

**EPA Region 4 SAB Science Integration for Decision Making Fact-Finding Interviews
October 26, 2009
Sam Nunn Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-8960**

Four members of the SAB Committee on Science Integration for Decision Making conducted three interviews in EPA Region 4: Drs. Jill Lipoti and Gregory Biddinger conducted the interviews in person and Drs. Deborah Cory-Slechta and Terry Daniel participated by phone. For each interview, 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 in each interview that the purpose of the interview was to help SAB Committee members learn about Region 4'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. Maciorowski thanked participants for taking time for the interviews and thanked Mr. Thomas Baugh for serving as liaison with the SAB Staff Office in planning the interviews.

**Interview with: Mr. Michael Peyton, Director, Science and Ecosystem Support Division
and Mr. Alan Farmer, Director, Resource Conservation and Recovery Act (RCRA)
Division
October 26, 2009, 11:00 a.m. - 12:00 p.m.**

Mr. Baugh began the session by noting that the Acting Deputy Regional Administrator, Ms. Beverly Banister, was unable to participate in the interview because of a personal emergency. In her stead, he introduced Mr. Michael Peyton and Mr. Alan Farmer and asked them to provide a senior management overview of major regional science needs.

The first major topic was the important role of science and ecosystem support laboratories. Region 4's Science and Ecosystem Support Division laboratory has memoranda of understanding with each regional division to support program and enforcement needs. The Division also maintains flexibility to respond to environmental disasters. The Region 4 Science and Ecosystem Support Division has approximately 100 federal employees and three contractors in its regional lab in Athens, Georgia, which has a separate and different mission from the ORD lab in that same city. Mr. Peyton noted that EPA has generally phased out or abandoned regional laboratories and that Region 4's retention of a laboratory staffed by federal employees was unusual and reflected the strength of Region 4's science. As a result, "EPA speaks with authority" and can maintain public trust because it can generate the science needed to support decisions (example: data gathered and analyzed in the Kingston Coal Ash case). Region 4's laboratory is ISO 17 accredited. Regional scientists were sufficiently confident to seek SAB advice on the region's Coastal Mississippi Water Quality Assurance Plan in the aftermath of Hurricane Rita.

The next topic concerned relationships between Region 4 science needs and ORD. Managers noted that ORD's current reinvention efforts provide an opportunity to strengthen

partnerships with the regions. ORD's Regional Applied Research Effort (RARE) program now provides \$200,000 per region per year for priority shorter-term research and technical support needs, a valuable innovation because ORD funds are not generally directed to technical support. For Region 4, RARE helps fund immediate needs for monitoring or to support enforcement decisions.

The senior managers reflected on the big science issues facing the region as a whole. They identified the following priority needs:

- Setting Total Maximum Daily Loads (TMDLs) where states don't have data or field capability to figure out contaminants in or characteristics of water bodies. Need to obtain data to populate models to determine if a stream reach is within guidelines and meets permits.
- Need for statistical expertise to characterize uncertainties and determine with more confidence when a sufficient number of samples have been taken
- Corrective action workload is a major priority. Region 4 has nearly 500 decisions to make by 2020 and is second to Region 2 in having the largest number of Superfund facilities to address.
- Need to maintain capability to address unforeseen events and respond to risks that may be presented by perfluorooctanoic acid (PFOA), perfluorooctane sulfonate, and coal ash. A toxic substance "on the radar for years" may suddenly present itself as a concern
- Ecological impacts of mountaintop mining to delineate impacts on water resources

Committee members asked if the following science needs were regional priorities, but the managers responded that they did not view them as priorities:

- Systematic, social-science based systematic assessment of efforts to engage stakeholder and public input into process for reclamation or sampling schemes. Region 4 managers have regular, coordinated discussion of community involvement efforts and rely on community involvement coordinators.
- Values assessment related to mountaintop mining assessments
- Economic assessments for regional decisions. Region 4 contracts out economic assessments for remedy selection decisions and turns to Headquarters offices when they need assistance

Managers discussed the "life-cycle" of collaboration efforts between lead divisions and science support divisions. Every regional science assessment begins with scientists and decision makers discussing and documenting problem definition and data quality objectives. Scientists resist pressure from media divisions to "run out immediately and gather data;" scientists need to know the objectives of the assessment before any inquiry begins. Sometimes "media division want to go to contractor because they want to do it faster" but such efforts nearly always result in problems.

