

**Summary Minutes of the United States Environmental Protection Agency (U.S. EPA)  
Science Advisory Board (SAB) Meeting  
March 22-23, 2011**

**Date and Time:** March 22, 2011, 1:00 p.m. to 5:30 p.m.; March 23, 2011, 8:300 a.m. - 12:00 p.m. Eastern Time

**Location:** The Umstead Hotel, Cary, North Carolina

**Purpose:** To consider a draft report commenting on the President's requested FY 2012 budget for research and to discuss SAB plans to provide advice on ORD strategic research directions.

**Members of the Chartered SAB:**

SAB Members

Dr. Deborah Swackhamer	Dr. Cecil Lue-Hing
Dr. Claudia Benitez-Nelson (by phone, 3/22/2011 only)	Dr. L.D. McMullen
Dr. Ingrid Burke	Dr. Judith Meyer
Dr. Terry Daniel	Dr. James Mihelcic
Dr. George Daston (3/22/11 only)	Dr. Christine Moe (by phone)
Dr. Costel Denson	Dr. Keith H. Moo-Young
Dr. Otto Doering	Dr. Eileen Murphy (by phone)
Dr. David Dzombak (by phone)	Dr. Duncan Patten
Dr. Elaine Faustman	Dr. Stephen Roberts
Dr. Jeffrey Griffiths	Dr. Amanda Rodewald
Dr. Bernd Kahn	Dr. James Sanders
Dr. Agnes Kane	Dr. Jerald Schnoor
Dr. Nancy Kim (by phone)	Dr. Kathleen Segerson (3/22/11 only)
Dr. Madhu Khanna	Dr. Barton (Buzz) Thompson (by phone)
Dr. Kai Lee (by phone)	Dr. Paige Tolbert (by phone)
	Dr. John Vena
	Dr. Roberts Watts

**Liaisons to the SAB**

Dr. James Johnson  
Dr. Kenneth Olden  
Dr. Martin Philbert

**EPA presenters and representatives**

Dr. Kevin Teichman, Deputy Assistant Administrator for Science, Office of Research and Development (ORD)  
Dr. Peter Preuss, Chief Innovation Officer, ORD

## **SAB Staff Office Participants**

Dr. Angela Nugent, Designated Federal Officer (DFO)

Dr. Vanessa Vu, Director

## **Meeting Summary March 22-23 2011:**

The meeting was announced in the Federal Register<sup>1</sup> and discussion at the meeting generally followed the issues and timing as presented in the agenda.<sup>2</sup> There were no oral public comments and one set of written public comments provided to the chartered SAB.

### **Convene the meeting and welcome from the SAB Staff Office Director**

Dr. Angela Nugent, SAB DFO, convened the advisory meeting and welcomed the group of SAB members and liaisons.<sup>3</sup> She noted that two sets of written public comments<sup>4 5</sup> had been received and that there had been no requests for oral public comment. Dr. Vanessa Vu, SAB Staff Office Director, expressed appreciation for members' preparations for the meeting.

### **Goals and agenda for the meeting**

Dr. Deborah Swackhamer, the SAB Chair, welcomed the group, identified the two major topics for discussion during the public meeting, and thanked the SAB Research Budget Work Group for preparing a draft report on the President's requested FY 2012 budget for ORD for the chartered Board's consideration.

### **Discussion of draft report from the SAB Research Budget Work Group - Introduction discussion**

Dr. Jerald Schnoor, Chair, SAB Research Budget Work Group, provided a brief introduction to the Work Group's activities. He noted that SAB Chair had developed written testimony for the House Committee on Space, Science and Technology<sup>6</sup> after the SAB Research Budget Work Group held a public meeting on March 3-4, 2011 and received briefings from ORD management and interim National Program Directors. The Work Group considered five questions, developed by the Work Group chair in collaboration with the DFO and the Chair of the chartered SAB, for each of ORD's six program areas to structure the meeting.

1. How well will the requested budget permit EPA to advance its strategic research directions and meet EPA priorities?
2. Are the changes since the FY 2010 enacted budget and EPA's research budget trends appropriate, taking into consideration overall resources, FTEs, intramural and extramural resources?
3. Are there well defined objectives/work products for next year's budget? Can these be accomplished with the given resources?
4. Are there pivotal, "game changing" investments that can advance the science?
5. Are there investments that will serve multiple program or multiple priority needs?

