

July 29, 1999

EPA-SAB-EEC-99-COM-004

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

RE: Commentary on the Need for Research on Risk Reduction Options for
Particulate Matter 2.5 (PM_{2.5})

Dear Ms. Browner:

The Science Advisory Board recommends that research on options for reducing risks from Particulate Matter 2.5 (PM_{2.5}) be conducted in parallel with research on the relationship of PM_{2.5} to health effects. The strategic exploration of potential PM_{2.5} risk reduction options will ensure that information is available to address both primary and secondary particulate matter standards in a timely manner.

In 1997, the Environmental Protection Agency (EPA) retained its regulatory position on PM₁₀ and initiated action on PM_{2.5}, recognizing both the differences between the two size fractions and studies showing an association between PM_{2.5} and health effects. EPA has begun a major research program on PM_{2.5}, guided by input from the National Research Council. The Board applauds EPA's emphasis on gathering critical scientific information to better characterize the nature and extent of the risks involved, including the potential causative agents, and their primary and secondary sources.

At the same time, even a simple value-of-information analysis would indicate that early exploration of potential risk reduction options associated with PM_{2.5} would have significant benefit because this research is likely to decrease the time required to reduce the risks once they are more fully understood. The Board acknowledges that the Agency has initiated source control research and encourages it to expand the scope to include a wider range of options. Early research into reducing PM_{2.5} may have benefits in addition to reducing risks to human health. Such research will generate important data for visibility programs, for example, and provide information relevant to the control of ecological risks resulting from PM_{2.5}. Even a modest investment in examining potential risk reduction options could decrease the time required to take action.

Planning for risk reduction research should consider both a number of hypotheses about the sources of risk and a variety of options for intervention. Chapter 4 of the SAB's soon-to-be-released Integrated Risk Project report discusses a wide range of possible risk reduction options including control technology, pollution prevention, and market incentives. Research on a limited

number of promising options will improve the scientific basis for regulatory decision making and associated technical support programs.

The following research themes are examples of those that could be considered:

- a) Approaches that enhance and explore technologies which capture particles and which can capture both primary particles and secondary particulate matter precursors.
- b) Development of source-specific "chemical fingerprints" to better understand contributions of specific sources to atmospheric concentrations of $PM_{2.5}$.
- c) The linkage between source processes (e.g., combustion conditions, secondary $PM_{2.5}$ formation) and composition of $PM_{2.5}$.

Waiting for complete definitive information before expanding the risk reduction research program will lengthen the time before test results and evaluations of various risk reduction options are available. The time needed to test and evaluate a risk reduction option depends upon the nature of the option, the opportunities for testing it, and the quality & quantity of the data needed for decision-making. For some options, such as those involving technology development and/or adaptation, the time between the decision to evaluate and the availability of the results may be measured in years. During this time, people will continue to be at risk.

When the results of the health research are available, we may learn that not all the risk reduction research was germane to the reduction of health risks. However, it is more likely that some, even a good deal, of that research will result in the substantial reduction of risks sooner, rather than later. Furthermore, all of the risk reduction research is likely to be relevant to comprehensive fine particle control strategy decision-making because health effects are not the only problem associated with fine particles. There are other regulatory considerations and programs, such as the regional haze program, and the secondary $PM_{2.5}$ standard. Therefore, the risk reduction research results are likely to serve a variety of regulatory programs.

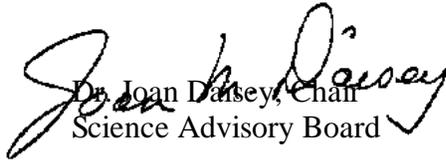
In developing this commentary, we have drawn upon the Committee's early work, the expertise and experience of its members, interactions with key individuals, both inside and outside of the Agency, and briefings and discussion at several public meetings. Relevant Committee reports include reviews of the National Risk Management Research Laboratory (SAB 1997a), Technology Innovation Program (SAB 1995a), and verification programs (SAB 1995b, 1995c, and 1997b). The EEC members' experience with control technology is reflected in their service on National Research Council committees as well as on advisory boards of other organizations that deal with control technology issues.

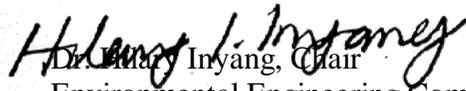
As to the future, we plan to enter discussions with the ORD Board of Scientific Counselors (BOSC) to see how we might be of assistance as they initiate a study of the way in which the Agency is carrying out the research plan on particulate matter. Further, we would be

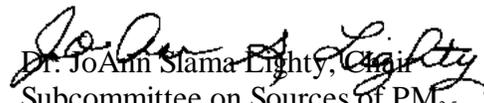
happy to meet with appropriate Agency personnel to discuss how these ideas might be carried out and look forward to continued participation in the Clean Air Scientific Advisory Committee's Technical Subcommittee for Fine Particle Monitoring.

We look forward to your reaction to this commentary.

Sincerely,


Dr. Joan Daisey, Chair
Science Advisory Board


Dr. Hwang I. Inyang, Chair
Environmental Engineering Committee
Science Advisory Board


Dr. JoAnn Slama Lighty, Chair
Subcommittee on Sources of PM_{2.5}
Environmental Engineering Committee

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Environmental Engineering Committee (FY99)**

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REFERENCES

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- SAB. 1995b. *Environmental Technology Innovation and Commercialization Enhancement Program* EPA-SAB-EEC-95-016, Environmental Engineering Committee, Science Advisory Board, U.S. Environmental Protection Agency, Washington, DC.
- SAB. 1995c. *Verification of Innovative Continuous Air Emission Monitors* EPA-SAB-EEC-95-018, Environmental Engineering Committee, Science Advisory Board, U.S. Environmental Protection Agency, Washington, DC.
- SAB. 1997a. *Superfund Innovative Technology Evaluation Program*, EPA-SAB-EEC-97-005, Environmental Engineering Committee, Science Advisory Board, U.S. Environmental Protection Agency, Washington, DC.
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