

**Summary Minutes of the Science Advisory Board Meeting
Washington Terrace Hotel, 1515 Rhode Island Ave., NW
Washington, DC 20005
November 30, 2004**

Board Members: See Roster –Attachment A.

Date and Time: November 30, 2004, 1:00 pm – 5:00 p.m. (See Attachment B for the Federal Register notice for the meeting)

Location: Washington Terrace Hotel, 1515 Rhode Island Ave., NW, Washington, DC, 20005.

Purpose: The purpose of this meeting was to permit the Board to discuss, with EPA, their science and research programs that are currently ongoing in support of EPA’s mission as described in its strategic plan.

Attendees:

1. Board Members Attending in Person	2. Board Members Attending by Telephone	3. Other from the SAB, CASAC, or Council
Granger Morgan, Chair James Bus Trudy Cameron Virginia Dale Ken Dickson Myrick Freeman William Glaze Rogene Henderson Phil Hopke James Johnson Roger Kasperson Cathy Kling George Lambert Jill Lipoti Mike McFarland Genevieve Matanoski Granger Morgan Rebecca Parkin Joan Rose Kristin Shrader-Frechette Deb Swackhamer Tom Theis Robert Twiss	Greg Biddinger Larry Goulder Robert Stavins Rhodes Trussell Terry Young Lauren Zeise	Giles Bussod Barry Dellinger Taylor Eighmy Mort Lippmann Jim Oris John Smith Viney Aneja Michael Kleinman Reid Lifset Gary King Stanley Grant Brian Dodd

See Sign in Sheets for Agency and Public attendees. (Attachment C)

Meeting Summary

The discussion generally followed the issues and general timing as presented in the meeting Agenda (Attachment D). Attachment B contains the *Federal Register* notice for the meeting and the sign-in sheets for meeting attendees.

1. Introductory Remarks and Welcome

Mr. Thomas Miller, Designated Federal Officer (DFO) for the Board opened the meeting and noted that this SAB meeting complied with the Federal Advisory Committee Act, and other relevant statutory requirements. Mr. Miller thanked the Board and Agency participants for their attendance.

Dr. Vanessa Vu also welcomed the members and noted the importance of the topics to be discussed. She thanked Dr. Glaze, Past Chair for his service to the Board over the preceding four years as Chair.

Dr. Morgan, Chairman of the Board, welcomed the members and asked them to introduce themselves (see above for a list of attendees introducing themselves). Dr. Morgan introduced Dr. Paul Gilman, Assistant Administrator for Research and Development and Science Advisor to the Administrator, and noted that this was his last visit to the Board as AA. Dr. Morgan thanked Dr. Gilman for his efforts to sustain science at EPA and to move it forward. Dr. Glaze also extended the thanks of the SAB noting that Dr. Gilman was the “model of a public servant” and that he had served the nation with distinction. He noted that Dr. Gilman had made a difference in the science at EPA by putting his experience and perspective to use in identifying critically important programs for the future. He noted that he had also established wide relations with other agencies and elevated the role of science at EPA.

Dr. Gilman thanked Dr. Glaze for his service as Chair of the SAB and welcomed Dr. Morgan as the new Chair. He thanked the SAB for its insight in “breaking the code” and revealing that there is science and research throughout EPA’s Program and Regional Offices, as well as within the Office of Research and Development. He also thanked the Board for recognizing the importance of EPA’s Regional science. Dr. Gilman noted his hope that the Board understands its importance to EPA and stated that the first topic on the day’s agenda, an informational briefing on the Program Assessment Rating Tool (PART), underscored the value of the SAB in evaluating programs and outcomes for EPA. Program management and evaluation, as in PART, is very important and the SAB’s insights here are important to EPA. Dr. Gilman stated that EPA is turning increasingly to its advisors to help evaluate the always hard to identify program outcomes.

Dr. Genevieve Matanoski, Chair of the Board’s Panel that is conducting the advisory on EPA’s science and research programs and budgets then made her opening remarks on

the activity. She noted her opinion that this advisory was the most important of the strategic activities of the SAB. It is the one time Congress demands we talk to them.

Dr. Matanoski stated that the Board has been developing a new mechanism for conducting its advisory on EPA's science and research program and budgets that does not require a short turn around on the whole program over a two week period. She noted that the past practice was to have EPA present a series of presentations about each office's programs within each Goal. Unfortunately, these presentations were often too focused and did not help the Board understand the actual science and research programs themselves, thus compounding the limitations placed on the Board by the short time frame. Also noted that there is much negotiation between those who do the science and research planning and budgeting for EPA and the government at its larger level that is not available to the SAB directly. The evolving process adopted by the Board and EPA requires that Members learn more about "program pieces" and engage in their broadest thinking about how the program pieces fit into the bigger Agency picture and mission.