Dr. Schnoor noted that the key question, overall, was "how well will the requested budget permit ORD to support its strategic directions." Other panel members suggested that the general

answer was “given the current budget reality,” the requested budget was acceptable, but that 1) there was insufficient detailed information provided to evaluate the budget fully as it related to FY 2012 planned activities; 2) there was insufficient money requested to advance strategic directions related to climate change, and 3) the SAB enthusiastically supported ORD’s strategic directions.

Several chartered SAB members stated that the draft report should be revised to state these major conclusions more clearly in the letter to the Administrator and the introduction to the report. They also offered the following preliminary suggestions for revisions relating to the Executive Summary and section 2.1 of the draft report:

- Emphasize benefits from clean air, especially the 30 to 1 benefit to cost ratio
- Improve the consistency between the Executive Summary and the body of the report, especially related to climate, behavioral research, economic returns from environmental protection
- Communicate more clearly that there are insufficient funds to pursue the research directions of ORD
- The draft Executive Summary is large factual; it needs to emphasize the most significant conclusions
- The draft Executive Summary should be renamed and reframed as the overarching/general conclusion section.

### **Air/Climate/Energy Research**

SAB members identified the following ways section 2 of the draft report should be revised:

- Section 2.1, emphasize benefits from clean air, especially the 30 to 1 benefit to cost ratio
- Move the first sentence of section 2.2 to 2.1
- Increase emphasis on research related to climate change
- Section 2.5, either find a better example of a model project for the Air, Climate, and Energy research area than the cook stove project or better explain the significance of the cook stove project for environmental protection, especially in the United States
- Emphasize the importance of research on both adaptation and mitigation
- Clarify how reduced funding for State Implementation Plan Development only slowed down the program and did not “zero it out.”

### **Safe and Sustainable Water Resources**

SAB members identified the following ways section 3 of the draft report should be revised:

- Text should be revised to call on ORD to provide a clearer definition of green water infrastructure.

- ORD should detail investments in distribution systems relevant to everyday contamination by pathogens. Such investments can have benefits for multiple programs, e.g., sustainable communities and homeland security.
- Add another “classic success story” to the Administrator’s letter, page 2: decline in reported waterborne disease outbreaks, maintained by CDC and EPA together.
- Add the nexus of water/energy/climate to the discussion on page 3, line 6.
- Change language, “This is too narrow,” and instead note that “this is narrow but a good starting point given limited resources for contamination of surface waters.”
- Clarify that wastewater is a resource for water, waste and energy.
- Note at the beginning of the water section that EPA has control over only a small part of federal water quality and note the importance, and also the limits of, section 319 for controlling nonpoint source pollution
- Page 5, l 16-17. Note that the budget focuses on drinking water contamination but the public and industry are concerned with other environmental issues related to water. Note that there are “inter-sectoral” aspects of water-related environmental issues not addressed by the current budget, which is grossly inadequate
- Page 3, top of page 4, discuss how the institutional change in EPA’s budget creates synergies that can make EPA’s water research program more cost-effective
- Remove specific language about the type of hydraulic fracturing research that is needed but still emphasize that budget is inadequate. Emphasize that new case studies require more funding. Emphasize that epidemiology research funding is cut in the Sustainable and Healthy Communities section and that study of possible human health effects requires more resources for case studies in Safe and Sustainable water Research
- Move much of the text in section 3.5 related to strategic issues (e.g., water-climate connections and water-health issues) to section 3.1. Section 3.5 should relate to synergies across research program. Synergies to emphasize include Sustainable and Healthy Communities and Homeland security.

## **Sustainable and Healthy Communities**

SAB members identified the following ways section 4 of the draft report should be revised:

- Include text to caution ORD to develop ways to more effectively communicate the translation from old programs to new programs. SAB should include text to protect and encourage ORD’s new direction
- Include some discussion of the importance of strategic research to study the interconnections between human health and ecology. Breaking down the dualism between ecosystem health and human health is important for ORD to communicate
- Include language about the need for social science research and lack of adequate budget for this purpose

