturer shall use all reasonable means necessary to locate vehicle or engine owners: Provided, that for good cause, the Executive Officer may require the manufacturer to use motor vehicle registration lists as available from State or commercial sources to obtain the names and addresses of vehicle or engine owners to ensure an effective notification.

(c) The Executive Officer reserves the right to require the manufacturer to send by first class mail or other reasonable means subsequent notification to vehicle or engine owners: Provided, that for good cause, the Executive Officer may require the use of certified mail to ensure an effective notification.

(7) (a) The manufacturer shall require those who perform the repair under the remedial plan to affix a label to each vehicle or engine repaired or, when required, inspected under the remedial plan.

(b) The label shall be placed in such location as approved by the Executive Officer consistent with State law and shall be fabricated of a material suitable for the location in which it is installed and which is not readily removable intact.

(c) The label shall contain:

(i) the recall campaign number; and

(ii) a code designating the campaign facility at which the repair, or inspection for repair, was performed.

(d) The Executive Officer reserves the right to waive any or all of the requirements of these procedures if he or she determines that they constitute an unwarranted burden to the manufacturer.

(8) The Executive Officer may require the manufacturer to conduct tests on components and vehicles or engines incorporating a proposed change, repair, or modification reasonably designed and necessary to demonstrate the effectiveness of the change, repair, or modification.

(9) If the Executive Officer finds that the remedial plan is designed and effective to correct the nonconformity, he or she will so notify the manufacturer in writing. If the remedial plan is not approved as submitted, the Executive Officer will provide the manufacturer notice of the disapproval and the reasons for the disapproval in writing. The Executive Officer shall order modification of the plan with such changes and additions as he or she determines to be necessary.

(10) Upon receipt of notice from the Executive Officer that the remedial plan has been approved, the manufacturer shall commence implementation of the approved plan. Notification of vehicle or engine owners shall be in accordance with requirements of these procedures and shall proceed as follows:

(a) When no public hearing is requested by the manufacturer, notification of ~~vehicles~~ vehicle or engine owners shall commence within 15 working days of the receipt by the manufacturer of the Executive Officer's approval unless otherwise specified by the Executive Officer.

(b) When a public hearing is held, unless as a result of such hearing the Executive Officer withdraws the determination of nonconformity, the Executive Officer shall, within 60 days after the completion of such hearing, order the manufacturer to provide prompt notification of such nonconformity.

(11) The notification of vehicle or engine owners shall contain the following:

(a) The statement: "The California Air Resources Board has determined that your (vehicle or engine) (is or may be) releasing air pollutants which exceed (California or California and federal) standards. These standards were established to protect your health and welfare from the dangers of air pollution."

(b) A statement that the nonconformity of any such vehicles or engines ~~which~~ will be remedied at the expense of the manufacturer.

(c) Eligibility may not be denied solely on the basis that the vehicle or engine owner used parts not manufactured by the original equipment vehicle manufacturer, or had repairs performed by outlets other than the vehicle manufacturer's franchised dealers.

(d) A clear description of the components which will be affected by the remedy and a general statement of the measures to be taken to correct the nonconformity.

(e) A statement that such nonconformity if not repaired may cause the vehicle or engine to fail an emission inspection test when such tests are required under State law.

(f) A description of the adverse effects, if any, that an uncorrected nonconformity would have on the performance or driveability of the vehicle or engine.

(g) A description of the adverse effects, if any, that such nonconformity would have on the function of other engine components.

(h) A description of the procedure which the vehicle or engine owner should follow to obtain correction of the nonconformity. This shall include designation of the date on or after which the owner can have the nonconformity remedied, the time reasonably necessary to perform the labor required to correct the nonconformity, and the designation of facilities at which the nonconformity can be remedied.

(i) A card to be used by a vehicle or engine owner in the event the vehicle or engine to be recalled has been sold. Such card should be addressed to the manufacturer and shall provide a space in which the owner may indicate the name and address of the person to whom the vehicle or engine was sold.

(j) The statement: "In order to ensure your full protection under the emission warranty made applicable to your (vehicle or engine) by State or Federal law, and your right to participate in future recalls, it is recommended that you have your (vehicle or engine) serviced as soon as possible. Failure to do so could legally be determined to be a lack of proper maintenance of your (vehicle or engine)."

(12) The manufacturer shall not condition eligibility for repair on the proper maintenance or use of the vehicle except for strong and compelling reasons and with approval of the Executive Officer; however, the manufacturer shall not be obligated to repair a component which has been removed or ~~rendered unrepairable~~ altered so that the remedial action cannot be performed without additional cost.