Managers also reflected that the region only has an informal process for evaluating performance of science to support decisions (i.e., the possible need to do different science, use science better, use public science) Such evaluation happens for major, high-profile issues, but not generally for routine issues. One exception is the Superfund program requirement for five-year analysis of Records of Decisions. The RCRA program is trying to adopt a similar

approach. Those analyses, however, focus on whether the chosen remedy worked, but not on whether another remedy could have worked better. Managers acknowledged that a formal evaluation process could be as valuable for improving future science efforts.

The discussion then turned to contractor resources, training, and personnel needs. The trend is to close labs and use contract labs because the EPA doesn't have the sample throughput to justify labs. But for new method development, you need agency labs. The managers noted that EPA has delegated authority to make corrective action decisions for hazardous and solid waste to every state except Mississippi and a few other facilities that states have deferred to EPA. Region 4 has limited resources for contractors to support these decisions. The managers noted that resources were limited for training. For the Science and Ecosystem Support Division with 100 personnel, the training budget is \$20,000. Managers find ways to reprogram other funds to increase training support to \$50,000. Managers also plan in-house training so that EPA experts can share their expertise. In regard to personnel needs, managers expressed a strong need to hire new scientific staff to maintain the crucial work force to support the basic work of the Agency, especially given projected turnover among older, experienced staff. Managers noted that personnel retention was good; EPA Region 4 scientists are motivated.

Managers also noted the need for EPA to train personnel in lab methods and techniques. The states leverage EPA's ability to protect human health and the environment.

The managers concluded with a brief discussion of how the region might better utilize the SAB as a resource to address environmental science issues.

**Interview with EPA Region 4 Managers
October 26, 2009, 1:00 p.m. - 2:30 p.m.**

EPA Region 4 Participants:

Mr. Glenn Adams, Chief of Technical Services Section, Superfund Support Branch, Superfund Division

Mr. John Deatruck, Chief, Ecological Evaluation Section; Ecological Assessment Branch; Science and Ecosystem Support Division

Ms. Denisse Diaz, Acting Chief, Enforcement and Compliance Planning and Management Branch; Office of Environmental Accountability

Mr. Doug Neeley, Chief, Air Toxics and Monitoring Branch; Air, Pesticides, and Toxics Management Division

Mr. David Parker, Chief, Wetlands Planning and Coastal Protection Section; Wetlands, Coastal, and Oceans Branch; Water Protection Division

Ms. Dee Stewart, Deputy Director, Region 4 Resource Conservation and Recovery Act Division

Mr. James Webster, Chief, Removal and Oil Programs Section

The SAB committee members asked the regional managers to describe the kinds of decisions their organization makes and their roles in the decision making process.

One manager described his role in supporting emergency response, remedial programs, and Brownfields. His organization reviews data collected by the remedial program and conducts risk assessments. The on-site coordinator uses that information for risk management decisions to determine if a site "meets the cut" and action needs to be taken or referred. External community involvement occurs through state input to Applicable or Relevant and Appropriate Requirements (ARARS). There are requirements for community involvement for activities lasting longer than 120 days. Some activities, like the TVA Kingston Coal Ash case, have a community advisory board; other community involvement efforts are smaller in scope and duration.

In response to a question about community sampling, one manager described the limits of engaging communities in air toxic sampling. One sampling effort in Louisville, Kentucky, involving air toxics resulted in "grab sample" data that didn't meet EPA's scientific criteria. Region 4 then partnered with a university group and the community to develop a quality assurance plan that met standards in 40 CFR and that secured better data.

