

State of California  
AIR RESOURCES BOARD

Resolution 81-62

October 22, 1981

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 1046-86 entitled "Visibility Reduction as Related to Aerosol Constituents," has been submitted by the Air and Industrial Hygiene Laboratory, California Department of Health Services, 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:

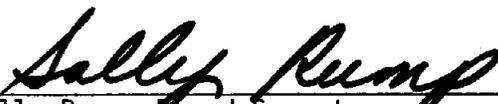
Proposal Number 1046-86 entitled, "Visibility Reduction as Related to Aerosol Constituents," submitted by the Air and Industrial Hygiene Laboratory, California Department of Health Services, for a total amount not to exceed \$170,284;

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 1046-86 entitled, "Visibility Reduction as Related to Aerosol Constituents," submitted by the Air and Industrial Hygiene Laboratory, California Department of Health Services, for a total amount not to exceed \$170,284,

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 \$170,284.

I certify that the above is a true and correct copy of Resolution 81-62 as adopted by the Air Resources Board.

  
Sally Rump, Board Secretary

State of California  
AIR RESOURCES BOARD

ITEM NO: 81-22-2b.1  
DATE: October 22, 1981

ITEM: Research Proposal No. 1046-86 entitled "Visibility Reduction as Related to Aerosol Constituents".

RECOMMENDATION: Adopt Resolution 81-62 approving Proposal No. 1046-86 for funding in an amount not to exceed \$170,284.

SUMMARY: Visibility reduction caused by air pollution, in addition to being an aesthetic blight, is linked to acid precipitation and possible adverse health effects, and it may result in significant economic losses either direct or indirect. California experiences both the best and poorest visibility conditions in the country, and a recent ARB sponsored study has shown that the poor visibility conditions result largely from poor air quality rather than being purely a meteorological phenomenon.

Several recent studies have attempted to relate air quality measurements to light extinction. However, recent research has shown that measurements of particulate nitrate and sulfate are prone to errors because of artifact loss and/or formation of sulfates and nitrates on filter surfaces. The Air and Industrial Hygiene Laboratory has just completed two successful research projects for the Air Resources Board that are helping to identify and to minimize artifact occurrence in sulfate and nitrate particle analysis.

Only recently have atmospheric researchers begun to understand the importance of carbonaceous particulate matter in visibility reduction. Primary carbon particulate emissions will increase drastically as dieselization of the light duty motor vehicle fleet occurs. Also, the role of water vapor and its effect on light scattering by particles has been confounded by possible sampling artifacts, and as a result, it is not yet well understood.

The objectives of this one-year study are to: 1) determine the relationship between visibility reduction and aerosol and gas concentrations under minimum artifact sampling conditions, 2) determine the total light extinction caused by scattering and absorption of light in the Bay Area and South Coast Air Basin,

3) measure the gaseous components which serve as precursors to visibility reducing particles, and 4) continue field measurements which will contribute to our ability to reduce sampling errors still further.

The proposed objectives will be accomplished through laboratory development of measurement techniques, field measurements at three urban sites for six days, and sample analysis. Interlaboratory comparison work as well as replicate analysis will determine the precision and accuracy of the measurement techniques employed in this study.

This study will provide valuable information on the relative roles of sulfate, nitrate and carbonaceous particles in visibility degradation in the state of California. The proposed work will also increase our understanding of the occurrence of artifact sampling problems and the importance of atmospheric water vapor in visibility reduction.

This information will assist the Board in developing strategies to protect against visibility degradation in California caused by excessive atmospheric concentrations of aerosol particles.

State of California  
AIR RESOURCES BOARD

Resolution 81-63

October 22, 1981

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 1045-85(R) entitled, "Health Effects in Children Exposed to Vinyl Chloride" has been submitted by Science Applications Inc., for an amount not to exceed \$110,788;

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

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

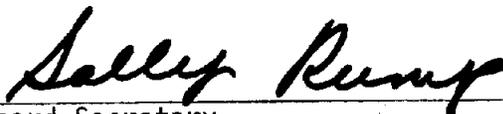
Proposal Number 1045-85(R) entitled, "Health Effects in Children Exposed to Vinyl Chloride", submitted by Science Application Inc., for an amount not to exceed \$110,788;

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 1045-85(R) entitled, "Health Effects in Children Exposed to Vinyl Chloride", submitted by Science Applications Inc., for an amount not to exceed \$110,788,

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 \$66,044.

I certify that the above is a true and correct copy of Resolution 81-63, as adopted by the Air Resources Board.

  
Board Secretary

State of California  
Air Resources Board

ITEM NO: 81-22-2b.2  
DATE: October 22, 1981

ITEM : Research Proposal No. 1045-85(R) entitled "Health Effects in Children Exposed to Vinyl Chloride".

RECOMMENDATION: Adopt Resolution 81-63 approving Research Proposal No 1045-85(R) for funding not to exceed \$110,788.

SUMMARY: Vinyl chloride monomer (VCM) and its polymeric derivatives have an important place in today's marketplace. Such diverse products as records, pipe, wrapping films and glazing materials are common examples of products fabricated from polyvinyl chloride (PVC). The production of such PVC products from VCM has until recently involved the release of large amounts of the monomer and possibly dimer and trimer to the atmosphere. These substances have been shown to include compounds that can cause cancer and other adverse effects in humans.

The State of California (ARB), the US EPA and OSHA have all acted to reduce human exposure from VCM processing and use. The ARB's regulatory activities were initiated in part, by community concern regarding the safety of children attending an elementary school in the Saugus area approximately 1000 feet downwind of a facility using large quantities of VCM. The EPA and, more recently, the South Coast AQMD have also been active at this facility, attempting to reduce plant emissions to acceptable levels.

The EPA initiated a pilot investigation of the health status of former students of the Saugus Elementary School. Students who had attended during the period of 1958 -1964 were thought most likely to exhibit the adverse long-term effects of previous exposures; thus, most efforts were centered on obtaining information on this cohort. Science Applications, Inc. was awarded the contract for the pilot study, which was recently completed.

Several interesting health observations, came out of the pilot study. The two most intriguing were: 1) the association of VCM exposure with major illness in children of exposed mothers as well as with adverse pregnancy outcomes and 2) the highly unexpected occurrence of 2 deaths from rare cancers and a death from a rare skin disease in the very small number of reported deaths among the exposed cohort.

Science Applications was to have completed an in-depth investigation of health outcomes following VCM exposure of this exposed cohort under EPA funding. The contract was awaiting final signature by the Administrator, but was disapproved at that point because of the recent Federal budget rescissions.

It is submitted to ARB in somewhat modified form. The objectives of the currently considered study are:

1. Establishing a subject registry that includes the name and current address of all exposed students. Contact will be made with all possible subjects.
2. Conducting a mortality study on the entire exposed cohort as well as a carefully constituted control.
3. Conducting an in-depth evaluation of pregnancy outcomes in the exposed female group. Extensive efforts will center on confirmation by the subjects' physicians of the reported adverse outcome. The proponents also intend to employ a better control cohort for comparison with the results obtained in the exposed women.

A fourth task was deleted due to budget limitations. This involved the surveying of current health status of the entire exposed and control cohorts.

The results of this study should help answer many questions about the health risks associated with the exposure of children to low levels of an identified carcinogen. Information derived may also be directly useful in regulating future sources of VCM.