(13) No notice sent pursuant to subsection B (5) (g) of these procedures nor any other communication sent to vehicle or engine owners or dealers shall contain any statement or implication that the nonconformity does not exist or that the nonconformity will not degrade air quality.

(14) The manufacturer shall be informed of any other requirements pertaining to the notification under this section which the Executive Officer has determined are reasonable and necessary to ensure the effectiveness of the recall campaign.

(15) The manufacturer shall provide to the Executive Officer a copy of all communications which relate to the remedial plan directed to dealers and other persons who are to perform the repair under the remedial plan. Such copies shall be mailed to the Executive Officer contemporaneously with their transmission to dealers and other persons who are to perform the repair under the remedial plan.

(16) The manufacturer shall provide for the establishment and maintenance of records to enable the Executive Officer to conduct a continuing analysis of the adequacy of the recall campaign. The records shall include, for each class or category of vehicle or engine, but need not be limited to, the following:

(a) Recall campaign number as designated by the manufacturer.

(b) Date owner notification was begun, and date completed.

(c) Number of vehicles or engines involved in the recall campaign.

(d) Number of vehicles or engines known or estimated to be affected by the nonconformity.

(e) Number of vehicles or engines inspected pursuant to the remedial plan found to be affected by the nonconformity.

(f) Number of inspected vehicles.

(g) Number of vehicles actually receiving repair under the remedial plan.

(h) Number of vehicles determined to be unavailable for inspection or repair under the remedial plan due to exportation, theft, scrapping, or for other reasons (specify).

(i) Number of vehicles or engines determined to be ineligible for remedial action due to ~~a failure to properly maintain or use such vehicles or engines~~ removed or altered components.

(17) If the manufacturer determines that the original answers for subsections B.(16)(c) and (d) of these procedures are incorrect, revised figures and an explanatory note shall be submitted. Answers to subsections B.(16)(e), (f), (g), (h), and (i) of these procedures shall be cumulative totals.

(18) Unless otherwise directed by the Executive Officer, the information specified in subsection B.(16) of these procedures shall be included in quarterly reports, with respect to each recall campaign, for six consecutive quarters beginning with the quarter in which the notification of owners was initiated, or until all nonconforming vehicles or engines involved in the campaign have been remedied, whichever occurs sooner. Such reports shall be submitted no later than 25 working days after the close of each calendar quarter.

(19) The manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, lists of the names and addresses of vehicle or engine owners:

(a) To whom notification was given;

(b) Who received remedial repair or inspection under the remedial plan; and

(c) When eligibility for repair is ~~conditioned on proper maintenance or use that were determined not to qualify for such remedial action~~ denied due to removed or altered components.

(20) The records described in subsection B.(19) of these procedures shall be made available to the Executive Officer or his or her authorized representative upon request.

(21) The records and reports required by these procedures shall be retained for not less than one year beyond the useful life of the vehicles or engines involved.

(22) Failure by a manufacturer to carry out all corrective actions or recall actions ordered by the Executive Officer pursuant to these procedures shall constitute a violation of that order and of Health and Safety Code Section 43105. The penalty for violation of an order or regulation or of Section 43105 is provided in Health and Safety Code Section 43016. In addition, a manufacturer is subject to the penalties provided in Health and Safety Code Sections 43211 and 43212 for violations of emission standards or test procedures.

(23) The Executive Officer shall extend any deadline in the plan if he or she finds in writing that a manufacturer has shown good cause for such extension.

C. IN-USE VEHICLE ENFORCEMENT TEST PROCEDURES

1. NONCOMPLIANCE

A vehicle's engine family is not in compliance with the applicable standards, rules and regulations when such engine family fails to pass the in-use vehicle enforcement test procedures. Corrective action, including recall of the affected vehicles, may be ordered by the Executive Officer based on the results of the enforcement testing.

2. ENFORCEMENT TEST PROCEDURES

a. Vehicle Selection

Any group or sub-group of vehicles, manufactured for sale in California and still within their useful lives, ~~are~~ is subject to these test procedures. Typically, an engine family, whose certification or New Vehicle Compliance Testing emissions levels, warranty repair history, in-use

performance, etc., are suspect, would be a proper candidate for such testing. Ten (10) in-use vehicles of a suspect engine family, determined by ARB staff to be properly maintained and used, would be tested to represent the emissions characteristics of that engine family. Up to twenty (20) additional vehicles may be tested if the initial testing is not conclusive.

b. The basic criteria for acceptance as a representative vehicle for enforcement testing are:

i. California certified and registered.

