



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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OFFICE OF  
RESEARCH AND DEVELOPMENT

**MEMORANDUM**

**SUBJECT:** Charge Questions for the SAB/BOSC Meeting

**FROM:** Robert J. Kavlock *rjk*  
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**TO:** Angela Nugent, Designated Federal Official  
Science Advisory Board

Gregory Susanke, Designated Federal Official  
Board of Scientific Counselors

We in the Office of Research and Development are looking forward to the joint meeting of the EPA's Science Advisory Board and ORD's Board of Scientific Counselors on July 10-11, 2012. This meeting will be a valuable opportunity to share our research programs with the Boards and benefit from their perspectives and advice. I am attaching a set of draft Charge Questions which convey the issues on which we seek advice from the Boards.

To prepare the Boards for our discussions on July 10 -11, 2012, we will be providing an Overview of ORD's research programs and the final versions of the Strategic Research Action Plans. Also, for the program integration discussion, we will provide short descriptions of five research topics that illustrate our efforts to integrate across programs.

If you have any questions or additional suggestions about the Charge Questions, please contact Gail Robarge and Stacey Katz.

Thank you.

Attachment

# Charge Questions for the Joint Meeting of the SAB/BOSC

## I. DRAFT SAB/BOSC CHARGE QUESTIONS FOR EACH BREAKOUT GROUP

### 1. FIRST YEAR PROGRESS

The Strategic Research Action Plans were developed during 2011, with the benefit of SAB and BOSC advice [*Office of Research and Development (ORD) New Strategic Research Directions: A Joint Report of the Science Advisory Board (SAB) and ORD Board of Scientific Councilors (BOSC)*]. (EPA-SAB-12-001)].

**Charge Question: How are the ORD research programs progressing in the first year of implementation? Are the research activities planned for FY 13 and future years appropriate for answering the science questions in the Strategic Research Action Plan?**

### 2. SUSTAINABILITY

The SAB and BOSC concluded in the October 21, 2011 report that "...ORD's research frameworks can advance EPA's adoption of sustainability as a core principle by more consistently and clearly describing where and how ORD research relates to sustainability."

**Charge Question: How are ORD programs contributing to sustainability through their research plans and activities? What advice does the SAB and BOSC have for each research program about advancing sustainability in future research?**

### 3. BALANCING IMMEDIATE PROGRAM NEEDS AND EMERGING ISSUES

Meeting program and regional needs is a primary objective of ORD research. The highest priority needs of the programs tend to be those that are most immediate. Another important role for ORD is to anticipate the future scientific needs of the programs and regions, areas of research that tend to get less support from the EPA partners. Anticipating emerging issues and investing in innovative approaches that could lead to more sustainable, less expensive or timely solutions often requires longer term and potentially higher risk research. The Strategic Research Action Plans strike a balance in addressing current priorities and future science needs; however, new emerging issues will likely arise that are not currently anticipated.

**Charge Question: As we consider science for the future, while budgets continue to shrink, how should ORD balance its commitments in the Strategic Research Action Plan with the need to advance science on emerging issues?**

#### **4. PROGRAM SPECIFIC QUESTIONS**

##### **Air, Climate and Energy Charge Question:**

To create an integrated program, research in ACE is organized in three Themes: 1) Assess Impacts, 2) Prevent and Reduce Emissions, and 3) Respond to Changes in Climate and Air Quality. Research related to energy and environment is not a specific focus, but is most prevalent in Theme 2. Relevant topics include research on near-road air pollution, multi-pollutant research, and greenhouse gas impacts.

- How do we bring together research on biofuels, oil and gas measurement methods, combustion related pollutant effects and modeling/decision support tools into a coherent whole to address the environmental effects of energy production and use?

##### **Safe and Sustainable Water Resources Charge Questions:**

- ORD has integrated programmatic research, with EPA Program Office input, to begin developing a strategic nutrient management plan for the nation with the intent of accomplishing the SAB's recommended goal to reduce reactive nitrogen by 25 percent. Are there research gaps that would impede accomplishing this goal? (*for example, should we be looking at green infrastructure for removing nutrients as well as for controlling storm water?*)
- To better accomplish our goal of using a variety of approaches to address stormwater issues, should EPA also consider incorporating natural infrastructure into research on constructed green and gray infrastructure?