Dr. Matanoski asked that in the Goal Team Breakout sessions that Members think about the science and research programs within the goal area based on the information we had available for last year (and up until now) and to decide what additional information is needed to enable Teams to move forward in preparing for the FY 2006 budget evaluation. Staff will then work with Teams and EPA to obtain that additional information. Dr. Matanoski reminded Members that the Board's role is to focus on the science and to advise on that. We can help if we do our part well.

Members were interested in knowing if we were still working to get earlier involvement in the agency's science and research planning efforts as discussed last year. Dr. Matanoski stated that we have not moved forward on this yet, but that SAB Staff will be asked to work on this early involvement issue for the Board and let us know how it might be done. She also noted that even in our standard approach to evaluating the budget, our advice works its way into EPA's future planning efforts for science.

Members were interested in how the FY 2005 appropriation looks for EPA science. Mr. Cantor of EPA stated that EPA fared reasonably well but that there were cuts and that ORD will get some of the cuts itself. He noted that the appropriation is now public information.

2. Informational Briefing on EPA's Use of the Program Assessment Rating Tool.

Mr. Howard Cantor briefed the Board on EPA's enhancements in the use of the Program Assessment Rating Tool (PART) in evaluating its science and research programs. He first described the tool itself and then ORD's systematic approach to using the tool. See Attachment E for presentation materials.

a. The Tool:

The Office of Management and Budget's (OMB) PART, evaluates program effectiveness in four areas: 1) Program purpose/design, 2) Strategic planning, 3) Management, and 4) Results. PART has 30 questions and a "Measures Tab." The "Results" section is weighted to be 50% of the total score and scores in the "Strategic Planning" and "Results" sections are primarily based on the quality of the goals and measures provided in the "Measures Tab." There is a separate PART format for "research and development." OMB itself uses the PART information provided by EPA to develop a numerical score and rating for the program. Ratings include: 1) "Effective," 2) "Moderately Effective," 3) "Adequate," 4) "Results not Demonstrated," and 5) "Ineffective." Mr. Cantor noted that a "Results not Demonstrated" rating is not based on a numerical score, rather, it is a reflection that OMB and the Agency do not agree on the "Measures" or the "data" supporting "Measures" used by the Agency.

Mr. Cantor showed a slide that demonstrated how information required by OMB's PART tool correlates with the EPA ORD "Program Design and Logic" model. An important point is that both the ORD model and the PART require linking of "Strategic Planning" and "Program Results." He noted the difficulty in demonstrating outcomes from research and that OMB requires "independent expert evaluations of adequate scope" to address how program results meet the OMB "Research and Development Investment Criteria."

Mr. Cantor noted that OMB's PART guidance for "Research and Development" requires establishment of:

- 1) "Long-term Goals" (2-3 per program that are easily understood, expressed as specific outcomes, that meaningfully reflect the program's purpose, that can be accomplished in a 5-10 year timeframe, and that influence the related GPRA strategic goal or objective to which the program contributes;
- 2) "Outcomes" (the intended results of the research program which consider events and conditions external to research programs, and which are of direct importance to the specific clients/goals/missions, and have a public benefit),
- 3) "Outputs" -- products resulting from the research activities (e.g., knowledge, tools, technologies) that are transferred to clients; and
- 4) "Performance Goals" (measurable objectives that represent a target level of performance for the program which include a "Measure" to gauge performance, a "baseline" against which program performance is measured, and a "time frame" which specifies the years in which the measure will be achieved).

"Performance goals and measures" must focus on progress to achieve outcomes and capture the most important aspects of a program's mission and priorities. Performance goals and measures for research may serve to answer priority scientific questions (e.g., reduce uncertainty linked to specific outcomes). Mr. Cantor noted that progress to achieve performance goals and measures for basic research programs, or for research programs that integrate basic and applied research, may be verified by independent expert panels through qualitative evaluation.

