State of California
AIR RESOURCES BOARD

Resolution 87-63
August 13, 1987

WHEREAS, the Air Resources Board has been directed to design and implement a comprehensive program of research and monitoring of acid deposition in California, pursuant to Health and Safety Code Sections 39900 through 39915; and

WHEREAS, a solicited research proposal, Number 172-24, entitled "Cost of Materials Damage Caused by Acid Deposition in the South Coast Air Basin," has been submitted by Mathtech, Inc.;

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

WHEREAS, the Scientific Advisory Committee on Acid Deposition has reviewed and recommends for funding:

> Proposal Number 172-24, entitled "Cost of Materials Damage Caused by Acid Deposition in the South Coast Air Basin," submitted by Mathtech, Inc. for a total amount not to exceed $179,873.

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39906, hereby accepts the recommendation of the Scientific Advisory Committee on Acid Deposition and approves the following:

> Proposal Number 172-24, entitled "Cost of Materials Damage Caused by Acid Deposition in the South Coast Air Basin," submitted by Mathtech, Inc. for a total amount not to exceed $179,873.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $179,873.

I hereby certify that the above is a true and correct copy of Resolution 87-63, as adopted by the Air Resources Board.

Harold Holmes, Board Secretary

ITEM NO.: 87-11-4(b)
DATE: August 13, 1987

State of California
AIR RESOURCES BOARD

ITEM: Research Proposal No. 168-24 entitled "Effects of Hydroxymethanesulfonate and Simulated Buffered Acid Fogs on Airway Function in Subjects with Asthma"

RECOMMENDATION: Adopt Resolution 87-64 approving Proposal No. 168-24 for funding in an amount not to exceed $177,881.

SUMMARY: The investigators plan to address two major issues in this study. First, hydroxymethanesulfonic acid (HMSA), an important organic acid species that has been measured in fogs in California, may have potential to cause health effects in lungs. It is essentially unstudied but is suspected to cause bronchoconstriction in asthmatics. The proposed work will involve studying the bronchoconstrictive effects of HMSA in subjects with asthma. The initial exposures will be performed at rest via a mouthpiece and will establish the preliminary dose-response nature of HMSA. Following that, asthmatics will be exposed in the ARB's newly completed fog chamber to appropriate concentrations of sulfuric acid and HMSA while they perform light exercise.

Second, the investigators have found through previous work that buffered acids are a more potent stimulus to bronchoconstriction in asthmatic subjects than are unbuffered acids. The proposed work will involve studying the effect of ammonium buffering agents in simulated fogs under conditions resembling natural fog exposure and will include exercise as part of the exposure protocol.

Work performed in this study should clarify the nature of the health consequences of inhaling acid fogs and aerosols. Prior studies done by the proponents and others have dealt with fairly simple simulations of the chemicals and fog droplets found in ambient acidity. The proposed work will enhance the realism and applicability of the findings from this project. The use of the newly completed fog chamber will allow the investigators to more closely mimic real fogs than has been possible thus far.

The principal investigator is Dr. Dean Sheppard of the University of California, San Francisco.

State of California
AIR RESOURCES BOARD

Resolution 87-64
August 13, 1987

WHEREAS, the Air Resources Board has been directed to design and implement a comprehensive program of research and monitoring of acid deposition in California, pursuant to Health and Safety Code Sections 39900 through 39915; and

WHEREAS, an unsolicited research proposal, Number 168-24, entitled "Effects of Hydroxymethanesulfonate and Simulated Acid Fogs on Airway Function in Subjects with Asthma," has been submitted by University of California at San Francisco; and

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

WHEREAS, the Scientific Advisory Committee on Acid Deposition has reviewed and recommends for funding:

> Proposal Number 168-24, entitled "Effects of Hydroxymethanesulfonate and Simulated Acid Fogs on Airway Function in Subjects with Asthma," submitted by the University of California, San Francisco for a total amount not to exceed $177,881.

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39906, hereby accepts the recommendation of the Scientific Advisory Committee on Acid Deposition and approves the following:

> Proposal Number 168-24, entitled "Effects of Hydroxymethanesulfonate and Simulated Acid Fogs on Airway Function in Subjects with Asthma," submitted by the University of California, San Francisco for a total amount not to exceed $177,881.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $177,881.

I hereby certify that the above is a true and correct copy of Resolution 87-64, as adopted by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

BUDGET SUMMARY

University of California, San Francisco

Effects of Hydroxymethanesulfonate and Simulated Acid Fogs on Airway Function in Subjects with Asthma"

BUDGET ITEMS:

Salaries	$78,383		
Benefits	21,378		
Supplies	12,280		
Equipment*	35,480		
Other Costs**	15,014		
Travel	2,400		
TOTAL, Direct Costs			$164,935
TOTAL, Indirect Costs			12,946
		TOTAL PROJECT COST	$177,881

*Equipment detail:

Ion chromatograph upgrade	$16,950
Spectrofluorometer	13,900
Impactor	3,450
Demodulators (2)	1,180

**Other Costs detail:

Consultants	6,400
Subject fees	5,500
Office supplies, publication fees	3,114
Chamber repair and maintenance	1,914

ITEM NO.: 87-11-4(b)
DATE: August 13, 1987

State of California
AIR RESOURCES BOARD

ITEM: Research Proposal No. 173-24 entitled "Pulmonary Function and Symptomatic Responses of Asthmatics to Ambient Acidic Atmospheres."

