

**EPA Office of Research and Development (ORD) National Risk Management Laboratory (NRMRL) Science Integration for Decision Making Fact-Finding Interviews  
November 30, 2009  
Cincinnati, OH**

Two members of the SAB Committee on Science Integration for Decision Making, Drs. Gary Saylor and Thomas Theis interviewed the Director and Staff of the NRMRL. Dr. Angela Nugent, Designated Federal Office for the committee, provided a brief introduction to the purpose of the interview. She also 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. Nugent noted in each interview that the purpose of the interview was to help SAB Committee members learn about the NRMRL Program's 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. Nugent thanked participants for taking time for the interviews.

**Participants:**

Ms. Sally Gutierrez, Director  
Dr. Andy Gillespie, Deputy Director for Management  
Dr. Herb Fredrickson, Associate Director for Ecology & EDC  
Dr. Subhas Sikdar, Associate Director for Science  
Dr. William Schuster  
Dr. Marc Mills  
Ms. Joyce Walling

SAB committee members asked the NRMRL director to begin the discussion by describing how she decides the focus of her program, given its broad mission, and where science integration fits into the picture. The director noted that the biggest environmental issues arise in the context of sustainability, but a focus on sustainability is new and different from EPA's structure and mandates. Her biggest challenge is to build a solid research program to support sustainability and to build consciousness about sustainability issues, when there are no decision makers charged expressly with that mission. Water resource management, land use, and climate change are all parts of EPA mission and should be viewed in the context of sustainability, but rarely are viewed in those terms. There is a need to inform and educate the managers in EPA's busiest programs about the significance of sustainability, so that they can engage in discussions about sustainability with decision makers in the private sector and stakeholders who have adopted sustainability as a central way of viewing environmental issues.

Other managers underscored the challenge involved in providing science to support sustainability decisions. Sustainability decisions are necessarily multi-media, but EPA is organized to enforce statutes, and the formal organizational structure has air, water, and land program areas. Sustainability thinking requires cutting across program silos.

NRMRL managers devote attention to brainstorming ways to make change happen and overcome inertia. One strategy might be to interact directly with stakeholders, who "live in the

real world," unconstrained by EPA's organizational structure. ORD might bring them into research decisions and work with them as a vehicle to effect change at EPA. NRMRL managers see potential in interacting with "problem owners," for example, owners of water systems affected by aging water infrastructure, and seeking partnerships to work on the science necessary to solve their management problems. Other examples where NRMRL took this approach include:

- Research activities involving a Researcher who is an architect who worked with a community in Stella, Missouri, where there was concern about the communities' long term sustainability as the area around the Walmart headquarters expands;
- a decision-support tool for managing municipal solid waste;
- technical support centers for Superfund problems at individual sites
- planning for stormwater management in Cuyahoga County, which incorporated green Best Management Practices that included a park structure that provided ecosystem services
- a Cooperative Research and Development Agreement (CRADA) with Louisville for wet weather flow and green infrastructure
- a sustainability study conducted in collaboration with Region 8 for Colorado
- a Cincinnati sustainability study in the Shepherd's Creek

These customer-oriented efforts build upon NRMRL's history supporting EPA client offices. NRMRL has supported the Office of Air and Radiation, for example; one prominent example is research supporting the Clean Air Mercury Rule.

NRMRL managers described their efforts to build expertise in sustainability science. The NRMRL director noted that every new hiring decision requires consideration of the lab's strategic human resource needs. She identified specific needs for expertise in modeling and decision sciences and described the difficulties of making informed hiring choices in technical areas new to the laboratory (e.g., decision science). Other managers cited the progress NRMRL has made in hiring in new areas of expertise: law, systems ecology, and economics. Managers make efforts to hire post docs and to retrain experts who are flexible and willing. Decisions to hire post docs are made at the laboratory level, rather than by Principal Investigators, so that new personnel benefit the whole laboratory, not just a single research effort. NRMRL also makes use of the temporary government employee mechanism used actively by the Ecosystem Services Research National Program Manager. This mechanism allows the laboratory to explore new areas of expertise to see where the laboratory might make a significant investment.