- State more clearly that the budget for ecological resources is inadequate. EPA’s Ecological Processes and Effects Committee viewed the ecosystem services research program as transformative and transdisciplinary. Budget cuts will affect the progress made in this program.
- Johnson, page 1, line 42 – underline word “toward”
- Clarify that EPA’s intramural capacity for conducting epidemiological studies has been severely cut, not its entire epidemiology budget. EPA’s grants program conducts epidemiological studies; (e.g., in the Air, Climate, and Energy Program) EPA’s intramural program cannot effectively do it. ORD can identify funding for ecological research for FY 2012
- Highlight in the Executive Summary and letter the severe cut to the ecological research program, which took a 10% cut, as compared to a 3% overall cut to ORD
- Add a paragraph about the STAR grants program
- Elevate discussion of the fellowship program to the Executive Summary

### **Chemical Safety for Sustainability**

SAB members identified the following ways section 5 of the draft report should be revised:

- Emphasize the importance of a proactive initiative to integrate computational toxicology into Human Health Risk Assessment
- Highlight past SAB advice that is addressed in this new area
- Consider whether this research area and the Human Health Research area truly support sustainability – or whether it relates more to the risk assessment paradigm. Consider how to reconcile language in the executive summary about EPA’s new sustainability focus with these research areas.
- Change language, page 11, lines 7 and 8 so this research area is not singled out as the area with the most “game-changing” potential
- Edit page 11, line 38 to refer to “science and development.” Include language, such as “NIH and other federal programs participate in public-private partnerships to...”
- Add a call for more resources; currently planned allocation will be inadequate to address current environmental impacts.
- Move some of the text from sections 5.4 and 5.5 to 5.1

### **Human Health Risk Assessment**

SAB members identified the following ways section 6 of the draft report should be revised:

- Emphasize lack of resources to realize the potential for transdisciplinary thinking, using outputs from the CSS program.

### **Homeland Security Research**

SAB member identified the following ways section 5 of the draft report should be revised:

- Remove text from section 7.5 that addresses strategic directions, rather than budget because the text is more appropriate for the SAB's strategic directions report
- Clarify the specific areas where research cuts will have major impacts, such as in Homeland Security technologies for detecting pathogens in water, microbial risk assessment methods
- Update references to resilience on page 15 and 16 to include references to Japan and Australia\
- Revise the language in section 7.2, page 14 to indicate that the requested budget is not sufficient to support critical research needs.

### **Economics and Decision Science**

SAB member identified the following ways section 5 of the draft report should be revised:

- Answer question in section 8.4 directly: there are pivotal “game-changing investments” that can be made, but the budget is too small
- Page 18 mention the usefulness of social science to climate change mitigation
- Page 18, line 11, remove first clause regarding expansion of ORD's mandate
- Page 18, reduce section 8.6 to two sentences and plan to use text for the SAB's report on strategic research directions.

### **Board actions and next steps**

Dr. Swackhamer asked SAB members to send comments to the DFO by March 30, 2011. She asked for a motion for the disposition of the report, A Board member moved that the draft report be approved subject to changes suggested in members' written and oral comments and re-review by the SAB Chair. The motion was seconded. Dr. Swackhamer asked for a voice vote to approve the motion. There was universal approval with no abstentions.

The public meeting recessed at 6:00 p.m.

### **Friday, March 23, 2011**

The Designated Federal Officer reconvened the public meeting at 9:00 a.m.

### **Implementation of ORD “Path Forward” and ORD Innovation – Presentations and Discussion**

Dr. Kevin Teichman, Deputy Assistant Administrator for Science, ORD, provided a presentation<sup>7</sup> describing the implementation of the “Path Forward” memorandum from Dr. Paul Anastas, and Dr. Peter Preuss, ORD Chief Innovation Officer, discussed ORD's Innovation efforts.<sup>8</sup>

SAB members then engaged Drs. Teichman and Preuss in conversation. They discussed the following topics:

