

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:

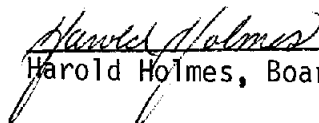
Proposal Number 1162-95 entitled "Formation and Fate of Toxic Chemicals in California's Atmosphere", submitted by The Statewide Air Pollution Research Center, University of California, Riverside, for a total amount not to exceed \$195,104;

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, 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.

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.

October 28, 1982

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"



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

Walter J. 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

Signature

J. S. Cantt

Date

11/2/82

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

W. L. 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

Date

11/5/72

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:

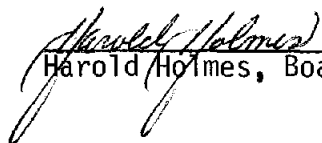
Proposal Number 1181-97 entitled "Maintenance and Operation of California Air Resources Board Field Fumigation Facility for Experimental Use", submitted by the University of California, Riverside, for an amount not to exceed \$60,297;

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 administrative 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 administrative 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 SO₂ 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 SO₂-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:

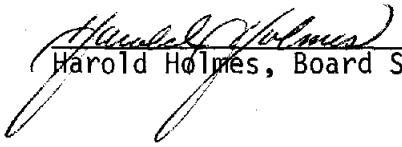
Proposal Number 1177-97 entitled "Quantitative Assessment of the Effects of Not Controlling Air Pollution", submitted by Energy Resources Consultants, Inc., for a total amount not to exceed \$172,941;

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, 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

2.

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:

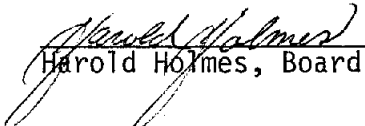
Proposal Number 1180-97 entitled "Assessment of Air Pollution Material Damage and Soiling in the South Coast Air Basin", submitted by TRC Environmental Consultants, for a total amount not to exceed \$95,759;

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, 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.