

Summary of SAB Interim Review of PM Center Program (2002)

The following pages contain the letter to the EPA Administrator written by the PM Centers Interim Review Panel of the EPA's Science Advisory Board (SAB) following its review of the PM Research Centers program in 2002. The members of the review panel are listed below. Following this letter is a summary update of how NCER and the PM Research Centers program have responded to the recommendations of the 2002 SAB panel.

*The complete report from the SAB panel, titled **Interim Review of the Particulate Matter (PM) Research Centers of the USEPA: An EPA Science Advisory Board Report: A Review by the PM Research Centers Interim Review Panel of the Executive Committee of the US EPA Science Advisory Board (SAB)**, can be viewed at: <http://www.epa.gov/sab/pdf/ec02008.pdf>*

Review Panel Members:

CHAIR

Mr. Daniel Greenbaum, President, Health Effects Institute, Boston, MA

EC MEMBERS

** Dr. Philip Hopke, Bayard D. Clarkson Distinguished Professor, Department of Chemical Engineering, Clarkson University, Potsdam, NY

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Ms Betty Fortune, Office Assistant

Ms. Diana Pozun, Program Specialist

* Members of this SAB Panel consist of

a. SAB Members: Experts appointed by the Administrator to serve on one of the SAB Standing Committees.

b. SAB Consultants: Experts appointed by the SAB Staff Director to a one-year term to serve on ad hoc Panels formed to address a particular issue.

** Dr. Hopke participated in the public meeting of the Panel and contributed material to an early draft of this report. Subsequently, he became associated with the Rochester PM Research Center and resigned from the Panel. Dr. Hopke did not participate in the final deliberations of the Panel and is not a party to the Panel's final report.



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

May 24, 2002

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

EPA-SAB-EC-02-008

Honorable Christine Todd Whitman
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Subject: Interim Review of the Particulate Matter (PM) Research Centers: An SAB
Report

Dear Governor Whitman:

On February 11 and 12, 2002 the PM Centers Interim Review Panel (Panel) of the US EPA Science Advisory Board (SAB) met to review the Agency's PM Research Centers program as a mechanism for generating research results that can inform Agency decision-making. The request to provide this advice was received from the National Center for Environmental Research (NCER) in the Office of Research and Development (ORD).

In 1998 the NCER, under its Science to Achieve Results (STAR) Program, issued a competitive request for applications that resulted in the support of five PM Research Centers for up to five years, with a total of \$8M expended in the first year of the program. The Centers were to address research needs in the areas of exposure, dosimetry, extrapolation modeling, toxicology, and epidemiology.

As it considers budget formation for FY04 and beyond, NCER needs to decide whether or not to continue with the concept of PM Research Centers beyond the current funding cycle, or whether there might be a better way of generating the research results that will inform Agency decision-making on PM issues. Insufficient time has passed for the Centers – individually or collectively – to have generated a body of research results that could allow a definitive answer to this question based on “outputs”, *per se*. However, considerable experience has been gained with the Centers concept to date that can allow an assessment of the overall utility of this approach, if not of the individual Centers themselves.

This emphasis on the assessment of the concept of Centers-based research is reflected in the Charge to the Panel that consists of an overall question, plus six specific questions:

Overall Question:

Is it likely that the PM Centers program will be sufficiently successful to merit continuation in FY 2004 and beyond? In which areas, to what extent, and for what reasons is a PM Centers program beneficial? Where it is not, what improvements can be made?

Specific Questions:

1. Recognizing the PM Centers program is barely at its halfway point, what important research findings (or promising investigations) have been made that would not have occurred otherwise? What unique aspect(s) of a Centers program enabled such actions to be taken.
2. To what extent has the direction or focus of research shifted as a result of the multi-disciplinary interactions within the Center (i.e., findings in one department influence researchers in another to change direction or emphasis). To what extent have changes in research direction or emphasis been influenced by Science Advisory Committee reviews, interactions with other PM Centers, or interactions with the broader PM research community? Which factors have been most influential?
3. How successful are Centers in communicating their findings to the public and specifically, to those who directly use their research? Is it clear that the work has been supported by the PM Centers program?
4. How, if at all, does a PM research centers program facilitate agreement or consensus on protocols or procedures to enable more direct comparison of results among research institutions or centers?
5. How, if at all, does a PM research centers program leverage or maximize use of resources through sharing expensive equipment, samples, data, etc.?
6. How is the program perceived within and outside the research community? Does a research center have greater visibility, and if so, what is the impact?

Detailed answers to these questions are found in the body of the report. The thrust of the answers are captured in the following major findings and recommendations:

1. The PM Centers Program a) has produced benefits beyond those normally found in individual investigator-initiated grants and b) is likely to continue to provide such benefits throughout its current funding cycle. Overall, the Panel found that the program merits continuation beyond FY04 -- through a new, fully-competitive round of applications -- as one part of a diverse PM research portfolio at the Agency.
2. The Panel identified several specific advantages that the Centers approach offers over more traditional research mechanisms, including enhanced flexibility and adaptability leading to improved timeliness, ability to conduct higher-risk pilot and validation efforts, study designs enhanced by intra-Center multi-disciplinary integration, and improved leveraging of the Agency's and the Centers' research resources.

