UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 21 1999

THE ADMINISTRATOR

Dr. Joe L. Mauderly
Chair, Clean Air Scientific Advisory Committee,
Science Advisory Board
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Dr. Mauderly:

Thank you for your letter of January 28, 1999 and the associated report produced by the Clean Air Scientific Advisory Committee (CASAC) Technical Subcommittee on Fine Particle Monitoring. Your conscientious review of the Environmental Protection Agency's (EPA) fine particulate monitoring program will greatly assist us in our efforts to deploy a monitoring network that meets environmental protection and research objectives. The EPA staff responses to the recommendations and comments made in the Subcommittee report are included as an enclosure to this letter.

We greatly appreciate the CASAC's role in facilitating and providing coordination with the National Research Council Committee on Research Priorities for Airborne Particulate Matter and the Subcommittee's efforts to provide the January review report. The recommendations and issues identified in the report are constructive and, as you will see in the enclosure, we are taking steps to incorporate these recommendations into the program. We are looking forward to your continued advice and to communicating with you on the fine particulate matter measurement program.

Sincerely,

Carol M. Browner

Carol M. Browner

Enclosure

cc: Deputy Administrator
Assistant Administrator, OAR
Assistant Administrator, ORD
Regional Administrators, Regions I-X
CASAC Technical Subcommittee on Fine Particle Monitoring

Enclosure

EPA Staff Response to the Clean Air Scientific Advisory Committee Advisory on the $PM_{2.5}$ Monitoring Program dated January 28, 1999

a) Role of the Subcommittee.

The EPA welcomes the bridging role that the Clean Air Scientific Advisory Committee (CASAC) performs with the National Research Council (NRC) Committee on Research Priorities for Airborne Particulate Matter, and views CASAC as our principal review body for the monitoring program. We agree strongly with the need for coordination across the major network components: (1) mass, (2) speciation, and (3) supersites. All program components benefit from enhanced coordination. The underlying design of the entire monitoring program assumes multi-directional feedback and communication across elements for its ultimate success. An example of this is the horizontal spatial richness provided by the speciation and mass components in combination with a smaller number of supersite locations with more intensive sampling and analysis. The transition of current research-grade measurement approaches to regulatory networks is an important supersites objective and it is being incorporated in the active planning for the initial Fresno and Atlanta supersites.

To improve overall coordination, we have relied heavily on overlapping group and committee representation with our partners in the States, Federal agencies, and the scientific community. Examples include the existing State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officers Monitoring Committee and the related Standing Air Monitoring Work Group which includes representatives from the EPA program and research offices, and State and local agencies that are engaged in overview and operational activities for all network program elements. Similarly, the combination of the speciation work group (EPA and State and local agency representatives) and the expert speciation panel (academic and private sector representatives) melds those active in all aspects of the monitoring program. We will continue to foster associations that will enhance coordination across network components.

The Subcommittee report suggests that the purview of the Supersites Coordination Committee be expanded to include: (1) mass, (2) speciation, and (3) supersites activities. We accept that suggestion. Our intention for that Committee has been to include representation from health effects and exposure, atmospheric sciences and regulatory disciplines. This vehicle would enable officials from EPA and State and local agencies responsible for deploying the mass and speciation networks to interact closely with those whose principal activity may be deployment of supersites, or related field research programs. The Supersites Coordination Committee is an excellent vehicle for providing coordination across the monitoring program, within practical constraints, regarding the operational aspects of how these groups interact. Dr. Dan Greenbaum of the Health Effects Institute (HEI) and Dr. Dan Albritton of the National Oceanic and Atmospheric Administration have agreed to co-chair this Committee utilizing existing infrastructure from the NARSTO (the North American public-private partnership focused on

ozone and particulate matter research) and the HEI organizations with support from EPA. We will keep you apprised of the specifics regarding this Committee's activities, recognizing that the primary charge of the CASAC Technical Subcommittee on Fine Particle Monitoring involves review of the speciation and supersites components of the network. The EPA appreciates the important linkages across the network elements and will continue to foster their coordination.

b) Responses to Specific Questions.

