EPA Office of Research and Development (ORD) National Homeland Security Research Center (NHSRC) Science Integration for Decision Making Fact-Finding Interviews
November 30, 2009
Washington, DC

Three members of the SAB Committee on Science Integration for Decision Making interviewed the Acting NHSRC Director and Staff: Drs. Gary Sayler and Thomas Theis in person and Dr. Jill Lipoti, by phone. 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 NHSRC 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.

Interview with NHSRC Managers and Staff

Participants:

Dr. Cynthia Sonich-Mullin, Acting Center Director
Mr. Jonathan Herrmann, Center Director (on Special Assignment)
Dr. Gregory Sayles, Acting Deputy Director for Management
Mr. Kim Fox, Division Director, Water Infrastructure Management Division
Dr. Tonya Nichols, Acting Division Director, Threat and Consequence Assessment Division
Dr. Hiba Ernst, Acting Division Director, Decontamination & Consequence Management Division
Dr. Shawn Ryan, Associate Division Director, Decontamination & Consequence Management Division
Ms. Kathy Nickel, GPRA Coordinator, Immediate Office, NRSRC
Dr. Kevin Garrahan, Acting National Program Director, Threat and Consequence Assessment Division

The Acting Director began the discussion by noting that the National Homeland Security Research Center (NHSRC) develops all its research to support EPA's homeland security mission and designs its activities in light of customers' needs. The goal is to provide solutions to problems their customers face in the near term. Sometimes, however, problems arise in translating "what the customer thinks is needed" into research.

The NHSRC organization reflects EPA's four major homeland security missions. Where there is a security incident, EPA helps clean it up. EPA is the sector lead for drinking water and waste water (but not harbors)

SAB members asked about the Center's decision strategies about when to release tools for use. The center follows ORD quality assurance procedures, but if the center can provide information useful to internal customers, they make the information available with the proviso that "this is what we know right now." They try to communicate uncertainties associated with products "transparently and fully." They collaborate with partners in development of assessments (e.g., provisional advisory levels that provide acute exposure guideline levels) and products and try to release information and products as early as "responsibly possible." In the water program, for example, water utilities and consultants were partners in developing the Threat Evaluation and Vulnerability Assessment (TEVA) tool. The Office of Water is piloting TEVA. The NHSRC is working with commercial developers and its customers in an iterative way to complete the tool. The decontamination program uses a similar approach. Researchers work with customers who would use scientific or technical tools. As they "understand better issues users face," researchers further develop tools.

Clients sometimes want a "quick and dirty test." In those cases, it is especially important that clients read and understand the limitations and uncertainties of scientific tools. NHSRC scientists know what level of detail is appropriate to share in semi-protected environments, in one-on one communications with individuals who have with security clearances. This information is different from information to share with contractors and the public.

Managers noted that such a strategy for releasing scientific tools for homeland security needs requires merging traditional EPA science with social and behavioral science. They acknowledged a challenge in managing EPA's workforce, given limited opportunities for workforce expansion. One manager noted that this is "an awkward area for us" since ORD dropped out of social science and economic research in the 1980's. The NHSRC is bringing those disciplines back in a limited way. NHSRC hasn't hired permanent staff with expertise in social and behavioral sciences. Instead, three members from the center maintain "intensive interaction with the disaster community" through the Office of Science Technology and Policy Committee on Disaster Reduction. This interaction helps the center tap the committee's social science base. NHSRC has also sponsored AAAS fellows with expertise in social science; they have sponsored a sociologist, a systems analyst with interest in decision making and risk perception, and currently, an anthropologist. NHSRC hopes that interaction with these fellows and the broader social science community will help ORD determine what it can do in the social and behavioral science arena to advance the homeland security research mission. NHSRC is also working with the National Center for Environmental Research on a small grant to sponsor social science research in a "half dozen" areas suggested by the SAB Homeland Security Advisory Committee related to non-zero clean-up levels for biologicals. NRSRC anticipated an announcement of this grant in late December 2009 or early 2010.

One manager asked SAB members to explain in more detail the SAB's interest in social and behavioral science. Members responded that risk communication, public perception of risk, and a structured approach to decision science might help the center communicate about its tools, prioritize tools, and help users employ them.

Managers described efforts to expand the Center's expertise, given limited authority for new hires. The center has made use of Federal post docs, ORISE post-docs, and AAAs fellows.