ii. Odometer indication of less than certified useful life mileage and within applicable time limit.

iii. No indication of abuse (e.g., racing, overloading, or other misuse), neglect, improper maintenance or other factors that would have a permanent effect on emissions performance and render the vehicle unrepresentative.

iv. No major repair to engine or major repair of vehicle resulting from collisson.

v. Lead content of fuel sample meets applicable standards.

vi. No indication of any problem that might jeopardize the safety of ARB personnel.

c. Enforcement Testing

Upon acceptance as a test vehicle, the fuel will be replaced with Indolene Clear or appropriate certification test fuel. Cold soak periods shall be at least 12 hours but less than 36 hours prior to testing. The following diagnosis/restorative maintenance will be performed prior to enforcement testing:

i. Identify the part numbers of all essential emission control system components.

ii. Check air filter, all drive belts, all fluid levels, radiator cap, all vacuum hoses and electrical wiring related to emissions control for integrity; check ignition, carburetion and emission control system components for maladjustments and/or tampering. Record all discrepancies.

iii. Check ignition system with oscilloscope and replace any defective components; i.e., spark plugs, wires, etc.

iv. Check compression, if indicated.

v. Check and adjust engine parameters to manufacturer's specifications.

vi. If the vehicle is within 500 miles of a scheduled maintenance service, that maintenance may be performed.

d. Restorative Maintenance Tests

After the vehicles have been accepted and restorative maintenance, if any, has been performed, the ~~following tests shall be performed~~ CVS-75 or appropriate certification test shall be performed. In addition, the following tests shall be performed as applicable:

~~i.~~ ~~CVS-75~~
~~ii.~~ i. Highway Fuel Economy Test (HFET).

~~iii.~~ ii. Three-Mode Loaded Mode Test.

~~iv.~~ iii. MVIP Test.

e. Enforcement Testing Results

If the CVS-75 test results (after restorative maintenance) indicate that the average emissions for any pollutant of the test vehicles are exceeding the applicable emissions standards, the entire vehicle population so represented will be presumed not to be in compliance with those standards. The Executive Officer will notify the manufacturer of the results and allow the manufacturer to submit a voluntary remedial plan within ~~30~~ 45 days to bring the affected vehicle population into compliance. If no such voluntary remedial plan is submitted, the Executive Officer may order corrective action including recall of the affected vehicles per Section B. above.

State of California
AIR RESOURCES BOARD

Response to Significant Environmental Issues

Item: Public Hearing to Consider Amendments to Title 13, California Administrative Code, Sections 2100 through 2110 and Adoption of Sections 2111 through 2113, and Related Procedures Regarding Emissions-Related Defects Reporting, In-Use Vehicle Recall, and In-Use Vehicle Enforcement Testing.

Agenda Item No.: 82-27-3

Public Hearing Date: December 8, 1982.

Response Date: December 9, 1982.

Issuing Authority: Air Resources Board.

Comment: No comments were received identifying any significant adverse environmental impacts associated with this item. The staff report identified no significant adverse environmental effects.

Response: N/A

CERTIFIED: Harold Holmes
Board Secretary

Date: 12/13/82

State of California
AIR RESOURCES BOARD

Response to Significant Environmental Issues

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Response Date: December 9, 1982

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Comment: No comments were received identifying any significant adverse environmental impacts associated with this item. The staff report identified no significant adverse environmental impacts.

Response: N/A

CERTIFIED: Board Secretary

Date: 12/13/82

State of California
AIR RESOURCES BOARD

Resolution 82-69
December 8, 1982

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1185-98 entitled "Characterization of the Sources and Three Dimensional Distribution of Acidity in California Clouds and Precipitation" has been submitted by Sonoma Technology Inc. to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1185-98 entitled "Characterization of the Sources and Three Dimensional Distribution of Acidity in California Clouds and Precipitation", submitted by Sonoma Technology Inc. for an amount not to exceed $99,985;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1185-98 entitled "Characterization of the Sources and Three Dimensional Distribution of Acidity in California Clouds and Precipitation", submitted by Sonoma Technology Inc. for an amount not to exceed $99,985;

BE IT FURTHER RESOLVED, that the Executive Officer shall initiate administrative procedures and shall execute all necessary documents and contracts for the research effort proposed in an amount not to exceed $99,985.

I certify that the above is
a true and correct copy of
Resolution 82-69 as passed
by the Air Resources Board.

