State of California

AIR RESOURCES BOARD

Resolution 80-15

April 24, 1980

WHEREAS, an unsolicited research Proposal Number 892-75 entitled "Air Quality and Birth Outcome, South Coast Air Basin" has been submitted by the University of California at Los Angeles 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 892-75 entitled "Air Quality and Birth Outcome, South Coast Air Basin" submitted by the University of California at Los Angeles for an amount not to exceed $157,521;

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 892-75 entitled "Air Quality and Birth Outcome, South Coast Air Basin" submitted by the University of California at Los Angeles for an amount not to exceed $157,521,

BE IT FURTHER RESOLVED, that the Executive Officer shall initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed in an amount not to exceed $157,521.

I certify that the above is a true and correct copy of Resolution 80-15 as passed by the Air Resources Board.

Sally Rump

Sally Rump
Board Secretary

State of California
AIR RESOURCES BOARD

ITEM NO: 80-7-3
DATE: April 24, 1980

ITEM: Research Proposal No. 892-75 entitled "Air Quality and Birth Outcome: South Coast Air Basin."

RECOMMENDATION: Adopt Resolution 80-15 approving Research Proposal No. 892-75 for funding in an amount not to exceed $157,521.

SUMMARY: This proposal was considered by the Board at its March 26, 1980 meeting, at which the Board deferred approval of the proposal pending formation of a committee of epidemiologists and statisticians to guide the study. Such a committee has been formed and the members and their affiliations follows the summary of the proposal presented below.

Numerous epidemiological studies have been carried out to determine how medium-to-long term exposure to air pollution affects the general population as well as identifiable sensitive sub-groups within the general population. Asthmatics, children, heart and lung disease patients are among these sub-groups.

Another research area of importance has been the potential effects of ambient air quality on birth outcome. Animal studies tentatively point to the possibility that nitrogen dioxide and certain other air pollutants play a role in birth outcome. The few human studies done in this area seem to suggest an air quality-birth outcome relationship, but have generated more questions than they have answers. What is proposed here is a more thorough study that might help answer the basic question "Does air pollution exposure affect birth weight, fetal development, congenital malformation rate and survival into early infancy?"

The project as proposed would assess whether or not there exists an association between levels and/or types of air pollution and reproductive success. Study areas would include the four counties of the South Coast Air Basin - Orange, Los Angeles, Riverside and San Bernardino. The period for study would include 1972-1978, a time that would include about one million births. Air quality information would

come from the South Coast Air Quality Management District and ARB. The air quality data would be used after application of exposure interpolation methods to give time relation exposure estimates on a small-scale spatial basis. The methods developed by Technology Services Corporation in a recently completed study for ARB would be the most likely approach. Pollutant exposures would be derived on an individual basis for all births. Variations in exposures received by mothers on a monthly basis will also be considered. In this way any relationship between stage of pregnancy and sensitivity to exposure might be shown. Areas with similar air pollution exposures will be grouped in some parts of the study. This would allow study of how factors such as social or economic status, prenatal care and racial make-up influence any birth outcome - air quality trends.

A guidance committee has been selected to assist the principal investigator on this project. Members represent two basic areas of expertise, either epidemiology or biostatistics. The members and their affiliations are listed below:

1. Heinz Berendes - Chief, Epidemiology and Biometry
   National Institute of Child Health and Human Development

2. Warren Winkelstein - Dean, School of Public Health
   University of California, Berkeley

3. Lou Mahoney - Director, San Bernardino County Health Department

4. Alice Whittemore - Department of Family, Community and Preventative Medicine
   Stanford Medical School

5. Jean Bowman - Health Program Advisor
   State Department of Health Services

State of California
AIR RESOURCES BOARD

Resolution 80-37

April 24, 1980

WHEREAS, the Air Resources Board is vested, under Section 39705 of the Health and Safety Code, with authority to appoint a Research Screening Committee composed of up to nine members with expertise in specified technical areas; and

WHEREAS, there now exist, as a result of recent resignations, three vacancies on the Research Screening Committee;

WHEREAS, Glen R. Cass, Assistant Professor of Environmental Engineering at the California Institute of Technology, is widely acknowledged as an expert in the fields of air quality control strategy design, air pollution source characteristics and control technologies, the fluid mechanical aspects of air quality modeling, energy resource management and the design and management of governmental regulatory programs;

NOW, THEREFORE BE IT RESOLVED that the Air Resources Board hereby appoints to full membership in its Research Screening Committee the following person, who has been found to meet all of the requirements set forth in Section 39705 of the Health and Safety Code:

