



PLANNED AIR POLLUTION RESEARCH

Fiscal Year 1998-1999

May 1998

Research Projects: Short Descriptions

(Click [here](#) or on any title below to read the full project descriptions.)

I. MOTOR VEHICLES AND FUELS

Mobile Sources

Recommended Projects:

[Analysis of Particulate Matter from Tire and Brake Wear of On-Road Vehicles](#)

To determine the gram-per-mile particle emission rate from tire and brake wear, the particle size distribution in these emissions, and the influence that different driving patterns may have on particulate emissions. (\$100,000)

[Exhaust Emission Testing of Diesel-Powered Off-Road Equipment](#)

To test various in-use diesel-powered off-road engines for exhaust emissions, including HC, CO, NO_x, total PM, PM10, and PM2.5 using a transient test cycle. (\$220,000)

[Development of an Analytical Test System for Heavy-Duty Diesel Vehicle Inspection and Maintenance](#)

To develop an acceleration simulation mode-like dynamometer test for heavy-duty diesel vehicles that causes the vehicle engine to work and includes the adaptation of instruments that are capable of real-time measurement of PM and NO_x emissions. The test should be capable of being implemented using a portable chassis dynamometer. (\$350,000)

[Physical and Chemical Characterization of Size-Segregated Particulate Matter Emissions from Gasoline- and Diesel-Powered On-Road Motor Vehicles](#)

To develop appropriate methods for sampling the entire size domain of gasoline- and diesel-fueled vehicle PM exhaust emissions under conditions that are representative of those that PM exhaust emissions experience in the atmosphere. If test procedures can be readily developed, a small fleet of gasoline- and diesel-powered vehicles would be tested using these new methods to obtain emission data from different classes of on-road motor vehicles. (\$325,000)

[Demonstration of High Power \(Level 3\) Electric Vehicle Charging](#)

To demonstrate level 3 charging stations. The project would demonstrate safety, reliability, and other factors necessary for the commercial introduction of the technology. (\$150,000)

[Development of Software for the Analysis of Spatially and Temporally Resolved Motor Vehicle Activity Data](#)

To develop software for the automation of current methods of Global Positioning System/Geographic Information System analysis used to generate spatially and temporally resolved motor vehicle activity data. (\$100,000)

Projects Recommended if Funding Available:

Determination of Nonregistration Rate of On-Road Vehicles in California

To determine the non-registration rate of the passenger fleet for each county and for the state overall; to assess the impact that these vehicles may have on the emissions inventory; and to determine the reasons for non-registration. (\$300,000)

II. TOXIC AIR CONTAMINANTS

Toxic Air Contaminants

Recommended Projects:

Development of the Risk Assessment Module of the Hot Spots Integrated Computer Program

To develop a user-friendly Windows 95-based risk assessment module to use with the existing Hot Spots Integrated Computer Program, thus completing the program. (\$100,000)

Examination of Alternative Technologies for Wood Furniture Stripping Operations; Characterization of Methylene Chloride Uses in California

To assess the emissions of methylene chloride from methylene-chloride-based furniture stripping operations and alternative stripping formulations or control technologies. (\$150,000)

Near-Source Exposure to Crystalline Silica and Fine Mineral Fibers in California

To determine near-source exposure to crystalline silica and fine mineral fibers (including fiber size) throughout the state. (\$125,000)

Projects Recommended if Funding Available:

Validation of Toxic Air Contaminant Concentrations Estimated from Air Dispersion Modeling for Distances Less than 100 Meters from the Source

To produce a valid air dispersion model for pollutant concentrations between the source and 100 meters. (150,000)

III. CALIFORNIA CLEAN AIR ACT

Stationary Sources

Recommended Projects:

Investigation of Low-Reactivity Solvents for Use in Consumer Products

To identify and evaluate the effectiveness of a wide variety of solvents for use in reformulated consumer products. To compile information about a diverse set of physical properties for those solvents, including photochemical reactivity, efficacy, and potential for use in reformulations, so that Board staff can develop better regulations and manufacturers can make more intelligent reformulation choices. (\$80,000)

[Demonstration of the High Volume Collection System \(HVCS\) for Direct Measurement of Mass Emission Rates of Hydrocarbon Leaks](#)

To establish the HVCS as an acceptable method for measuring mass emission rates of hydrocarbon leaks in the petroleum industry. (\$100,000)

[Measurements of Ammonia Flux to Estimate Emission Factors for Stationary Sources](#)

To estimate the ammonia emission factors for a variety of area sources using a fabric denuder recently developed at the Center for Environmental Research and Technology at the University of California, Riverside. This approach would allow short-term sample collection periods for the measurement of ammonia flux using passive flux samplers. (\$50,000)

Regional Air Quality

Recommended Projects:

[Chemistry of Primary and Secondary Organic Aerosols](#)

To develop or improve methods capable of identifying and quantifying ambient air organic aerosol compounds. (\$300,000)

[Development of Reactivity Scales via 3-D Grid Modeling of California Ozone Episodes](#)

To conduct state-of-the-science 3-D grid modeling of several California ozone episodes. From each modeling case, develop a unique set of maximum incremental reactivity factors. (\$150,000)

Projects Recommended if Funding Available:

[Improving Air Quality Forecasts](#)

To improve existing 1-hour daily maximum ozone and 24-hour average PM10 prediction techniques, to develop 8-hour ozone and PM2.5 prediction techniques in response to the new U.S. EPA standards, and to develop prediction tracking systems for these techniques. (\$110,000)

[Improvements to SAQM](#)

To modularize the code of the SAQM program so that the improvements can be used in a single simulation; to parallelize the code to increase its computational efficiency and to extend its applicability to the regional scale, and to document the code to meet regulatory model requirements. (\$300,000)

[Development of a Meteorological Database to Support Multi-Faceted Research](#)

To create a standard database containing a comprehensive array of high quality meteorological data for the South Coast Air Basin from all routinely available sources for 1986-1997. (\$100,000)

[Determination of Chemically Speciated Source Profiles Using Induction-Coupled Plasma Mass Spectrometry \(ICPMS\)](#)

To develop, apply, and evaluate ICPMS as a technique for providing chemical speciation data to distinguish among different particulate matter sources. Unique and consistent patterns of chemical abundance for PM10 and PM2.5 source material determined with these methodologies would allow fugitive dust sources to be differentiated from each other. (\$125,000)

IV. AIR QUALITY STANDARDS

Health Effects

Recommended Projects:[Health Effects Studies Using a Transportable Particle Concentrator](#)

To establish and operate a transportable concentrator facility to define the health effects of California particulate matter exposures in human volunteers and animals. (\$500,000)

[Particulate Air Pollution and Morbidity from Cardiovascular and Respiratory Causes](#)

To evaluate physiologic changes resulting from short-term and long-term exposures to particulate matter, alone and in combination with other criteria air pollutants, and to define the host characteristics that might be contributing to, or be predictive of, those changes and development/progression of cardiovascular disease in an elderly cohort. (\$100,000)

[About the Research Program](#)[Full Descriptions of the Research Projects](#)

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