Harold Holmes, Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO.: 82-27-4 b(1)
DATE: December 8, 1982

ITEM: Research Proposal No. 1185-98 entitled "Characterization of the Sources and Three Dimensional Distribution of Acidity in California Clouds and Precipitation"

RECOMMENDATION: Adopt Resolution 82-69 approving proposal 1185-98 for funding in an amount not to exceed $99,985.

SUMMARY: In the fall/winter period of 1981-82, a coordinated research effort to determine the chemical composition of fog, cloud and rain water in southern California showed that high concentrations of acidity and ionic species were present in collected samples. pH levels as low as 2.2 and 2.4 were found in fog and cloud water samples, respectively. The results of the study have potentially important implications for development of control strategies.

The objectives of this project are: 1) to determine the spatial patterns of cloud water acidity in and upwind of the Los Angeles area; and 2) to determine the speciation of sulfur, nitrogen and carbon containing compounds among the gas, aerosol and droplet phases before, during and after cloud occurrence. This program will help answer questions about the spatial relationship of acidity in clouds and its relationship to sources, the pathways for formation of acidity and the fate of cloud species after the clouds evaporate.

During this study five series of flights will be performed in the South Coast Air Basin during the foggy May-June 1983 period. Chemical analysis of the collected cloud water will be performed in order to understand the relationships between acidic particles and gases and cloud water chemistry. Mechanisms will be proposed to explain oxidation rates, pH levels and sulfate and nitrate concentrations found during this study.

The results of this work will provide valuable information on the oxidation of NOx and SO_2 and their incorporation into cloud water. This information will assist the Board in developing strategies to reduce both acid deposition and atmospheric acidity to acceptable levels.

State of California
AIR RESOURCES BOARD

Resolution 82-70

December 8, 1982

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1188-98 entitled "The Effects of Exercise on Lung Injury Induced by Ozone and Nitrogen Dioxide" has been submitted by the University of California at Irvine to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding;

Proposal Number 1188-98 entitled "The Effects of Exercise on Lung Injury Induced by Ozone and Nitrogen Dioxide" submitted by the University of California at Irvine for an amount not to exceed $99,858;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Secton 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

Proposal Number 1188-98 entitled "The Effects of Exercise on Lung Injury Induced by Ozone and Nitrogen Dioxide" submitted by the University of California at Irvine for an amount not to exceed $99,858;

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $99,858.

I certify that the above is a true and correct copy of Resolution 82-70 as passed by the Air Resources Board.

Harold Holmes, Board Secretary

ITEM NO.: 82-27-4-b(2)
DATE: December 8, 1982

ITEM: Research Proposal No. 1188-98 entitled "Effects of Exercise on Lung Injury Induced by Ozone and Nitrogen Dioxide"

RECOMMENDATION: Adopt Resolution 82-70approving Proposal No. 1188-98 for funding in an amount not to exceed $99,858.

SUMMARY: Ozone exposure is known to reduce pulmonary functional performance of human subjects undergoing exercise. Because of an increase in ventilatory rate, there is an increase in the total dose of ozone. Studies have also shown that athletic performance may be adversely affected on high oxidant days because of results observed in chamber studies with ozone. What is not known is the extent of any tissue damage accompanying the changes. Such a determination requires the use of laboratory test animals which can be exposed under controlled exercise and studied for tissue damage.

Previous work by the proponent has shown that exercise greatly enhances deep lung injury in rats exposed to ozone and that the risk may be considerably greater than predicted by ventilation rate alone.

This study will follow up on such observations, employing increased exercise loads with low levels of O_3. In addition this study will assess exposures to ozone and nitrogen dioxide under exercise stress enhance lung damage above that attributable to ozone or to nitrogen dioxide presented singly.

Three specific areas of study are proposed. They are designed to examine the following questions:

1) How do different intensities of exercise affect ozone induced lung damage?
2) Are the effects of ozone and nitrogen dioxide inhaled as a mixture simply additive or does a non-additive interaction occur?
3) What is the relationship between ozone induced lung injury and exercise exposure duration?

State of California
AIR RESOURCES BOARD

Resolution 82-71

December 8, 1982

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1189-98 entitled "Determination of the Effects of Photochemical Oxidants and/or SO_2 on Yield of Navel Oranges" has been submitted by the University of California, Riverside to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1189-98 entitled "Determination of the Effects of Photochemical Oxidants and/or SO_2 on Yield of Navel Oranges" submitted by the University of California, Riverside for an amount not to exceed $300,298.

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1189-98 entitled "Determination of the Effects of Photochemical Oxidants and/or SO_2 on Yield of Navel Oranges" submitted by the University of California, Riverside for an amount not to exceed $300,298.

