

September 29, 1995

EPA-SAB-EEC-COM-95-005

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

SUBJECT: Commentary on Appropriateness of SAB Reviews of  
Computer Environmental Transport and Fate Models  
Developed for Regulatory Decisionmaking

Dear Ms. Browner:

The Environmental Engineering Committee (EEC) of the Science Advisory Board (SAB) presents this Commentary in order to clarify its role as peer reviewer of new and modified computer models developed by the Agency. Specifically, the EEC plans to focus on the peer review of the following:

- a) Substantially new models;
- b) Technically significant advances/adaptations of existing models;
- c) Novel and/or controversial applications of existing models; and
- d) Situations in which applications of models could have significant impact on major regulatory decisions.

The Committee will work with the Agency to identify those fundamental models and model developments that should receive close scrutiny by the SAB. At the same time, an even larger number of more evolutionary developments will be identified for review by alternative peer review mechanisms. This type of distinction--with the SAB maintaining a "right of first refusal"--was first envisioned in the Board's favorable 1993 review of the Agency's proposed model review process (EPA-SAB-EEC-LTR-93-008, July 1993).

The Environmental Engineering Committee has nearly a decade of experience in reviewing computer transport and fate models for the Agency. This Commentary is a result of that experience, including deliberations and discussions associated with the EEC's most recent report: *Review of EPA's Composite Model for Leachate Migration, Including Transformation Products* (EPA-SAB-EEC-95-010, August 1995).

In sum, the EEC continues to believe that mathematical models are important tools for incorporating scientific understanding of environmental processes into regulatory decisionmaking.

The EEC has rendered model-specific advice on several different computer transport and fate models. In addition, the Committee has offered generic advice (e.g., the Board's very first commentary--EPA-SAB-EEC-89-012) on how the Agency could organize itself to review models--and improvements in models--in a more systematic manner. Recently, the Committee favorably reviewed the Agency's generic approach for conducting peer review of such models (EPA-SAB-EEC-LTR-93-008), which includes reviewing the mathematical equations, verification processes, and real-world applications of models for regulatory decisions. In an associated action, the Agency has moved forward with the implementation of the Agency's Peer Review Policy for all major scientific and technical workproducts (issued in July, 1994), including computer models.

In light of these developments and the increasing number of alterations in and applications of existing models, the EEC perceives its future institutional role as focusing on the peer review of the following:

- a) Substantially new models.
- b) Technically significant advances/adaptations of existing models.
- c) Novel and/or controversial applications of existing models.
- d) Situations in which applications of models could have significant impact on major regulatory decisions.

Other matters related to models are likely to be more incremental and evolutionary in nature and should be reviewed through other mechanisms described in the Peer Review Policy.

For the next several months, the Committee would like to work with the Agency in making these distinctions. Such an exercise would enable the SAB and the Agency to generate a common understanding of the types of issues that should come to the Board and those that should be handled by some other mechanism.

In addition, the Committee would like to be kept informed of--and, as warranted, provide advice on--the process and progress of the alternative peer review mechanisms established for models.

In short, the EEC compliments the Agency on the steps it has taken to respond to recommendations concerning peer review of computer environmental transport and fate models used in regulatory decisionmaking. The Committee will work with the Agency to exercise those new mechanisms, while focusing EEC involvement on the

most significant issues. At the same time, the EEC has a continuing commitment to insuring that there is adequate and appropriate peer review of major changes/ applications of such models.

The Committee looks forward to working with the Agency on these issues and to your reaction to the projected future role of EEC in peer review of computer models.

Sincerely,



Dr. Genevieve M. Matanoski, Chair  
Executive Committee  
Science Advisory Board



Dr. Ishwar P. Murarka, Chair  
Environmental Engineering  
Committee