3. The Panel identified several ways in which a new round of Center grants could be enhanced, either by expanding upon activities already underway or by undertaking new efforts. Importantly, the Panel noted that while there are evident benefits of integration within and across Centers, there are also potential challenges to insure that the work of the Centers does not become isolated from that of other researchers within the Agency and in the academic community. Key enhancements include the following:
- a. Continued attention in a new request for applications (RFA) to focusing the Centers' efforts on the most critical PM needs, as determined at that time in reviews of research progress and needs by the National Research Council and US EPA
 - b. The development of an informal, but overarching, mechanism of scientific advice to the program
 - c. Enhanced opportunities for cross-fertilization of ideas with EPA's intramural researchers and the broader extramural community
 - d. Enhanced interaction between the research conducted at the Centers and ongoing intensive air quality monitoring efforts, such as those at the Agency's supersites and others
 - e. The provision of systems and resources from the start for inter-Center integration efforts.

We appreciate the opportunity to review and provide advice on the PM Research Centers program. We want to acknowledge the valuable assistance of the Agency staff who supplied us with information that is a part of the public record of our meeting. The documentation, presentations and availability of the Center Directors to answer questions during our public meeting were also very helpful.

We look forward to your response to this report.

Sincerely,

/ Signed /

Dr. William H. Glaze, Chair
EPA Science Advisory Board

/ Signed /

Mr. Daniel Greenbaum, Chair
PM Research Centers Interim Review Panel
EPA Science Advisory Board

EPA Update in Response to 2002 SAB Interim Review of the PM Research Centers

SAB Recommendation: Continued attention in a new request for applications (RFA) to focusing the Centers' efforts on the most critical PM needs, as determined at this time in reviews of the research progress and needs by the National Research Council and US EPA.

EPA Response: EPA followed this recommendation and funded the original centers for an additional year, awaiting the final report from the NRC to help guide the next PM Centers RFA. The writing team for the 2004 RFA consisted of EPA scientists, policy and regional staff to ensure highest priority research needs were included. The following excerpt from the "Specific Areas of Interest" section of the 2004 RFA demonstrates an example of the incorporation of the NRC recommendations (see Tab 4-O for full text of RFA).

"Cross-Cutting Theme: Linking Health Effect with PM from Sources and Components

"In its 1998 report, and reiterated in 2004, the NRC PM committee described a source-to-response framework. This framework continues to provide a useful structure for identifying and organizing the PM research priorities.

"This RFA relies on the source-to-response continuum as a cross-cutting theme to facilitate the integration of PM research proposals. EPA research continues to address the health effects of PM characteristics and constituents, but increasingly, key research questions are focusing on linking these PM attributes to source categories. Research is needed to understand relationships between PM components/attributes emitted from emission sources and the resulting ambient concentrations and human exposures. Research is also needed to understand the relative toxicity of different PM components/attributes, and to link these back to emission sources and exposures. Collectively, this information can help identify those sources and attributes of PM contributing to the most hazardous exposures.

"As emphasized by the NRC Committee in its final report, some progress has been made in identifying specific attributes or chemical components of PM, but there are still critical gaps in our understanding of the contribution of PM components (e.g., organic compounds) and attributes (e.g., different size fractions of PM) to the observed health effects associated with PM (NRC 2004)..."

SAB Recommendation: The development of an informal, overarching, mechanism of scientific advice to the program

EPA Response: EPA carefully considered this recommendation, but chose not to adopt it for the following reasons:

- a. The review structure of the centers program already benefits from having several of the same external scientists serve on multiple PM Center science advisory committees (SACs). In addition, each SAC has at least one member from another

PM center so that the discussion of related work at other centers and advice about overarching integration is already occurring.

- b. With five SAC meetings, a large PM center directors meeting, and typically one centers-related workshop each year, another level of advice and coordination did not seem warranted. In addition, the PM centers program falls under multiple reviews of EPA programs including the Board of Scientific Counselors (BOSC) Review of the ORD air program and the BOSC and NAS reviews of the STAR program.

SAB Recommendation: Enhanced opportunities for cross-fertilization of ideas with EPA's intramural researchers and the broader extramural community

EPA Response: EPA followed this recommendation and continues to do so. Descriptions of efforts to enhance cross-fertilization are described in the section of the notebook on PM Centers interactions and workshops. Examples include: bi-monthly work-in-progress presentations and discussions among the Centers and EPA; workshops of interest to the Centers, EPA and other investigators, special sessions at the annual Centers meeting with outside experts, and comparative studies that involve the Centers, EPA and other investigators.

SAB Recommendation: Enhanced interaction between the research conducted at the Centers and ongoing intensive air quality monitoring efforts, such as those at the Agency Supersites and others.

EPA Response: The second round of PM centers increased the links between the health and atmospheric science research communities. Each center now has leading experts in atmospheric science as an integral part of the team, and is taking advantage of the Speciation Trends Network where possible. Because of the end of the Supersite program, the PM centers cannot participate in on-going Supersite measurement. However, these research teams are leveraging the information learned and tools developed in the Supersite program.

SAB Recommendation: The provision of systems and resources from the start for inter-Center integration efforts.

EPA Response: EPA followed this recommendation, but we are currently investigating our options to go further. The requirements for this current round of Centers call for a centers integration committee. The Center Directors chose themselves to be on this committee and the group meets by teleconference bimonthly. In addition, each Center included additional resources in their administrative core to foster inter-center and EPA interaction through additional travel and participation in activities being conducted at other Centers. However, given the resources to accomplish the projects set out in each center's proposals, there has not been a lot of enthusiasm for developing new projects

that involve the collaboration of all of the centers. The current centers have participated in one collaborative project--- to do a comparison of analytic techniques--- and this is still underway. It is not clear if an RFA can require resources to be set aside for future inter-center research collaboration through a grant mechanism. However, EPA is currently investigating that option before the next RFA is developed.