EPA Office of Research and Development's National Program Directors and Program Leads
Planning and Standards Science Integration for Decision Making Fact-Finding Interviews
February 4, 2010

Three members of the SAB Committee on Science Integration for Decision Making conducted an interview with the Office of Research and Development's National Program Directors and Program Leads via teleconference: Drs. Rogene Henderson, Wayne Landis, and Thomas Theis. Dr. Anthony Maciorowski, Deputy Director of the SAB Staff Office, provided a brief introduction to the purpose of the interview and the Designated Federal Officer, Dr. Angela Nugent, took notes to develop a summary of the conversation. All interviewees were provided a copy of the committee's Preliminary Study Plan in advance.

Dr. Maciorowski noted that the purpose of the interview was to help SAB Committee members learn about National Program Directors' and Program Leads' current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts. Dr. Maciorowski thanked participants for taking time for the interviews.

EPA National Program Directors' Perspectives (2:00 p.m. - 3:00 p.m.) Participants:

<u>EPA Office of Research and Development National Program Directors and Program Leads:</u>

Dr, Stan Barone, Human Health Risk Assessment
Dr. Dan Costa, Air
Dr. Sally Darney, Human Health
Dr. Elaine Francis, Pesticides and Toxics
Dr. Kevin Garrahan, Homeland Security
Dr. Alan Hecht, Sustainability
Dr. Rick Linthurst, Ecosystem Services
Dr. Randy Wentsel, Land

Although ORD has a structured research planning process, there is flexibility to respond to emergency issues and immediate regional priorities. A prime example is ORD's response to the aftermath of Hurricane Katrina. ORD and other offices responded quickly and were even able to request SAB advice and review. When a human health risk assessment issue emerges (e.g., lead in drinking water in Washington D.C., air risks associated with the World Trade Center disaster, PCBs in caulk), regions or states may have exposure data. ORD typically will conduct a screening-level assessment or develop a preliminary assessment. ORD scientists have responded to a Region 4 call to evaluate acute risks related to perflourinated chemicals. ORD scientists' response, however, come at a cost to previous commitments made. EPA's human health research program has historically focused on long-term core research, but the current Administrator has asked that immediate problem-specific issues also be addressed.

There are mechanisms to integrate the newest science into EPA's research programs. ORD's air research has a "constantly ongoing process" for re-evaluating criteria pollutants. The National Center for Environmental Assessment has a new publication inventory process that will help keep assessments up to date. ORD itself creates much of the emerging science related to air pollution. Methods development can be difficult, but ORD scientists quickly incorporate new scientific approaches.

ORD human health science also pioneers in integrating new approaches into Integrated Risk Information System (IRIS) assessments. ORD uses new physiologically-based pharmacokinetic (PBPK) regression modeling and other new analytical techniques into chemical assessments. Draft assessments are peer reviewed before they are used by regions, states, and programs.

To keep up with new science and methods, ORD uses a variety of approaches. There is a need for continuous cross-training for EPA scientists in new methods, such as life-cycle assessment. ORD has a limited number of staff with social science expertise, so the Ecological Services Research Program uses innovative methods to consult with external scientists, for example using Special Government Employees to get the expertise it needs. The Human Health research program relies on grants programs to access expertise in epidemiology, children's health, and community stressors. EPA, however, cannot legally direct grantees to provide information of particular benefit to the Agency. Several research programs (e.g., Global Change, Air, Human Health) have extramural grants programs; others do not.

There are generally few obstacles to integrating new science into ORD research. In contrast, there are obstacles to implementing new science into EPA programs and decisions. Lifecycle analysis, for example, is required by mandate only for greenhouse gases. It is not required and not conducted for decisions in other programs. Similarly, it is difficult to integrate computational toxicology approaches into the pesticide and toxics programs. There is a sense that the new science must be "solid enough before it moves a policy forward." If the science is controversial, it is difficult for decisions to be made using it.

EPA's regulatory mandates and institutional "stovepipes" create barriers to science integration. Reform of the Toxic Substances Control Act is timely and may provide a new regulatory paradigm for human and ecological health assessment.

ORD monitors international research related to its major research programs. The computational toxicology program is distinctive for its involvement with international organizations. There is significant international exchange on air pollution research. ORD researchers sit on the World Health Organization Board and international researchers sit on the Particulate Matter Centers Review Board. ORD researchers interact often and collaborate with scientists from other countries through the Organization for Economic Cooperation and Development.

ORD has multiple effective mechanisms for receiving and addressing feedback on its research. The ORD Board of Scientific Counselors provides feedback on each research program

on a periodic basis. Program offices provide feedback. Inter-agency review of technical documents allow for feedback from other federal agencies on major ORD work products.

ORD's ecological programs receive peer review on individual work products, but lack a mechanism for integrating multiple "pieces of the ecological analysis puzzle together" in an overall assessment that will have meaning for decision makers. ORD ecological assessments do not yet have the same overall integrative power as ORD human health assessments. One recent effort to conduct such a major assessment is the National Center for Environmental Assessment's Integrated Science Assessment for Oxides of Nitrogen and Sulfur, which examined ecological and welfare effects.

ORD has explored possible integration of human health and ecological sciences. One important area is climate change, where human health and ecological effects need to be studied together. The concept of ecosystem services, which includes human well being, offers an opportunity to integrate information about human and ecological impacts. ORD representatives plan to meet with officials from the Centers for Disease Control (CDC) in April to discuss accessing CDC databases that can shed light on both human and ecosystem exposures and other issues. The endocrine disruptors program is also trying to integrate human health and ecological research. There may be a possibility of developing tools to extrapolate across species because the "endocrine system is well conserved across vertebrates" and molecular tools may be useful both for understanding the degree of similarity in some human health and ecological effects.

There seems to be more continuity in EPA's science than in policies and politics at the Agency. The endangerment finding changed EPA's climate change program and responsibilities in major ways. To anticipate future changes in policies, ORD tries to have well considered research plans that incorporate input from multiple stakeholders and advisory panels that will be sustained through different Administrations.

To meet the needs of emerging environmental problems, EPA may as a whole need to conduct an analysis of current workforce vis à vis emerging environmental problems. It would be helpful if ORD engaged in a workforce planning process that was focused, well-conducted, and efficient. ORD has an aging workforce that as a result of retirement is losing effectiveness and new hires that may not necessarily have the experience or training to accomplish needed research in all areas. EPA's post-doctoral program is reasonably successful, but EPA cannot rely only on post-docs to provide the key new expertise needed for the Agency.