RECOMMENDATION: Adopt Resolution 87-65 approving Proposal No. 173-24 for funding in an amount not to exceed $158,294.

SUMMARY: A Request for Proposals (RFP) was issued in 1985 to solicit proposals to begin a program using different approaches to study possible health effects of acidic species in California air. One of the approaches funded was a pilot epidemiological study to monitor one hundred carefully selected asthmatic subjects. The subjects were to be monitored for one year, with the objective of relating daily symptoms and lung function changes to urban pollution levels. The selection of asthmatics was made because, as a group, they represent a significant part of the population who are sensitive to the effects of air pollution. Subjects were selected from the Irvine/Costa Mesa area of Orange County, which exhibits moderate air pollution, including acidic components and their precursors.

Several problems were encountered with the initial study plan. The most important problem was recruiting satisfactory and reliable subjects. Delays in delivery of data from ambient HNO_3 monitoring performed by another investigator are also not yet available. The investigators have extended the field assessment of the subjects to increase the merit of the study.

This proposal would extend and increase the scope of this field epidemiology study. Changes that are proposed from the initial effort include expansion of air quality monitoring, increasing the cohort size, and completing the statistical analysis of both existing and new data.

The principal investigator is Dr. Steven Colome of the University of California, Irvine.

State of California
AIR RESOURCES BOARD

Resolution 87-65
August 13, 1987

WHEREAS, the Air Resources Board has been directed to design and implement a comprehensive program of research and monitoring of acid deposition in California, pursuant to Health and Safety Code Sections 39900 through 39915; and

WHEREAS, an unsolicited research proposal, Number 173-24, entitled "Pulmonary Function and Symptomatic Responses of Asthmatics to Ambient Acidic Atmospheres," has been submitted by the University of California, Irvine;

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

WHEREAS, the Scientific Advisory Committee on Acid Deposition has reviewed and recommends for funding:

> Proposal Number 173-24 , entitled "Pulmonary Function and Symptomatic Responses of Asthmatics to Ambient Acidic Atmospheres," submitted by the University of California, Irvine for a total amount not to exceed $158,294;

NOW, THEREFORE, BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code Section 39906, hereby accepts the recommendation of the Scientific Advisory Committee on Acid Deposition and approves the following:

> Proposal Number 173-24, entitled "Pulmonary Function and Symptomatic Responses of Asthmatics to Ambient Acidic Atmospheres," submitted by the University of California, Irvine for a total amount not to exceed $158,294.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein in an amount not to exceed $158,294.

I hereby certify that the above is a true and correct copy of Resolution 87-65, as adopted by the Air Resources Board.

Harold Holmes

Harold Holmes, Board Secretary

BUDGET SUMMARY

University of California, Irvine

"Pulmonary Function and Symptomatic Responses of Asthmatics to Ambient Acidic Atmospheres"

BUDGET ITEMS:

Salaries	$92,432		
Benefits	13,928		
Supplies	1,700		
Equipment*	5,000		
Other Costs**	26,504		
Travel	4,794		
TOTAL, Direct Costs			$144,358
TOTAL, Indirect Costs			13,936
		TOTAL PROJECT COST	$158,294

*Equipment Detail:

Acid Aerosol Sampler	$ 3,800
Peak Flow meters (24)	1,200

**Other Costs Detail:

Operating Expenses and Diaries	4,054
Consultants	12,750
Maintenance for Sulfate Monitor	1,250
Allergy testing	4,000
Data acquisition	700
Computer time	2,000
Publication costs	1,750

State of California
Air Resources Board

Resolution 87-68

August 13, 1987

WHEREAS, Health and Safety Code Sections 39700, 39701, and 39703 authorize the Air Resources Board (the "Board") to coordinate and collect research data on air pollution and to administer and coordinate all air pollution research funded in whole or in part by state funds;

WHEREAS, in February 1987 the Board approved a long-range research plan recommended by the Research Screening Committee which includes a large scale coordinated field study known as the Southern California Air Quality Study or "SCAQS." The purpose of the SCAQS is to develop a comprehensive air quality data base for the South Coast Air Basin which can be used to improve air quality models;

WHEREAS, the Board approved the funding of the SCAQS core program of research projects as described in the Board's long-range research plan;

WHEREAS, abnormal meteorological conditions have resulted in lower than expected levels of ozone, preventing the collection of data critical to the SCAQS data base during the summer study period;

WHEREAS, it is necessary to act promptly to modify the SCAQS plan in order to accomplish all of the study objectives with respect to data collection during the summer study period by providing for funding of six additional intensive sampling days between August 18 and September 10, 1987;

WHEREAS, it is therefore necessary to make limited amendments or augmentations to existing contracts or to initiate new contracts to obtain the additional summer sampling data; and

WHEREAS, any additional funding of the existing contracts needed to accomplish the additional summer sampling will be substantially offset by the redirection of resources from planned fall studies that have already been funded by the Board, and is not expected to exceed $50,000.00.

NOW, THEREFORE, BE IT RESOLVED, that the Executive Officer is hereby directed and authorized to initiate administrative procedures and execute all necessary documents and contracts to augment or, as necessary, to initiate such contracts as may be required to complete the summer sampling portion of the SCAQS for a total amount, exclusive of redirection of the fall study portion of SCAQS, not to exceed $50,000.00.

I hereby certify that the above is a true and correct copy of Resolution 87-68, as adopted by the Air Resources Board.

Harold Holmes, Board Secretary