##### **Sustainable and Healthy Communities Charge Questions:**

- The Sustainable and Healthy Communities Research Program incorporated a number of diverse research elements (e.g., ecosystem goods and services, human health outcomes, waste and contaminant remediation, environmental indicators) in building a research program focused on supporting community decision-making. The SHC Strategic Research Action Plan aims to provide science-based research and tools to assist communities in evaluating their decisions from a sustainability perspective. What advice can the SAB/BOSC provide to help ensure this research and these tools will most effectively support communities in doing so?
- The SHC's fourth theme investigates sustainability practices within four high-priority decision sectors identified during SHC community listening sessions. These sectors are: transportation, land use, buildings and infrastructure, and waste and materials management. There are three primary goals: to assess opportunities for communities to achieve greater synergies from practices within a given sector and across multiple sectors; to provide methods to more comprehensively account for these practices in terms of their social, economic, and environmental outcomes; and to collaboratively apply and refine these findings in partnership with specific communities (e.g., Durham,

NC). Does the Committee agree that this fourth theme provides a useful way to integrate research within SHC? If so, what are the most important implementation questions that ORD must address?

- Does the Committee feel that SHC has the appropriate balance of breadth and depth in its design? If out year budgets continue to shrink, what areas should SHC maintain as the primary areas of focus? Can the committee recommend areas that SHC should invest in if budgets increase?

#### **Chemical Safety for Sustainability Charge Questions:**

- Is the CSS program well positioned to support EPA needs in the three key areas of endocrine disrupting chemicals, nanotechnology, and computational toxicology research?
- How well has the exposure component of the CSS research program progressed since its inception?

#### **Human Health Risk Assessment Charge Questions:**

- The HHRA research program is committed to modernizing methods to evaluate the health effects of pollutants, consistent with advice of the SAB/BOSC and National Academy of Sciences. What aspects of the hazard and dose-response assessments produced by the HHRA research program are most likely to benefit from the application of state-of-the-art data streams and methods (e.g., in vitro toxicity testing results, gene expression profiling data, bioinformatics and QSAR modeling)? Additionally, what approaches can be envisioned to enhance risk managers' understanding, use and acceptance of these new methods?
- In the 2010 mid-cycle progress review of the HHRA program the Board of Scientific Counselors noted that "IRIS assessments and ISAs are among the most heavily peer reviewed documents provided by scientists anywhere." How can the HHRA research program efficiently obtain robust peer reviews that contribute to the scientific integrity of assessments without impacting the timely provision of documents with public health value? Additionally, can the SAB/BOSC provide advice on the appropriate overall balance of peer review of individual products versus other recommended scientific capacity-building activities?

#### **Homeland Security Charge Question:**

The HSRP has conducted research primary to support EPA's homeland security mission, i.e., response to acts of terrorism. In 2011, the SAB and BOSC stated that "the program should consider expanding research and capabilities in relation to natural disasters..." What advice (e.g., strategic, tactical, structural) can the SAB give to guide the program toward this broader role?

## II. DRAFT CHARGE QUESTIONS FOR GENERAL ORD/PLENARY SESSION

### 1. INTEGRATION ACROSS PROGRAMS

By their very nature, environmental issues are cross-disciplinary. Pollutants move and change across air, land, water and species. Energy, health, environmental justice and ecology are cross cutting topics. To organize research that is so intertwined requires a structure. By realigning its program from 16 distinct research topics to six related programs, ORD has made it a priority to eliminate stove-piped research and foster integrated, transdisciplinary research.

In the first year of implementation, the National Program Directors are in the early stages of managing each research program, while also taking steps to integrate across the six programs. This requires a balance of formally organizing and integrating research that relates to multiple programs, without creating additional, separate research programs.

While there are numerous topics that involve integration, ORD has selected five examples to present as case studies for the SAB and BOSC to consider. These five integrated topics reflect a range of dimensions including:

- topics that ORD has just begun to integrate and others that are further developed
- topics germane to every research program and others more narrowly focused among two or three
- topics that are more immediately client-driven and others that are longer-term

Integrated Topics:

- Nitrogen
- Global Climate Change
- Children's Health/Environmental Justice
- Applying new chemical assessment approaches in human health risk assessment
- Endocrine-mediated Dose-Response

**Charge Question: Based on the presentation of five integrated topics, what advice can the SAB and BOSC provide to help ORD succeed in integrating research across the ORD programs? How can different approaches to integration help us achieve our research goals?**

## 2. INNOVATION

The Path Forward principles that guide ORD's realigned research program emphasize pursuing innovative, ground-breaking research. To address increasingly complex and expensive environmental problems, innovative solutions are needed.

**Charge Question: How can ORD's initial innovation activities be improved to ensure continued and long term benefits for EPA? Are there useful experiences and lessons from other research organizations about managing innovation? What guidance can the SAB and BOSC provide for ORD in developing metrics that would be most effective in assessing the success of our innovation efforts?**