- ORD is conducting conversations with regions and program within each of the research areas to formulate key problems and identify priority research needs
- ORD management is also encouraging ORD National Program Directors to break down barriers impeding collaboration and synergy across research areas, especially in the areas of energy, biofuels, and hydraulic fracturing
- ORD is only considering limited efforts to include economics considerations to encourage innovation to promote environmental protection.
  - ORD had developed a Technology Innovation Cluster in Cincinnati with universities and industries to promote water filtration technologies.
  - ORD is planning a meeting with venture capitalists to try to understand kinds of things that might be of interest to them in terms of new technologies and approaches.
  - Dr. Paul Anastas has challenged EPA's Science and Technology Policy Council to develop framework for technological innovation, to identify opportunities for technological innovation to work with outside groups.
- ORD has strengthened the role of NPDs in ORD's personnel assignments as part of ORD's efforts to restructure its research programs
  - ORD has developed a "balance matrix" that identifies "what must be done by when and why." The NPDs are responsible for the matrix. Laboratory and Center Directors decide "who" in the laboratories or centers will be responsible. NPDs and the Laboratory and Center Directors collaborate on plans that must be clear to communicate to regions and partners. It is a more balanced structure than used previously.
- ORD is considering making use of "open source innovation" to respond to region and program needs for addressing short-term research issues
- ORD is working to reduce bureaucratic interference with Pathfinder Innovation Projects (PIP) awardees and to find innovative ways to transfer results of these projects to users. Often policy innovations that take advantage of emerging science results is the "hardest nut to crack"
- ORD is looking to incorporate ORD's innovation effort into the Science to Achieve Results (STAR) program. Extramural grants will include criteria for innovation and sustainability in solicitations
- ORD is developing a communications strategy for the innovation efforts. ORD has provided PIP awardees with digital cameras and asked them to record what they're doing.
- National Program Directors have included discussions of innovation in major meetings with regions and programs.
- ORD will need to development measurements of success. Although it is easy to focus on anecdotes, it will be important to identify metrics. Successes might be measurable in terms of high-risk projects attempted and perhaps not in terms of narrow goals. One metric of success might be to build a culture where innovative thinking will be part of everyone's thinking.
- For ORD's research programs more generally, the SAB spoke of the need for increased coordination across case studies being developed in each of the four major research areas

- Dr. Paul Anastas is identifying ways to institutionalize innovation as part of ORD's culture. He is charging career managers with responsibility to continue innovation efforts; has developed the "balance matrix" with shared responsibilities by NPDs and Laboratory and Center Directors, and has moved personnel to advance these goals
- ORD is looking for ways to communicate the results of STAR grants so that they can be utilized by EPA programs. OAR's success using the results of research by Dr. Arden Pope is a prime example of how STAR research can be used for the benefit of the agency.
- No PIP research was funded in the area of social, behavioral, and decision sciences

### **Planning for June 2011 SAB/BOSC Joint Meeting on New ORD Strategic Research Directions -**

Dr. Deborah Swackhamer noted that ORD has requested SAB and BOSC advice on five charge questions related to ORD's new strategic research directions<sup>9</sup>. The following draft charge questions would be proposed as the focus of the June 29-30, 2011 SAB/BOSC meeting:

- a) Do ORD's research programs, as presented to the SAB, align with the strategic program priorities identified by EPA's National Program and Regional offices?
- b) Do ORD's research programs reflect coordination, and do they complement one another?
- c) Do ORD's research plans reflect its commitment to sustainably protecting human health and the environment?
- d) Based on EPA's presentations to the SAB, and Board members' own knowledge of efforts in the broader scientific community, how well do ORD's research programs appear to complement environmental science programs elsewhere?
- e) Based upon the SAB's knowledge of ORD's research programs, are these programs positioned to address the nation's highest priority, emerging environmental issues in the coming years?

She asked SAB members and BOSC liaisons to discuss these charge questions, the appropriate people to involve in the June meeting, and the materials they would like ORD to provide before the meeting.

In response to her request, SAB and BOSC liaisons identified the following action items related to the planned SAB-BOSC meeting on June 29-30 to discuss ORD's new strategic directions:

- Develop a new charge question related to innovation
  - ORD will provide information about how the four research areas incorporate ORD's new innovation focus
  - ORD will provide more about plans for a multi-agency innovation platform
- Develop a new charge question: "Do ORD's new strategic research directions add value to ORD's research programs?"
  - For each research area, ORD Staff will identify synergies across EPA research programs resulting from ORD's restructured research programs
- ORD will ask Dr. Ravona Trovato to provide information about ORD's new "Balance matrix" that will be used by NPDs and Laboratory and Center Directors to plan ORD work.