Mr. Cantor noted that OMB guidance has specific questions for “research and development” that reflect “Research & Development Investment Criteria” that have been developed by the Office of Science and Technology Policy and OMB. These criteria include:

- 1) **“Relevance”** (the purpose of the research program must be clear; it must respond to specific existing environmental problems relevant to EPA’s mission/national priorities, and primary clients; the program must demonstrate an outcome-oriented design; the benefits are unique or extend beyond similar government or private sector contributions; program coordination is effective in minimizing or avoiding duplication; and there are a small number of performance goals focused on scientific progress to answer key questions - or reduce uncertainty – linked to the program’s outcomes).
- 2) **“Quality”** (programs must maximize the quality of the research they invest in— there must be merit-based procedures to ensure the program’s scientific quality and leadership and the program compares favorably to similar programs; if the program allocates funds extramurally it should ensure merit-based competition, relevance to program objectives, and independent review by subject matter experts; and if the program allocates funds non-competitively that appropriate merit-based procedures are used); and
- 3) **“Performance”** Programs must identify relevant inputs to ensure that implementation actually results in the intended research activities and outputs (programs must define appropriate output and outcome measures/schedules/decision points; define what would be a minimally effective and successful program --for some basic research programs, qualitative outcome measures are acceptable --; the program must demonstrate that it meets performance goals; and the program must obtain client feedback and demonstrate that progress is being made to achieve outcomes).

b. The ORD Approach:

Mr. Cantor stated that for the FY 2005 budget, ORD received ratings of “Results not Demonstrated” in three of its programs, particulate matter research, pollution prevention research, and ecosystems protection research. These will be re-evaluated and re-submitted with the FY 2007 request. For FY 2006 the endocrine disruptors research program is being evaluated jointly by ORD and OPPTS. The agency is discussing the programs that are to be evaluated for FY 2007 with OMB.

EPA ORD has discussed PART with EPA’s Chief Financial Officer, the Inspector General and OMB and is now developing a systematic approach to design, organize and evaluate outcome-oriented research at the program level. It will train its staff to use this approach. Overall, the approach 1) uses an integrated risk assessment framework to synthesize available environmental problem-specific information; 2) identifies knowledge gaps/uncertainties linked to agency decisions and strategic goals; 3) uses key research questions to organize the research program and develop knowledge/tools to inform agency decisions; 4) develops multi-year plans to describe research program

designs (including how clients apply research knowledge and tools); 5) engages independent expert panels to apply the “R&D criteria” to evaluate programs (progress in answering research questions, research contributions to outcomes/long-term goals, and plans to address emerging scientific issues and environmental problems); and 5) synthesizes and evaluates advances in research knowledge.

ORD “defines Long-term Goals” for research by describing how specific clients apply research to strengthen their decisions/actions (outcomes). In essence, they help customers understand the relevance of the science so they can use it appropriately in their decision making.

ORD “defines Performance Goals” that 1) answer key research questions, develop knowledge/tools that inform decisions, and enable clients to apply a strong scientific foundation for decision making. This shifts the focus of performance goals from research activities and outputs to research progress and outcomes. It significantly strengthens ORD’s ability to demonstrate results.

ORD’s approach reflects a strong commitment to independent expert evaluation of research at the program level. This helps ORD respond to multiple internal and external needs. It will help establish “best practices” in federal research program design, management, and evaluation. Much of this independent evaluation is being done by ORD’s Board of Scientific Counselors (BOSC).

Mr. Cantor noted that more information on OMB’s PART and the R&D Investment Criteria can be found on the OMB website – PART guidance for the FY06 budget -- (www.omb.gov/part) and in a Government Accountability Office report (GAO-04-174) at www.gao.gov.

Board Members made the following comments on and asked the following questions of Mr. Cantor.

- 1) How does the agency demonstrate results in long term research programs? It is possible to do research and learn of things that actually increases scientific uncertainty. Does OMB understand this? Maybe the statement should be “better understand” instead of decrease uncertainty.
- 2) The Strategic Plan is not well suited to demonstrate links between program goals and long term research goals.
- 3) What weight do the external reviews of EPA programs get? The STAR was given a strong external review last year but it did not seem to faire well in the budget. Mr. Cantor explained that some reviews, such as the ecosystems program under STAR did not do well, but that OMB’s rationale was that the full program should be reviewed, not just the STAR portion. Thus their rating. They considered the review mentioned to be only a partial review.

- 4) Is there risk involved in combining into a whole program review excellent work that is being done by one mechanism (internal or external to EPA) along with lesser quality work that is being done by another mechanism (either internal or external)?
- 5) Provide an example of disagreements leading to a “Results not Demonstrated” rating. Dr. Farland stated that in the Particulate Matter research program, the long term goals (LTGs) and the annual performance goals (APGs) were considered not to be measurable by OMB. ORD is working to revise the LTGs and APGs. In doing so, ORD is using National Research Council (NRC) comments that are now available on program progress which was not available during the PART review of PM research.
- 6) How does EPA justify some research that might precede an identified mission need? Dr. Farland noted that EPA has a broad mission to protect human health and the environment and justifying basic research in such a mission is not so difficult. ORD’s research portfolio routinely includes about a 60% basic research and 40% problem driven research.
- 7) Is there a double standard in demonstrating results between EPA and NSF, for instance? Mr. Cantor noted that there is and that is because EPA ORD research responds to EPA’s mission of protecting human health and the environment. The NSF mission is more general and should be evaluated differently. EPA work has to relate to the EPA mission. Dr. Farland noted that NSF uses a “Committee of Visitors” to look at their programs. EPA is considering whether such an approach could be useful to it as well.
- 8) Members wondered if a research program’s unanticipated results were considered in evaluations of the program. Mr. Cantor noted the difficulty in doing this but acknowledged that some unanticipated results were quite important.
- 9) Members noted that EPA historically supported “exploratory research”. They wondered whether the emphasis on outcomes is moving EPA away from this type of research. Mr. Cantor noted that this was not the case and that EPA responds to reporting on such exploratory programs by using different measures.