Managers described barriers to integration. Risk management is often regarded as the last link in the risk paradigm and historically has received meager resources. Managers suggested that a sustainability paradigm involves thinking of management early in the scientific process. One example suggested was the challenge of mercury in fluorescent light bulbs. Instead of NRMRL investing in research to develop less toxic light bulbs or clean-up programs for broken or discarded light bulbs, the laboratory could invest in research and design so buildings maximize daylight. How decision makers frame questions determines the needed science and EPA needs to interject sustainability questions early in risk management discussions.

Managers spoke of the challenge of sustaining interdisciplinary collaboration. NRMRL has three major integrated efforts: watersheds, biofuels, and nanotechnology. For these issues, NRMRL is not often at the table for major policy discussions. Without advanced research planning for sustainability, however, EPA will find itself in "catch-up" mode, developing remedies for an environmental problem.

Although program offices have not partnered with NRMRL on sustainability projects, the laboratory has partnered with the Army Corps of Engineers on a sustainability project in the Ohio River Basin. NRMRL has the ability to work with stakeholders at the grass roots level on major development issues and to contribute research for problem solving.

The NRMRL managers acknowledged that their successful projects were "small programs under the radar." Scaling up projects in partnership with the Office of Water and Office of Air and Radiation would require significant resources and may encounter challenges from within EPA. .

SAB members asked how NRMRL gathers and responds to feedback about science. NRMRL primarily relies on ad hoc feedback, although it meets regularly with program offices. Program offices review NRMRL's research plans and react to products developed. The laboratory has a system for reviewing its 21 major research areas according to criteria in the strategic plan. Reviews have lead to decisions to disinvest in certain areas. In addition, scientists interact with "problem holders" to identify needs. They conduct gap analyses within the framework of the NRMRL strategic plan. They work to fill the plans needs and meet stakeholder needs.

Field studies are resource-intensive. Projects that require stakeholder interaction require travel budgets for reaching out to stakeholders.

A NRMRL scientist described a major field study that addressed a well-defined stressor and involved social, economic, and environmental concerns. NRMRL's Sustainable Environment Branch focused on storm water as a major national issue that offered an opportunity to integrate law, economics, ecology, and hydrology. They aimed to manage risks caused by excess storm water in an urban and suburban context. They tested an auction-based approach which engaged stakeholders in new ways to manage this significant problem. The research offered a practical solution of interest to a diverse set of stakeholders in the Shepherd Creek Watershed.

NRMRL managers and staff proposed that the approach could be used in other mid-west cities and could be adopted as part of consent decrees. NRMRL is working with city of Cleveland to take wide variety of decision tools to use vacant land and assign to non-traditional land use that provide-ecosystem services (e.g., storm water abatement, esthetics). Managers noted that there are also human health benefits of interest to Agency managers, so that the approach may be attractive to EPA senior managers. NRMRL is in the process of documenting benefits and environmental improvements. When that research is completed, the project will be "promoted more" and may receive fuller support from across ORD and the Agency.

Another scientist described NRMRL multi-disciplinary research addressing contaminated sediments. It began initially in 2002 as a relatively small project evaluating a Superfund remedial method by addressing the difference between a Superfund Remedial Project of reduced sediment and reduced toxic levels in fish tissue. NRMRL engineers reached out to fish tissue and sediment experts and over time realized that the goal of the research evolved from a focus on a particular remedial method to a broader question of how to assess remedy effectiveness. The project was "low profile" and initially benefited from Superfund research funds, but the Superfund process offered too slow a timeframe for the research envisioned by NRMRL. NRMRL then found a new customer in the Great Lakes National Program Office (GLNPO), which had received funding to conduct legacy act remediation. NRMRL worked with GLNPO on methods to evaluate remedy effectiveness and methods to evaluate program effectiveness,

SAB members and NRMRL managers and staff discussed the merits of "working under the radar." Such projects allow scientists to build a team based on trust and collaborate in creative ways, but if a project is successful, it needs to be shared with a larger community.