

**State of California**

**AIR RESOURCES BOARD**

Resolution 88-2  
January 7, 1988

**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; and

**WHEREAS**, an unsolicited research proposal, Number 1554-135A, entitled "Lifetimes and Fates of Toxic Air Contaminants in California's Atmosphere," has been submitted by the University of California, Riverside; 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 1554-135A, entitled "Lifetimes and Fates of Toxic Air Contaminants in California's Atmosphere," submitted by the University of California, Riverside, for a total amount not to exceed \$294,867.

**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 1554-135A, entitled "Lifetimes and Fates of Toxic Air Contaminants in California's Atmosphere," submitted by the University of California, Riverside, for a total amount not to exceed \$294,867.

**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 \$294,867.

I hereby certify that the above is a true and correct copy of Resolution 88-2, as adopted by the Air Resources Board.

  
Cary Allison, Board Secretary

ITEM NO.: 88-1-1(b) 1  
DATE: January 7, 1988

State of California  
AIR RESOURCES BOARD

**ITEM:** Research Proposal No. 1554-135A, entitled  
"Lifetimes and Fates of Toxic Air Contaminants  
in California's Atmosphere"

**RECOMMENDATION:** Adopt Resolution 88-2 approving Proposal No.  
1554-135A for an amount not to exceed  
\$294,867.

**SUMMARY:** The objective of this project is to determine  
the atmospheric removal processes, atmospheric  
chemistry and ambient concentrations of 12  
potential toxic air contaminants identified  
for review pursuant to AB 1807 (Tanner Bill).  
The project is a continuation of a planned  
multi-year study by the University of  
California, Riverside, to determine the  
reaction rate constants for specified toxic  
air contaminants in the presence of important  
oxidizing species. These data will help  
define the degradation pathways and products  
of atmospheric reactions of the compounds and  
also establish whether they can be formed in  
the atmosphere from other substances. The  
results of this study will be used by Air  
Resources Board staff and others to assist in  
control strategy development for risk  
management.

In the first phase of this study, the  
University of California, Riverside,  
investigated the atmospheric chemistry and  
determined the kinetics/and or the products of  
the gas-phase reactions of 16 volatile and

# B U D G E T   S U M M A R Y

University of California, Riverside

"Lifetimes and Fates of Toxic Air Contaminants in  
California's Atmosphere"

## BUDGET ITEMS:

Salaries	\$181,587	
Benefits	46,538	
Supplies	24,900	
Travel	5,036	
Other Costs (a)(b)(c)	<u>10,000</u>	
<b>TOTAL, Direct Cost</b>		<b>\$268,061</b>
<b>TOTAL, Indirect Cost</b>		<b><u>26,806</u></b>
	<b>TOTAL PROJECT COST</b>	<b>\$294,867</b>
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- (a) Computer Library Search
  - (b) Computer Shop Charges
  - (c) Reproduction

**State of California**

**AIR RESOURCES BOARD**

Resolution 88-3  
January 7, 1988

**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; and

**WHEREAS**, a solicited research proposal, Number 1560-136, entitled "Sampling, Analysis, and Validation of Indoor Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)," has been submitted by Indoor Environmental Engineering; 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 1560-136, entitled "Sampling, Analysis, and Validation of Indoor Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)," submitted by Indoor Environmental Engineering, for a total amount not to exceed \$149,520.

**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 1560-136, entitled "Sampling, Analysis, and Validation of Indoor Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)," submitted by Indoor Environmental Engineering, for a total amount not to exceed \$149,520.

**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 \$149,520.

I hereby certify that the above is a true and correct copy of Resolution 88-3, as adopted by the Air Resources Board,

  
Cary Allison, Board Secretary

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DATE: January 7, 1988

State of California  
AIR RESOURCES BOARD

**ITEM:** Research Proposal No.1560-136 entitled  
"Sampling, Analysis and Validation of Indoor  
Concentrations of Polycyclic Aromatic  
Hydrocarbons (PAHs)

**RECOMMENDATION:** Adopt Resolution 88-3 approving Proposal No.  
1560-136 for an amount not to exceed \$149,520.

**SUMMARY:** The objective of this project is to develop  
appropriate sampling, analytical and validation  
methods for measuring personal and/or indoor  
airborne exposures of the California population  
to polycyclic aromatic hydrocarbons (PAHs) in  
both the particulate and vapor phase.

PAHs have been identified by the Air Resources  
Board as toxic air contaminants. Reliable  
monitoring data are needed to better assess and  
to help manage the risk to public health posed  
by these toxic air contaminants. Currently,  
only indirect methods are available for  
determining indoor exposures to PAHs; this  
project will develop and validate suitable  
methods which can be used to obtain indoor  
exposure data.

This is a planned study in the Board's Long-  
Range Research Plan.