Managers spoke of the need for defensible data to support decisions, data that have been developed following a pre-approved method or other scientifically defensible method. The Quality Assurance Program Plan (QAPP) was mentioned as a planning tool. The research is made relevant by spelling out objectives in the planning process. The QAPP is required.

Managers commented that social knowledge often is factored into the scientific process to influence data collection. One example was a RCRA case, where community members believed treated wood presented creosote exposures. EPA followed up on the local knowledge to focus data collection. Social data often proves useful for exposure assessments related to

fishing and hunting. Local data are also used in the wetlands and watersheds program and for decisions related to the 303(d) list of impaired lakes and streams.

SAB members asked whether the region evaluates its use of science for decision making to improve its science support efforts. It might have been helpful, for example, to explore whether universities or communities could have been educated in advance about regional protocols for data collection. Some managers spoke about the difficulties anticipating science problems (i.e., the region may not know of universities or communities conducting studies). Managers responded that decisions in the regions are fast paced and often there is no time to reflect when something (i.e., enforcement, corrective, action, sampling, delisting efforts) doesn't work right. The highest profile issues may be publicized and highlighted in an accomplishments report, but often incremental improvements addressing routine issues don't get attention.

The SAB members asked about the possibility of using site-specific problems, as they arise, as opportunities to learn about science issues of general interest to the region. The region might identify important issues in advance and look for opportunities to gather data from site conditions. Managers responded that they must always be reminding staff that their job is not to conduct a scientific study outside a timeframe, but instead conduct an investigation leading to a specific decision.

Managers spoke about how they lacked science to address immediate problems or where they felt challenged because they needed more defensible science. Specific areas discussed include:

- Identification of PFOA health effects. EPA's Office of Research and Development has helped Region 4 by developing analytical methods but not with interpreting the impact of PFOA on human health while IRIS value is being developed
- Similar tensions exist for all contaminants.
- Region 4 would benefit from more "maintenance of tools" provided by ORD and others. Region 4 uses models and tools but could use more technical assistance about how to use and interpret them
- Statistical expertise to develop sampling approach and analyzing reports.
- Disinfection byproducts in water [EPA Region 4 turning to the Agency for Toxic Substances and Disease Registry (ATSDR), which is providing a slow response] EPA's MCLs are out of date
- Emerging contaminants - endocrine disruptors, PFOA, Bspenol A (no standards or sampling procedures)
- Numeric nutrient standards -- attractive but problematic - some standards are set too high and some too low
- Lack of guidance for ecological assessments that would be similar to IRIS and would provide site-by-site ecological risk values

Managers did note that they did conduct ecological risk assessments to consider multi-stressor effects within the context of TMDLs. They try to identify successes and publicize them. Managers expressed frustration, however, that EPA often lacks authority to address stressors that create the greatest ecological impacts.

Managers noted that have not been tracking recent literature on ecosystem services. They noted that they are waiting for policies and precedents to come from the Fish and Wildlife Service. One manager noted that "for some sites, ecosystem services would get in your way" and be just another expensive assessment to conduct.

Managers spoke about the proportion of regional decisions based on modeling vs. data collection and the standards for data use. TMDLs are mostly based on modeling. Any data is preferred to no data and almost no time is available for quality assurance checking of data received from non-EPA sources. EPA has a hectic pace, given the rate that state TMDLs are being developed. The Superfund program uses a fair amount of modeling for sampling-site selection. But if a site is contaminated, "real data" are used for remediation decisions. The water program compares end-of-pipe data from the regulated party against modeling. EPA's air program uses model values for permitting, but "trues that information up" with monitoring for nonattainment decisions.

