State of California

AIR RESOURCES BOARD

Resolution 81-70

December 4, 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 1049-86 entitled "Direct Measurement of Nitrous Acid, Nitrogen Dioxide and Formaldehyde in Auto Exhaust by Differential Optical Absorption Spectroscopy", 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 1049-86 entitled "Direct Measurement of Nitrous Acid, Nitrogen Dioxide and Formaldehyde in Auto Exhaust by Differential Optical Absorption Spectroscopy" submitted by the University of California, Riverside for a total amount not to exceed $97,944;

NOW,THEREFORE, BE IT RESOLVED, that the Air Resources Board under the powers and authority granted by the Health and Safety Code, Section 39705, hereby accepts the recommendation of the Research Screening Committee and approves the following proposal:

> Proposal Number 1049-86 entitled "Direct Measurement of Nitrous Dioxide and Formaldehyde in Auto Exhaust by Differential Optical Absorption Spectroscopy" submitted by the University of California, Riverside, for a total amount not to exceed $ 97,944;

BE IT FURTHER RESOLVED, that the Executive Officer shall initiate administrative procedures and shall execute all necessary documents and contracts for the research effort proposed in an amount not to exceed $97,944.

I hereby certify that the above is a true and correct copy of Resolution 81-70 as adopted by the Air Resources Board.

Sally Rump

Board Secretary

State of California
AIR RESOURCES BOARD

Item No.: 81-25-4b.2
Date: December 4, 1981

ITEM: Research Proposal No. 1049-86 entitled "Direct Measurement of Nitrous Acid, Nitrogen Dioxide and Formaldehyde in Auto Exhaust by Differential Optical Absorption Spectroscopy."

RECOMMENDATION: Adopt Resolution 81-70 approving Research Proposal 1049-86 for funding in an amount not to exceed $97,944.

SUMMARY: Formaldehyde (HCHO) and nitrous acid (HONO) are key compounds in initiating and sustaining the formation of photochemical smog. Because of the importance of the role of these compounds in smog formation, it is important that reliable data for the emissions of these compounds be obtained. Measurements performed during the first year of this study indicate that there were elevated levels of nitrous acid in the vicinity of freeways during the pre-dawn hours. It was not clear, however, whether the nitrous acid was being produced by freeway traffic or was being transported from upwind. Tests performed at the Board's Haagen-Smit Laboratory have shown nitrous acid in diluted auto exhaust taken from the CVS sampling trains. Additional testing is needed to determine whether this nitrous acid is actually present in auto exhaust or is formed by heterogeneous reaction on the surfaces inside the sampling system.

The objectives of this project will be: 1) to measure the nitrous acid in diluted auto exhaust in a way that is free from possible "artifact HONO" caused by reaction on the walls of the sampling train, and 2) to determine levels of nitrous acid upwind and downwind of a freeway as a function of wind speed and direction, traffic density, temperature and relative humidity. This study will provide critically needed information on the mean source strength of HONO from freeway traffic.