# B U D G E T   S U M M A R Y

## Indoor Environmental Engineering

"Sampling, Analysis and Validation of Indoor Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)

### BUDGET ITEMS:

Salaries	\$ 27,760
Subcontract	81,000
Laboratory Supplies*	9,500
Copying Costs	300
Travel	<u>3,200</u>

<b>TOTAL, Direct Cost</b>	<b>\$121,760</b>
<b>TOTAL, Indirect Cost</b>	<b><u>27,760</u></b>

**TOTAL PROJECT COST**                      **\$149,520**  
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\*Sampling Pumps  
Chromatographic Column  
Portable Gas Chromatograph

**State of California**

**AIR RESOURCES BOARD**

Resolution 88-4  
January 7, 1988

**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; and

**WHEREAS**, an unsolicited research proposal, Number 1550-135, entitled "Emissions of Volatile and Potentially Toxic Organic Compounds from Wastewater Treatment Plants and Collection Systems," has been submitted by the University of California, Davis;

**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:

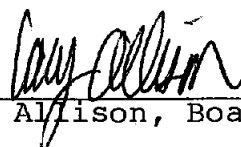
Proposal Number 1550-135, entitled "Emissions of Volatile and Potentially Toxic Organic Compounds from Wastewater Treatment Plants and Collection Systems," submitted by the University of California, Davis, for a total amount not to exceed \$169,999.

**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 1550-135, entitled "Emissions of Volatile and Potentially Toxic Organic Compounds from Wastewater Treatment Plants and Collection Systems," submitted by the University of California, Davis, for a total amount not to exceed \$169,999.

**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 \$169,999.

I hereby certify that the above is a true and correct copy of Resolution 88-4, as adopted by the Air Resources Board.

  
Cary Allison, Board Secretary

ITEM NO.: 88-1-1(b) 3  
DATE: January 7, 1988

State of California  
AIR RESOURCES BOARD

**ITEM:** Research Proposal No. 1550-135 entitled  
"Emissions of Volatile and Potentially Toxic  
Organic Compounds from Wastewater Treatment  
Plants and Collection Systems."

**RECOMMENDATION:** Adopt Resolution 88-4 approving Proposal No.  
1550-135 for an amount not to exceed \$169,999.

**SUMMARY:** The objective of this project is to quantify the  
emissions of 16 volatile and potentially toxic  
organic compounds from Publicly Owned Treatment  
Plants and Collection Systems in California.

The 16 compounds are listed on the Air Resources  
Board's list of toxic and potentially toxic  
compounds to be reviewed in accordance with the  
California Health and Safety Code Section  
39660.5 (Assembly Bill 3052, Tanner).

In the first phase of this project, the  
University of California, Davis (UCD), completed  
a survey of available information, identified  
toxic or potentially toxic compounds emitted,  
and determined where critical information gaps  
exist in knowledge of emissions. Under the  
subject proposal, UCD would carry out a field  
measurement program and would develop a model to  
predict emissions of toxic compounds from  
wastewater treatment systems.



# BUDGET SUMMARY

University of California, Davis

"Emissions of Volatile and Potentially  
Toxic Organic Compounds from Wastewater  
Treatment Plants and Collection Systems"

## BUDGET ITEMS:

Salaries	\$ 80,631	
Benefits	16,421	
Supplies	6,390	
Chemical Analysis Gas/ Liquid Samples	22,880	
*Equipment	17,300	
Computer Usage/ Report Preparation	1,165	
Travel	<u>11,330</u>	
<b>TOTAL, Direct Cost</b>		<b>\$156,117</b>
<b>TOTAL, Indirect Cost</b>		<b><u>13,882</u></b>
	<b>TOTAL PROJECT COST</b>	<b>\$169,999</b>
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## \*Equipment Summary:

Desolver/Purge-and Trap	\$ 8,500
Desolver	2,200
Liquid Level Meter	4,100
Freon Analyzer	<u>2,500</u>
Total	\$17,300

**State of California**

**AIR RESOURCES BOARD**

Resolution 88-5  
January 7, 1988

**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; and

**WHEREAS**, an unsolicited research proposal, Number 1479-130A, entitled "Incidence of Respiratory Symptoms and Chronic Diseases in a Nonsmoking Population as a Function of Long Term Cumulative Exposure to Ambient Air Pollutants (Year 2 of the AHSMOG Follow-up Study)," has been submitted by Loma Linda University; 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:

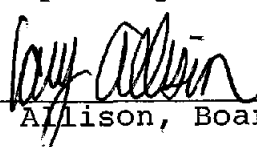
Proposal Number 1479-130A, entitled "Incidence of Respiratory Symptoms and Chronic Diseases in a Nonsmoking Population as a Function of Long Term Cumulative Exposure to Ambient Air Pollutants (Year 2 of the AHSMOG Follow-up Study)," submitted by Loma Linda University for a total amount not to exceed \$257,573.

**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 1479-130A, entitled "Incidence of Respiratory Symptoms and Chronic Diseases in a Nonsmoking Population as a Function of Long Term Cumulative Exposure to Ambient Air Pollutants (Year 2 of the AHSMOG Follow-up Study)," submitted by Loma Linda University for a total amount not to exceed \$257,573.

**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 \$257,573.

I hereby certify that the above is a true and correct copy of Resolution 88-5, as adopted by the Air Resources Board.

