

August 10, 1999

EPA-SAB-CASAC-LTR-99-004

Honorable Carol M. Browner
Administrator
U.S. Environmental Protection Agency
401 M Street SW
Washington, DC 20460

RE: CASAC Review of the Draft Document *Airborne Particulate Matter: Research Strategy (EPA/600/R-99/045)*

Dear Ms. Browner:

The Clean Air Scientific Advisory Committee (CASAC) of EPA's Science Advisory Board, supplemented by expert consultants (together referred to as the "Panel"), met on June 10, 1999 to review the May 1999 draft document, *Airborne Particulate Matter: Research Strategy (EPA/600/R-99/045)*, in a public meeting in Research Triangle Park, NC. This was the second draft of the particulate matter (PM) research strategy reviewed by CASAC. Comments resulting from the November 1996 review of the first draft were transmitted to the Administrator on March 12, 1997

1. SUMMARY

The Panel complimented the Agency staff (referred to as "Staff") for its effort in developing a revised document substantially different in scope and format than the previous draft, and one that clearly demonstrated intent to be responsive to both CASAC's previous comments and to the recommendations of the National Research Council (NRC) PM Research Committee (*Research Priorities for Airborne Particulate Matter - I - Immediate Priorities and a Long-Range Research Portfolio*, National Research Council, National Academy press, Washington, DC 1998, 195p).

The Panel recommends revising the introductory material substantially to focus on the need for the information to be developed by the PM research program, rather than on the mission, structure, and capabilities of the Office of Research and Development. Background information on the PM NAAQS and current uncertainties would provide a much more useful context for the following material, especially for the broad audience likely to be interested in the document.

The Panel agreed with the Agency's selection of key research topics, and noted its general consistency with recommendations of the NRC Committee. The Panel recommended strengthening the descriptions of relative priorities and the prioritization process. The strategy also needs strengthening in the areas of coordination with other PM research activities within and

outside the Agency, monitoring progress, communication, measuring success in meeting specific information needs, and human resources.

The Panel was unanimous in its opinion that, although the revised document was substantially improved from the last draft, it needs further revision and re-review by CASAC.

2. DETAILED FINDINGS

When queried at the end of the discussion of the document on June 10, Staff stated its view that the charge issues had been adequately addressed by the discussions and the Panel's comments. Accordingly, only selected summary responses to the charge are given here.

2.1 Research Directions

Review and comment on the research directions EPA has selected to focus on and the approaches EPA is planning to use to address those questions/issues.

The research directions are appropriate and are responsive to both CASAC comments on the first draft and to the recommendations of the NRC PM Research Committee. Several suggestions were offered by individual panelists regarding specific research needs and approaches, but the Panel developed no consensus views on research directions that conflict with the topics listed by the Agency. There was inadequate description of a strategy for coordinating the Agency's PM research program with those of other organizations.

2.2 Priorities

Comment and make recommendations regarding relative priorities for the various stated research topics.

The description of relative priorities among research topics and the process by which those priorities were developed and will be reviewed in the future needs improvement. The Panel did not attempt to develop a consensus ranking of priorities, and did not take strong exception to the relative priorities portrayed by the Agency. Rather, the Panel viewed the document's present description of priorities and the prioritization process as inadequate.

2.3 Effectiveness in conveying directions and anticipated results

Comment on the effectiveness of the document in conveying the strategic directions and anticipated results of the research program.

The effectiveness of the document is diminished by the overriding emphasis in the first two chapters on ORD organization, goals, and capabilities. The Panel considered this information, however accurate, to be of secondary importance to the document, and recommends that the introductory information focus instead on the genesis of the need for the research (i.e., Clean Air Act, NAAQS process, PM debate, and knowledge gaps). The document

contained little information directly addressing the nature and timing of the anticipated results, and how the results of this program and others will be synthesized to fill specific knowledge gaps and provide a scientific framework for NAAQS decisions. The description of the management strategy needs strengthening in the areas of prioritization, inter-program coordination, measures of success, and human resources. Thus, although the document effectively communicated key research topics, its effectiveness in describing a research and management strategy and placing them in context can be improved substantially.

3. COMMENTS BY CHAPTER

Only selected general points are summarized below; no attempt is made to recapitulate the Panelist's comments in their entirety. Numerous other points are raised and examples given in the comments of individual Panel members (Appendix A) and the transcript of oral comments during the June 10, 1999 meeting. The appended comments are considered an integral part of the Panel's report, and Staff is urged to review them in detail for a complete understanding of the points which should be given consideration.

3.1 Chapters 1: Vision and Goal, and 2: Overview of ORD

These two interrelated chapters were discussed together; thus, the following comments apply to the collective material contained in the two chapters.

The Panel recommends that the material in the first two chapters be merged into a single chapter aimed much more toward readers outside the "inner circle" of the Agency and its advisors. At present, the material is strongly oriented toward descriptions of the nature and mission of the Office of Research and Development (ORD), and promotion of ORD's intramural capabilities and efforts. The Panel does not argue with the facts presented, but it views as much more important for the present purpose to focus on the events and issues leading to the PM research program; i.e., on the need for the information that will result from the strategy described in subsequent chapters. For example, rather than focusing on ORD's vision and mission, it would be more appropriate to focus on the more specific mission of providing the new information required to adequately understand, and protect the public from, the health effects of airborne PM. The introductory material might appropriately include a brief summary of the history of the Clean Air Act and PM NAAQS, as related to their forming the basis for present PM research needs.