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $300,298.

I certify that the above is a true and correct copy of Resolution 82-71 as passed by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

ITEM NO.: 82-27-4-b(3)
DATE: December 8, 1982

ITEM: Research Proposal No. 1189-98 entitled "Determination of the Effects of Photochemical Oxidants and/or SO_2 on Yield of Navel Oranges".

RECOMMENDATION: Adopt Resolution 82-71 approving Proposal No. 1189-98 for funding in an amount not to exceed $300,298.

SUMMARY:

Oranges are an important tree crop in California with 183,000 acres planted. During 1980-81 the crop was valued at 285 million dollars. Only one study on the effects of air pollution on oranges in California has been done. That study was done during the 1960's and demonstrated substantial yield losses due to ambient air pollution even though there was no visible leaf injury. Results of the study have been questioned because the trees were grown in enclosed greenhouses which significantly altered the environment around the trees and may have affected the outcome of the study. Study methods were not as sophisticated as those in use today. Furthermore, the study did not address the effects of SO_2 on oranges.

The proponent plans to study the effects of photochemical oxidants and/or SO_2 on bearing navel orange trees located on the U.C. Riverside campus for two growing seasons. Past production history of each tree is available. An open-top fumigation chamber will be constructed around each tree and test trees will be exposed to one of the following treatments: 1) ambient air; 2) carbon filtered air; 3) ½ ambient air + ½ filtered air; 4) filtered air + .05 ppm SO_2; 5) filtered air + .10 ppm SO_2; 6) ½ ambient air + ½ filtered air + .05 ppm SO_2; 7) ½ ambient air + ½ filtered air + .10 ppm SO_2. Four trees will be exposed to ambient air without chambers. The air pollution effects will be measured by determining the amount of premature drop of leaves and immature fruit. Mature fruit will also be harvested and examined. Photosynthetic and transpiration rates of the trees will be monitored also. This study will provide the Board with important information on the cost of air pollution to orange growers and the threshold of air pollution concentrations that cause damage to navel orange trees. The results should also be applicable to the San Joaquin Valley, where most of the navel oranges are grown and which is subject to oxidant (ozone) pollution and to some sulfur dioxide. It is expected that a third and final growing season exposure study will be carried out as an extension of the proposed study.

State of California
AIR RESOURCES BOARD

Resolution 82-72

December 8, 1982

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code Sections 39700 through 39705;

WHEREAS, an unsolicited research Proposal Number 1186-98 entitled "The Role of Air Pollutants in Facilitation of Cancer Cell Metastasis" has been submitted by the University of Southern California to the Air Resources Board; and

WHEREAS, the Research staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 1186-98 entitled "The Role of Air Pollutants in Facilitation of Cancer Cell Metastasis" submitted by the University of Southern California, for an amount not to exceed $92,499;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 1186-98 entitled "The Role of Air Pollutants in Facilitation of Cancer Cell Metastasis" submitted by the University of Southern California, for an amount not to exceed $92,499;

BE IT FURTHER RESOLVED, that the Executive Officer is authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $92,499.

I certify that the above is a true and correct copy of Resolution 82-72 as passed by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

ITEM NO.: 82-27-4-b(4)
DATE: December 8, 1982

ITEM: Research Proposal No. 1186-98 entitled "The Role of Air Pollutants in Facilitation of Cancer Cell Metastasis"

RECOMMENDATION: Adopt Resolution 82-72 approving Proposal No. 1186-98 for funding in an amount not to exceed $92,499.

SUMMARY: This proposal extends current research activities that established an association between cancer and air pollution. In a recently completed contract, the contractor demonstrated increased numbers of melanoma (tumor) nodules in mice exposed to nitrogen dioxide. Important questions resulted from these observations, such as: 1) Could ozone elicit a similar response? 2) Since the previous results were observed after injection of melanoma cells, do metastases develop from existing primary tumors? and 3) What is the role of the immune system in the development of cancer metastases?

A series of experiments have been designed to answer these questions. The investigators will measure the cell dose which produces lung metastases in a small number of control mice. This will allow comparison of the number of metastases which develop and the number of mice which develop them. In a second experiment, mice will be exposed to nitrogen dioxide, melanoma cells will be injected and the number of metastatic nodules in lungs, liver, spleen, and gastro-intestinal tract will be counted. The immune status of some of the mice will be measured using a natural killer assay. In the third experiment, mice will be exposed to ozone and the identical measurements will be taken. Finally, the effects of nitrogen dioxide on the growth and spontaneous metastasis of a primary tumor adenocarcinoma will be measured.