Speciation Network. The CASAC Subcommittee report expressed concern about the lack of additional field testing of speciation samplers, especially during summer conditions, and the lack of evaluation criteria for selecting a national trends sampler. We agree with the need for continued sampler evaluation and are taking the following steps:

1. We will gradually phase in the 54 speciation trend sites from late summer 1999 to April 2000 to allow more time for sampler evaluation and to uncover unforeseen logistical and operational issues prior to activating a complete network. As part of this phase-in, we are working with State and local agencies to participate in a broader sampler evaluation at ten locations that would extend the geographic and climatic challenges encountered in the first phase of the intercomparison. The implementation of the trends network will begin with the installation of ten trends sites which will include multiple speciation samplers to be operated at 1 in 3-day intervals from October 1999 through March 2000. Several of these initial ten sites will be located in northern tier areas to test the ability of the samplers to perform under extreme winter conditions, as well as to address their ability to collect samples for elemental and organic carbon analyses, at sites which will experience major $PM_{2.5}$ contributions from wood smoke.

2. Speciation sampler intercomparisons will be conducted during the Atlanta supersites study beginning in August 1999. This Atlanta study provides a unique opportunity to compare instrument performance across a large suite of applications and research oriented technologies. The timing will also allow for field testing of samplers in summer conditions.

With regard to the development of evaluation criteria for the selection of a specific speciation sampler for the trends network, we have considered several factors. These include:

1. The consistency of comparison between speciation mass and the federal reference method (FRM) mass under idealized conditions. We are comparing data between collocated FRM mass measurements and speciation sampler mass, under atmospheric conditions, during which volatile aerosol components represent an insignificant fraction of the total $PM_{2.5}$ mass. These comparisons are being made at locations where there is a large coarse mass (>2.5µm) component. The objective of these comparisons is to evaluate the speciation sampler cut point relative to the particle size separator (WINS impactor) performance under field conditions.

2. The precision of the speciation samplers to collect the specific target analytes. These determinations are being made through field measurements at sites which included collocated pairs of the speciation samplers and the FRM. The target analytes for comparison within the speciation samplers include: (1) sulfate, (2) nitrate, (3) carbon, and (4) a range of elements. The

environmental conditions for these sample collections are to include seasonal and regional influences that exhibit high volatile aerosol component characteristics including nitrates and organic carbon. The analytical methods are being performed using a defined set of laboratory standard operating procedures and a quality assurance program to insure controlled laboratory precision. All samples for comparison are being analyzed by a common laboratory. The collection efficiency of the sampler for the target analytes is being evaluated by a technical review of the scientific merit of the design approach.

3. Ease of operation in actual field conditions is being determined through an assessment of documentation collected during the field intercomparison studies. Studies are being conducted using field personnel of appropriate skill levels comparable with State and local agency network site operators and technical support services available from the sampler vendors.

4. Operation under extreme environmental conditions. These conditions include weather extremes (winter and summer), electrical power interruptions and instrument recovery, and precipitation (snow, ice, rain).

5. The samplers are being evaluated for their ability to incorporate advancements in sampling technology such as the inclusion of verified organic vapor denuders for organic aerosol collection and additional filter channels for enhanced measurements.

6. The samplers are being evaluated in terms of their initial and ongoing maintenance costs and availability. These costs include: (1) initial purchase, (2) set-up, and installation, (3) cost of accessories, and (4) costs to maintain and operate over the long-term. Also, to be noted are any extraordinary or atypical sampler-specific installation requirements for use at State and local agency monitoring stations.

Supersites. The EPA appreciates the advice provided by the National Academy of Sciences and the participants of the July 1998 Particulate Matter Measurements Workshop. Recommendations identified through this workshop have helped to shape the scope and logistics of the supersites program. We look forward to CASAC's continued review of this program and that is a critical link between emerging science and regulatory applications.

c) **Monitoring - Availability and Analyses of Data**.

Availability of data. The EPA appreciates the CASAC Subcommittee's concern regarding the availability of data and studies of the FRM sampling system, and comparisons to alternative methods. The EPA does plan to publish reports on these efforts in peer-reviewed journals, and to make this information available to the CASAC Subcommittee and to the monitoring community at large.

Utilization of data. The EPA appreciates and shares the concern expressed in the CASAC Subcommittee report on utilization and availability of the air quality data collected in the fine particulate monitoring program. We plan to keep the CASAC Subcommittee directly informed on our data analysis planning efforts and on analytical results as they become available.