Glen R. Cass, Ph.D.
Assistant Professor of
Environmental Engineering Science
California Institute of Technology

I certify that the above is a true
and correct copy of Resolution 80-37
as passed by the Air Resources Board

Sally Rump

Sally Rump
Board Secretary

GLEN R. CASS

EDUCATION

B.S. Mechanical Engineering, University of Southern California (Summa Cum Laude), 1969

M.S. Mechanical Engineering, Stanford University, 1970

Ph.D. Environmental Engineering Science, California Institute of Technology, 1978. Thesis Topic: Sulfate Air Quality Management

PROFESSIONAL INTERESTS

Air quality control strategy design, energy resources management, air pollution source characteristics and control technology, fluid mechanics applied to air quality problems, design and management of governmental regulatory programs.

PROFESSIONAL EXPERIENCE

1978-present Senior Research Fellow and Instructor in Environmental Engineering Science, California Institute of Technology. Member of the Research Staff of Caltech's Environmental Quality Laboratory

1978-present Consultant, specializing in design of comprehensive emission control strategies which will attain or maintain compliance with air quality standards in a multiple source regional setting. Clients include the South Coast Air Quality Management District (formerly the Los Angeles Air Pollution Control District).

1973-77 Ph.D. Candidate in Environmental Engineering Science, California Institute of Technology. Research Assistantship, Environmental Quality Laboratory (1973-74, 1976-77), Barker Fellowship (1974-75), Rockwell International Fellowship (1975-76).

1974 Consultant to Institute of Industrial Launderers (part-time) on gaseous-fueled truck fleet problems.

1970-73 Commissioned Officer, U.S. Public Health Service. Loaned to U.S. Environmental Protection Agency, Region IV, Atlanta, Georgia. Program advisor to 18 state and local pollution control agencies in the Southeastern United States.

Summer 1969 Engineer, Naval Undersea Center, Pasadena, California. Worked on undersea internal combustion engine design.

COLLEGIATE SCHOLASTIC HONORS

Archimedes Circle Award (USC, 1969), Phi Kappa Phi, Tau Beta Pi, Pi Tau Sigma, Phi Eta Sigma, Sigma Xi, Sigma Nu Fraternity's Nationwide Scholar of the Year (1969).

COLLEGIATE LEADERSHIP HONORS

Order of the Palm (USC, 1969), Skull and Dagger (USC), Blue Key.

CURRENT COMMUNITY SERVICE

Clean Air Committee, Pasadena Lung Association.
Alumni Representative on a Student/Faculty Committee at USC.
President of a non-profit corporation which owns and operates student housing facilities at USC.

SPONSORED RESEARCH

The California Air Resources Board is supporting the Sulfate Air Quality Management Study at EQL under a major research contract. The project period is June 1976 through mid-1978. The proposal to the ARB was developed and written by me under the general supervision of the principal investigators, Professors Lees and Shair.

PUBLICATIONS AND CONFERENCE PAPERS

Methods for Sulfate Air Quality Management with Applications to Los Angeles, Ph.D. Thesis, California Institute of Technology, December 1977.

The Relationship between Sulfate Air Quality and Visibility at Los Angeles, Memorandum No. 18, Environmental Quality Laboratory, California Institute of Technology, August 1976.

Air Pollution Control Agency Behavior: Implementing Legal Mandates in an Uncertain World, presented at the CIT/IA Conference on Governmental Regulatory Policies, May 6-7, 1975.

Dimensions of the Los Angeles SO_2/Sulfate Problem, Memorandum No. 15, Environmental Quality Laboratory, December 1975. Presented at the Conference on Strategies for Air Pollution Control in the South Coast Air Basin, California Institute of Technology, December 2-3, 1975.

Lead as a Tracer for Automotive Particulates: Projecting the Sulfate Air Quality Impact of Oxidation Catalyst Equipped Cars in Los Angeles, Memorandum No. 12, Environmental Quality Laboratory, California Institute of Technology, May 1975.

Alternate Vehicle Fuels for the Industrial Laundry Industry, copyright by Research and Development Committee of the Institute of Industrial Launderers, October 1974, (with C. Almquist).

Cost and Performance of Automotive Emission Control Technologies, Memorandum No. 7, Environmental Quality Laboratory, California Institute of Technology, December 1973.

Air Pollution Control Agency Performance Evaluation, presented at the 66th Annual Meeting of the Air Pollution Control Association, June 24-28, 1973.