- Questions (a), (b), (c)
  - Reframe questions as “How well does ORD’s research...” rather than “Does ORD’s research...”
- Question (a)
  - ORD will provide materials to show how its new research programs align with the strategic program priorities identified by EPA’s National Program and Regional offices, including reports from Regional Science Liaisons that identify short and medium-term science and research needs for each region
  - The SAB will provide updated information from the SAB’s Committee on Science Integration for Decision Making, which interviewed regional and program offices
  - The SAB Staff Office will invite Regional and Program Offices to represent themselves
- Question (b)
  - ORD will provide detailed information about the process it used to develop research frameworks
- Question (d)
  - Reframe question as: Based on EPA’s presentations to the SAB, ~~and Board members’ own knowledge of efforts in the broader scientific community,~~ how well does ORD's research program appear to complement environmental science programs elsewhere?
  - ORD will summarize efforts to identify, leverage, and coordinate with other federal agencies and other research entities for each research area
- Question (e)
  - Dr. Jerald Schnoor, as chair of the SAB Workshop Planning Work Group will collaborate with Dr. Kenneth Olden to explore the work of the National Institute of Environmental Health Sciences on emerging environmental issues to help prepare BOSC and SAB members to address question (e) efficiently
- ORD will prepare podcasts and presentations describing research areas at least 10 days before the June meeting and SAB Staff and BOSC staff will underscore the importance of advisory committee members listening to and reviewing podcast information before the June meeting. Podcasts and presentations each should include
  - Summaries of research problem definitions and visions
  - Process for working with clients, including the priorities of Program and Regional Offices
  - Major goals
  - Research action plans for FY 2012, FY 2013 and mid-range
  - Efforts to stimulate/foster innovative research with each research area.
  - Reports from Pathfinder Innovation Project awardees
  - Synergies expected to be achieved through ORD’s restructured research programs
  - Coordination with other federal agencies and other major environmental research entities, including efforts to complement, leverage, and find research partnerships
  - Major challenges faced in developing the research area and questions where SAB and BOSC input could be especially helpful
- SAB Staff and BOSC staff will work with the SAB and BOSC chairs to develop an agenda for a full two-day meeting in June in Research Triangle Park that

- Maximizes opportunities for discussion an interaction
- Plans a plenary session and at least four break out groups to address six or possibly seven charge questions
- Builds on pre-work to be done by SAB and BOSC members, based on availability of ORD materials through podcasts and advance materials

**Identification of next steps**

Dr. Swackhamer thanked members for their participation.

Dr. Otto Doering asked chartered SAB members to contact him, Dr. James Galloway or Dr. Thomas Theis, or Dr. Thomas Armitage of the SAB Staff Office to help schedule talks at professional meetings about the forthcoming SAB report on Reactive Nitrogen in the United States.

The Designated Federal Officer adjourned the meeting at 12:00 p.m.

Respectfully Submitted:

Certified as True:

*/Signed/*

*/Signed/*

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Dr. Angela Nugent  
SAB DFO

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Dr. Deborah Swackhamer  
SAB Work Group Chair

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. The reader is cautioned to not rely on the minutes represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.

**Members of the public attending the public meeting:**

Sue Shallal  
Rick Linthurst  
Ann Vega  
Becki Clark  
Andy Miller  
Jennifer Orme Zaveletta  
Michael McDonald  
Bob Kavlock  
Tim Watkins  
Dan Costa  
Jason Sacks  
Desmond Mayes  
Bill Sanders  
Michele Conlon  
Mark Miller  
Virginia Houk  
Sally Darney (by telephone)  
Gail Robarge (by telephone)  
Ann Vega (by telephone)

## Materials Cited

The following meeting materials are available on the SAB Web site, <http://www.epa.gov/sab>, at the page for the [March 22-23, 2011](#) meeting: <http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/f5521e02a565dbf5852577b30051e2f9!OpenDocument&Date=2011-03-22>

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<sup>1</sup> Federal Register Notice Announcing the Meeting

<sup>2</sup> Agenda

<sup>3</sup> Roster of Chartered SAB Members and SAB Liaisons, March 2011

<sup>4</sup> Comment from Hal Walker

<sup>5</sup> Comments from Patricia Bishop, People for the Ethical Treatment of Animals.

<sup>6</sup> Written Statement of Deborah L. Swackhamer, PhD, Chair of U.S. Environmental Protection Agency Science Advisory Board to the Subcommittee on Energy and Environment, Committee on Science, Space, and Technology, U.S. House of Representatives.

<sup>7</sup> Presentation from Dr. Kevin Teichman, March 23, 2011

<sup>8</sup> Innovation presentation by Dr. Peter Preuss.

<sup>9</sup> Advisory Request from the Office of Research and Development: “New ORD Research Program Strategic Directions”