3. Break-out Sessions:

Members then moved to break-out sessions to discuss science and research programs with EPA representatives. Discussions were informed by Goal-specific information summarized in Attachment F. The results of those individual Team discussions are contained in Attachment G.

4. Next Steps

Members reconvened. Teams were asked to provide information on issues with cross-goal implications that would need input from other Teams. Goal Teams 4 and 5 had no requests.

Goal Team 1 identified 3 issues: 1) they would like to have information on actual resource levels for programs to supplement the budget proposal numbers that they routinely receive; 2) they still have some concerns with PART scoring; and 3) whether research resource allocations were the results of mandates or whether there is an ability to shift resources to issues that might be evaluated as having a “higher social value.”

Goal Team 2 noted some intersections with Goal 4 in the area of sensitive populations, human capital, and the level of “programs” that we should focus upon in our evaluations.

Goal Team 3 noted that Homeland Security, Industrial Ecology and Benefit-Cost Analysis for Brownfields have cross-goal implications. He also noted the continuing need for social science research and behavioral change research if EPA is to attain its goal (articulated on page 60 of the EPA Strategic Plan) of moving from a waste-oriented towards a life-cycle way of thinking about waste.

The Cross-Goal Team noted a number of needs or issues for other Teams. These include: 1) notes on the multi-media/cross-media implications of other goal areas – re there gaps that other Teams see? 2) Regional skill needs; 3) emerging issues; 4) needs for behavioral and decision sciences research; 5) science infrastructure needs (tools, models – especially on outcomes); 6) large scale issues that are best evaluated at a “regional” scale instead of piecemeal; and 7) any PART-friendly tools/models that might be available.

Tom Miller provided a tentative schedule of next steps activity reflected in the table below.

DATE	ACTIVITY	TYPE TASK
12-4-2004	Team DFOs summarize break-out sessions and identify action items, information needs, and additional meeting needs.	Information gathering on existing EPA science and research programs
12-7-2004	Integrate Team summaries and suggest an action plan for December 2004 through January 2005	Information gathering on existing EPA science and research programs
12-8-2004	SAB Team Leaders, Panel Chair, Board Chair, SAB Staff discuss continuing activity needs	Information gathering on existing EPA science and research programs
12-9-2004	SAB Staff releases action plan to Teams for implementation.	Information gathering on existing EPA science and research programs
	Follow-up activities continue	Information gathering on existing

12-10-2004 to 1-30-2005	between SAB Goal-specific Teams and Agency staff on existing science and research programs.	EPA science and research programs
2-1 to 2-16-2005	Evaluate FY 2006 Program proposals in budget vs. existing programs	Evaluation of FY 2006 science and research programs and budgets
2-17 to 2-18, 2005	Board face-to-face meeting on FY 2006 budget	Evaluation of FY 2006 science and research programs and budgets
3-2005	Develop Report to Administrator and Testimony to Congress	Report on FY 2006 program and budget proposals

ACTION ITEMS:

Develop action plan for December 2004 – March, 2005 – SAB Staff

Teams continue to interact with EPA representatives on program learning

Staff work with EPA to determine the type of early involvement in science and research planning that might be open to Board observation or participation.

The meeting was adjourned at 5:00 pm.

Respectfully Submitted:

Certified as True:

/ Signed /

/ Signed /

Thomas O. Miller
Designated Federal Officer

Dr. M. Granger Morgan
Chair, EPA Science Advisory Board

ATTACHMENTS

- Attachment A: Board Roster
- Attachment B: Federal Register Notice
- Attachment C: Sign-in Sheets
- Attachment D: Meeting Agenda
- Attachment E: Presentation materials on the Program Assessment Rating Tool
- Attachment F: Team Synopses for November 30, 2004
- Attachment G: Team Breakout Session Noves for November 30, 2004
- Attachment H: Bibliography of Materials