  
Cary Allison, Board Secretary

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DATE: January 7, 1988

State of California  
AIR RESOURCES BOARD

**ITEM:** Research Proposal No. 1479-130A entitled "Incidence of Respiratory Symptoms and Chronic Diseases in a Nonsmoking Population as a Function of Long Term Cumulative Exposure to Ambient Air Pollutants (Year 2 of the AHSMOG Follow-up Study)"

**RECOMMENDATION:** Adopt Resolution 88-5 approving Proposal No. 1479-130A for an amount not to exceed \$257,573.

**SUMMARY:** Knowledge about the health effects of long-term exposures to existing ambient levels of pollution is needed to determine if standards protect adequately against effects of these exposures. Very few long-term epidemiological studies are performed because of the large effort and expense involved. This proposal is to fund the second of two years to complete a restudy of the large non-smoking population investigated in the first AHSMOG study. That study, which analyzed the respiratory symptom and disease effects of ten years of exposures to several ambient pollutants, showed that subjects frequently exposed to high levels of ozone and suspended particulates had significantly increased risks of chronic obstructive pulmonary disease.

The purpose of the restudy is to assess the effects of ten additional years of exposures to ambient pollution, together with information about all occupational exposures and exposures to indoor pollutants and others' tobacco smoke. Comprehensive information about lifestyle factors that affect responses to air pollution will also be taken into account. The restudy is analyzing the rates of cancer and heart disease and overall mortality, as well as the rates of respiratory symptoms and diseases analyzed in the first study. The data collection and verification of the project's first year are being completed on schedule.

The investigator proposes to perform a large number of thorough statistical analyses of this very large body of data. The analyses will be performed by three epidemiologists, each specializing in one category of health effects, with the assistance of consultants on indoor air quality, fine particulates, and statistical methods. The principal investigator of this study is Dr. Daniel Abbey of the Loma Linda University.

## B U D G E T   S U M M A R Y

Loma Linda University

"Incidence of Respiratory Symptoms and Chronic Diseases  
in a Nonsmoking Population as a Function of Long Term Cumulative  
Exposure to Ambient Air Pollutants  
(Year 2 of the AHSMOG Follow-up Study)"

### BUDGET ITEMS:

Salaries	\$115,187	
Benefits	29,948	
Supplies	2,950	
Equipment*	1,620	
Travel	3,319	
Consultants	15,351	
Other Costs**	<u>26,400</u>	
<b>TOTAL, Direct Cost</b>		<b>\$194,775</b>
<b>TOTAL, Indirect Cost</b>		<b><u>62,798</u></b>
	<b>TOTAL PROJECT COST</b>	<b>\$257,573</b>
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\* Equipment: Two leased IBM Personal Computers

\*\* Other Costs: Includes \$24,000 computer charges

**State of California  
AIR RESOURCES BOARD**

Resolution 88-7

January 7, 1988

**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 request for budget augmentation for Contract No. A6-147-32, entitled "Snow, Snowmelt, Rain, Runoff and Chemistry in a Sierra Nevada Watershed," has been submitted by the University of California, Santa Barbara; and

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

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

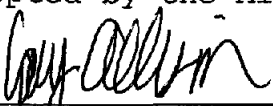
Augmentation to Contract No. A6-147-32, entitled "Snow, Snowmelt, Rain, Runoff and Chemistry in a Sierra Nevada Watershed," submitted by the University of California, Santa Barbara by \$9,149 for a total amount not to exceed \$374,151.

**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:

Augmentation to Contract No. A6-147-32, entitled "Snow, Snowmelt, Rain, Runoff and Chemistry in a Sierra Nevada Watershed," submitted by the University of California, Santa Barbara by \$9,149 for a total amount not to exceed \$374,151.

**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 by \$9,149 for a total amount not to exceed \$374,151.

I hereby certify that the above is a true and correct copy of Resolution 88-7, as adopted by the Air Resources Board.

  
Cary Allison, Board Secretary

ITEM NO.: 88-1-1(b) 6  
DATE: January 7, 1988

**State of California  
AIR RESOURCES BOARD**

**ITEM:** Augmentation for Contract No. A6-147-32 entitled "Snow, Snowmelt, Rain, Runoff and Chemistry in a Sierra Nevada Watershed"

**RECOMMENDATION:** Adopt Resolution 88-7 approving a budget augmentation of Contract No. A6-147-32 by \$9,149 for a total contract amount not to exceed \$374,151.

**SUMMARY:** This contract augmentation will provide for air quality and acid deposition field support at Sequoia National Park during winter 1987-88. Specifically, this augmentation provides for a part-time technician to service ARB samplers for wet and dry deposition at remote locations in the Park.

The results of this monitoring effort will aid the Air Resources Board in defining the magnitude of acidic pollutants deposited to Sierran forests and high-altitude lakes. In addition, this study will provide some of the first information on the acidity of cloud water intercepted by coniferous forests on the western slope of the Sierra Nevada.

The principal investigators for this effort are Drs. Jeff Dozier and John Melack of the University of California, Santa Barbara.