The center also funds training and full degree programs to encourage scientists to broaden their expertise. It is a benefit that their center is "young." Staff were attracted to the center's mission after 9/11. The scientists are mission-driven and seem to be more flexible and interdisciplinary than most ORD scientists. The culture in the center is to conduct mission-driven research, not "legacy research." Managers are thinking ahead to succession planning in anticipation of upcoming retirements. They consider each new hire in light of the overall staffing needs for the center. Managers also acknowledged that their fairly flat organization has made them more nimble and acknowledged their relatively large extramural budget, compared to many other parts of ORD.

The center makes plans for the future based on three priorities: 1) Administration-identified priority threats (e.g., currently biothreats, dirty bombs); 2) NHSRC's own fact finding; and 3) program customers and stakeholders. The center tries to balance long and short-term research needs.

When asked for impediments to interdisciplinary research, managers noted that often, despite efforts to interact with customers and develop products through partnerships, customers hesitate to use science or tools developed by the center. NHSRC managers acknowledged that NHSRC scientists often underestimate the time needed for "science translation, i.e., communicating how research results can actually impact EPA's environmental protection work. They noted that this problem is a common one for ORD and is, in part, one focus of ORD's transformation effort. One lesson learned is that potential clients must be ongoing participants in development of a science product, starting with joint development of a Quality Assurance Program Plan that captures the research objectives in writing, so that both ORD and the customer have a common understanding of who would use the product and for what purpose.

An SAB member asked whether the NHSRC involves environmental groups or stakeholders developing products, such as tools to identify non-zero cleanup levels. Center managers responded that they viewed the Agency program offices and regions as their primary customers and are committed to "walking in their shoes." They view environmental and stakeholder groups as the next tier, appropriate to provide comment in the peer review stage. NHSRC delivers products to customers, who then "take the science products to environmental outcomes" and deal with stakeholder in setting non-zero levels. They anticipated problems if environmental groups became involved with the development of "pure science products."

Another impediment to the center's work is users' reluctance to engage with uncertainties associated with the release of center products. There are often 40- or 50-page quality assurance and peer review reports associated with products, but users, such as on-scene disaster coordinators, who are called upon to make decisions quickly, do not want to deal with such detailed information. "The more information they have, the less they like it." It is challenging to communicate the answers to the exact questions on-scene coordinators raise and to do it briefly in ways that support their needs. One example was a region's need to decontaminate raw drummer skins from Africa that contained anthrax. Region 1 was able to use a preliminary NHSRC decontamination method that used chlorine dioxide, but that method would not necessarily work in situations where temperatures and other factors differ. Communicating these complexities can be difficult.

NHSRC scientists must walk a fine line. They are not in a position to make Agency policy on homeland security, but they need to interact and communicate with policy makers to understand their research needs.

Managers touched on several other impediments. They noted that the Department of Defense (DOD) and the Department of Homeland Security (DHS) often do not inform EPA appropriately about research planning and do not collaborate, even when DOD and DHS target research on EPA's priorities. Managers also noted that the NHSRC does not own laboratory space; instead, it shares laboratories with other parts of EPA.

Center managers noted some "drivers" encouraging science integration. The center's mission focus has weaned it from a more traditional academic focus. Center managers take note of customers' feedback and have stopped academically acclaimed projects that were not useful to client offices. They viewed this decision as a success for the program. Center managers also said that views by the Board of Scientific Counselors, the National Research Council, and the Science Advisory Board suggested new ideas that have improved the program and enhanced its credibility. One manager noted that preparation for these reviews are useful education efforts for center staff and encourage cross-program dialogue. Preparation for the reviews helps the staff tell the story of their research and communicate why it is valuable. It helps staff see where their research fits into the big picture.

One manager voiced some frustration with the SAB's Homeland Security Advisory Committee's strong criticism of the center's limited ability to enhance its capabilities regarding risk perception and risk communication. He acknowledged that public risk perception is an important issue to address, but viewed this issue as a government-wide issue with strong involvement needed by the Department of Homeland security.

Managers then spoke briefly about methods for characterizing uncertainties. Managers noted that they do use models and guidance provided by the Center for Regulatory Environmental Models. The principal barrier to use of the models is communication of uncertainties.