

**State of California
AIR RESOURCES BOARD**

**Research Screening Committee Meeting
AGENDA**

**Cal/EPA Headquarters Building
1001 I Street
Conference Room 550
Sacramento, California 95814
(916) 445-0753**

**April 29, 2005
9:00 a.m.**

ADVANCE AGENDA

Responses to Requests for Proposals:

1. "Characterization of Off-Road Equipment Population"
 - a) Sonoma Technology, Inc.
\$249,796, Proposal No. 2583-248
 - b) Eastern Research Group, Inc.
\$299,984.94, Proposal No. 2584-248

The project will provide a basis for an improved and updated inventory of emissions from off-road equipment in California. The inventory will be a tool for the development of emission standards for new equipment.

By surveys, the contractor will obtain and analyze data on the types, numbers, and uses of equipment. By outfitting equipment with data loggers or by surveys, the contractor will obtain data on the diurnal and longer-term patterns of use of equipment. Most of the information to be obtained will pertain to equipment that uses engines of less than 175 horsepower.

Two proposals were received in response to the RFP. They have been evaluated by the secondary method of evaluation (in which the scoring considers the relative strengths of the proposals and the relative amounts of the bids). One proposal has been judged to be not completely responsive to the RFP. The other proposal is satisfactory.

Contract Augmentation

2. "A Study to Quantify Health Benefits of Incremental Improvements in Air Quality, University of California, Berkeley, \$143,974.76, Proposal No. 2586-248

For more than 25 years, the Air Resources Board (ARB) has been promulgating ambient air quality standards at levels which are protective of human health. The

standards are based in part on epidemiological and toxicological evidence demonstrating that ambient air pollution is significantly associated with serious adverse health effects. The ARB and air pollution control districts have been implementing aggressive control measures to reduce emissions of pollutants to reach the goal of clean, healthy air established by the standards. These efforts have contributed to significant reductions in ambient air pollution that would be expected to significantly reduce occurrences of adverse health effects. A wide range of evidence suggests that these expectations of health benefits are plausible, and the economic values of these expected benefits are predicted to be large.

However, long-term health data from a large population exposed to decreasing levels of air pollution have not previously been analyzed to determine whether measurable improvements in the population's health can be quantified. Air pollution in the South Coast Air Basin (SoCAB) has decreased significantly since 1980. The original study was a pilot project (Contract 01-346) for methodology development to investigate trends in the occurrence of some major respiratory and cardiovascular health endpoints in the SoCAB since 1980 and determine whether or not these trends can be related to the improvements in air quality. To this end, the investigators: 1) assembled and integrated the required exposure, demographic and health outcome data for years 1980-2000; 2) established spatial units within the South Coast Air Basin (SoCAB); 3) established metrics for air pollutants and meteorological variables that are relevant for the health analyses; 4) produced descriptive data on spatial and temporal changes in patterns of ambient air pollution, population demographic and the distribution of potential confounders; and 5) began to apply statistical methods for causal inference to determine if there are unconfounded, causal relationships between decreases in the levels of individual and specific groups of diseases that have been repeatedly associated with ambient levels of air pollution. The investigators developed analysis techniques that would account for changes in a large number of socioeconomic, behavioral, and medical factors associated with cardiovascular and respiratory health. To summarize, the pilot study was successful in producing useful data sets and developing analysis techniques for establishing causal relationships between reducing air pollution levels and health benefits. The data collection, theoretical development, and programming of the analysis techniques required more time than originally anticipated. Hence, the investigators were able to demonstrate the usefulness of the methodology for one health endpoint and one air pollutant only.

For this augmentation, the investigators will apply the methodology that they had developed to more pollutants. Specifically, they plan to update the databases to year 2003, complete the additional theoretical and programming work, and fully apply the analysis techniques to evaluate long-term effects of reductions in various air pollutants on health. The project would also estimate the economic value of those improvements in health which are shown to be related to the improvements in air quality. The project's quantification of the health and economic benefits of decreased air pollution in a large population would significantly add to the ARB's knowledge about the benefits of improving air quality in a region that has historically been exposed to high levels of pollution.

Final Report

3. "Oxygenated Organics in Gas and Fine Particle Diesel Emissions for Source Apportionment", University of California, Davis, \$249,999, Contract No. 00-318

Accurate measurements of ambient diesel particulate matter (DPM) are needed to assess exposure levels and to track impacts of new emission standards. At present, source apportionment using organic tracers provides the best tool for characterizing diesel and other important sources to ambient PM. One of the greatest challenges in apportioning diesel contributions to ambient PM is differentiation of DPM from PM emitted by gasoline vehicles. This project sought to address the problem by measuring oxygenated compounds (and PAHs) in both diesel and gasoline vehicle fine PM emissions for use as possible tracer species. Emission rates for over 80 compounds (carbonyls, organic acids, PAHs) were characterized – many for the first time. Although the project did not reveal a compound unique to diesel or gasoline vehicle PM that could serve as a suitable source apportionment tracer, it greatly improved and extended the knowledge of oxygenated organic compounds that may be used in conjunction with other species to form source profiles for use in apportionment modeling.

Other Business

4. Responses to RSC comments on a proposal titled "Assess the Health Impacts of Particulate Matter From Indoor Sources", University of California, Davis
5. "Evaluation of Portable Emissions Measurement Systems That Could Be Used to Implement the Not-To-Exceed Regulation for Heavy-Duty Diesel Engines", University of California, Riverside, \$400,000, Contract No. 03-345
6. "Draft Planned Air Pollution Research, Fiscal Year 2005-06"

The Board conducts a research program to support clean air programs in accordance with the California Health and Safety Code. The Board's research program investigates the causes and effects of, and solutions to, the air pollution problems in California. Each year research ideas are solicited from the public and are evaluated for possible inclusion into the Board's Research Plan. The Research Screening Committee (RSC) has reviewed the research ideas and their comments have been forwarded to the Executive Research Review Committee for their use in developing the Planned Air Pollution Research for Fiscal Year 2005/2006. The final selection of ideas will be presented to the RSC for their approval. The Plan will be presented to the Board in July 2005.