Internal Agency organization and capabilities are of secondary importance to the document, and most relevant to the management of the program and the conduct of the intramural research portion of the program. These issues would fit best into the present Chapter 4. If Staff desires to show organizational structure, interrelationships, and capabilities in detail, this material might best be included as an appendix.

Because the lack of ecological focus in the program may be taken as a deficiency in the strategy, it is important to clearly note in the first chapter where the ecological research needs are being addressed in other programs.

3.2.2 Chapter 3: Research Directions

In general, the research directions presented in this chapter are appropriate, and are responsive to both CASAC's comments on the first draft and the recommendations of the NRC Particulate Matter Research Committee.

Some, if not most, of the background information given at the beginning of this chapter would be more appropriately covered in the revised first chapter. Background information in this chapter should focus on how specific elements, or requirements, of the NAAQS drive selection of research topics.

The numerous references to the accomplishments of the ORD intramural program, however legitimate the claims, do not add value to the description of research topics and priorities that is needed in this chapter. They detract by appearing self-promoting and out of place.

The chapter does not adequately portray the priorities of the research topics, or how prioritization is accomplished. The issue of prioritization is relevant to both the research topics and effort allocation presented in Chapter 3 and to the management of the program presented in Chapter 4, and must be addressed in both chapters. Several comments on relative priorities among research topics and on specific research approaches were offered by individual panelists, as recorded in both the written comments and transcript. Although these suggestions should be considered, the Panel did not attempt to review priorities methodically, or to develop consensus views.

In the same vein, listing of the funding for FY-1998-1999, and proposed FY-2000 for each research topic, and inclusion of summary funding information in Figure 3.1 should be considered. If the width of the topical "boxes" in the figure is the only portrayal of the relative and absolute funding levels, that should be made more explicit in the labeling and figure legend. In addition, the title of Figure 3.1 is inaccurate; the topics shown extend beyond those recommended by the NRC Committee.

The chapter does not adequately portray the relationship between the EPA PM research program and PM research sponsored by other organizations. Even if the Agency intends for its program to encompass all of the topics described, it needs to be clear that the program is not intended to "cover all the bases" in all topics. The NRC Committee's recommendations described research needs without regard to the division of effort among the several programs underway in the U.S. and elsewhere. To comprise a credible research strategy, the Agency's efforts, and allocations of effort among topics, need to be placed in context within the broader perspective.

3.2.3 Chapter 4: Program Management

The program management strategy should more explicitly address two important issues raised above in regard to Chapter 3: prioritization, and relationships to the research programs of other organizations. To manage the program well, both issues will require continued attention, and a management approach that lets the strategy evolve as the programs of the Agency and other organizations progress and interim information is developed.

The interaction between the ORD research program and the Agency's OAQPS monitoring program is a special case of the need for coordination between programs. If a significant goal of the monitoring program is to facilitate or inform the research effort, it needs to be an integral part of the research planning process. Coordination of priorities and activities between ORD and OAR is another example.

Both coordination with other organizations and communication with other stakeholders, such as Congress, industry, and the public, will require a communication strategy for the program. The *Communications* Section on page 44 lists general communication pathways, but does not describe a communication strategy sufficiently focused on the needs of this program.

The section on *Measures of Success* presents several general performance indicators and assessment processes, but does not adequately describe a strategy for determining the success of the PM research program in filling specific NAAQS-related knowledge gaps in an efficient and timely manner. A strategy is needed for assessing the productivity of the program in reducing key uncertainties.

The section on *Monitoring Research Progress* does not mention any role for the NRC PM Research Committee. If, as the Panel understands, the NRC Committee is intended to have a continuing role in monitoring progress, it should be acknowledged and incorporated into the Agency's strategy.

The management strategy does not adequately address the issue of human resources. An appropriate strategy might deal with the need to ensure succession of program management over several years, might incorporate graduate and postdoctoral training programs and incentives, and might describe a process by which human resource needs will be reviewed and addressed.

3.2.4 Chapter 5: Summary

This chapter consists of two paragraphs that add little value to the document. The "chapter" does not integrate the foregoing information in a substantive manner. The Panel offered no specific comments on this material. Staff should revisit the need for, and best use of, this chapter once the preceding chapters have been revised.

4. CONCLUSIONS

The Panel was unanimous in its opinion that, although the revised document was substantially improved from the last draft, it needs further revision and re-review by CASAC.

We appreciate the opportunity to review this draft document and to provide comments and advice to the Agency. We look forward to your response.

Sincerely,

Dr. Joe L. Mauderly, Chair
Clean Air Scientific Advisory Committee

**U.S. Environmental Protection Agency
Science Advisory Board
Clean Air Scientific Advisory Committee (CASAC)
Particulate Matter Research Review Panel**

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