Managers commented that they did not see the science need for economists at the regional level because they did not view economics as science. EPA Region 4 had one financial analyst who conducted cost analysis. Often cost analyses are provided by responsible parties. Although one manager noted a concern that EPA may spend "millions of dollars cleaning up a property worth \$13,000," EPA is bound by the law and does not have the option to consider economic benefits in Superfund Clean ups. EPA **does** provide technical assistance, tools, worksheets, and other information to communities for Brownfields decision and cooperates in visioning sessions for communities considering cleaning up underground storage tanks, but EPA does not undertake the analyses for those communities considering restoration decisions.

The conversation then turned to training and development of staff and resource constraints. Managers acknowledged that the training budget in the region was limited, but noted that motivated staff can usually find ways to take classes, develop their individual development plans, go to conferences, and be mentored by senior scientists. Some managers expressed concern that training policy and resources were implemented differently across divisions in the Region. In regard to resources to maintain Region 4's scientific staff, one manager noted that his division no longer conducts ecorisk assessments for the region's waste division and now contracts those activities out.

Managers identified a need for a repository of environmental information gathered in all environmental programs that would help Regional science-based decisions. A repository that would store Katrina information and have geo-spatial data information common to all programs and a common data quality approach would foster science integration for better decision making. It would be a major challenge to develop such a repository. Headquarters' efforts to develop a single database for Katrina data is an example of a need for a central repository and of the challenge to developing one. Currently, data systems within media offices do not "talk to each other" (e.g., Storet and TMDL information).

**Interview with Scientific and Technical Staff
October 26, 2009, 2:45 p.m. - 4:15 p.m.**

EPA Region 4 Participants:

Dr. Kenneth Mitchell, Office of the Regional Administrator
Dr. Egide Louis, Air, Pesticides, and Toxics Management Division
Mr. Van Shrieves, Air, Pesticides, and Toxicx Management Division
Mr. Doug Johnson, Water Protection Division
Mr. Craig Zeller, Superfund Division (on the telephone)
Mr. Reggie Barrino, Office of Environmental Accountability
Mr. John E. Johnston, RCRA Division
Ms. Kay Wischkaemper, Superfund Division
Mr. Galo Jackson, Superfund Division
Mr. Luis Flores, Superfund Division

The SAB committee members asked participants to describe the kinds of decisions their organization makes and their roles in the decision making process.

Participants noted that EPA staffs conduct some risk assessments because they are mandated to support air, water, and waste decisions and other risk assessments where such analyses are not mandated, for example, in response to community concerns about cumulative impacts or support for green remediation. Staff viewed good data and good science as the bed rock of federal and state decisions.

SAB committee members asked about use of social science to inform human health and ecological risk assessments. One regional scientist acknowledged that social surveys could inform exposures; most often EPA uses default assumptions rather than surveys populations about exposure patterns. A participant then noted that the region understands that vulnerability assessments are important, but does not conduct them because the region does not have the expertise to conduct or interpret such assessments.

Participants agreed that lack of a shared system of data across EPA programs is a major barrier to science integration. In the dredging program, for example, where EPA works closely with the Army Corps of Engineers, data are collected, but not evaluated or maintained. Within regions and across regions there is no central database and no standard format. In response, Regions have "each gone in their different ways." Specific problems mentioned include:

- Lack of a shared data dictionary with firm rules
- Problems with air toxics data
- Scientists working on air issues may not know about Superfund site data and possible emissions related to air
- Toxic release inventory and the National Air Toxics Inventory have no specific data requirements that must be met. EPA is developing an inventory of greenhouse gas emissions and already maintains an air emissions inventory. These inventories are not coordinated and planned in concert "Nobody knows what's out there; there is no consistency in terms of collection and reporting"

- OPP toxicity values diverge from IRIS, even though "the physical laws of nature do not vary by program office"
- Coordinated available data systems like Envirofacts are just a subset of environmental information

Regional staff agreed that data coordination is frustrating because it is resource intensive, there is a lack of vision for how an integrated system would to be used, a "reluctance to let go of what is seen as mine," and a fear that quality control may not be present in databases out of a user's control.

EPA staff then named data they "routinely wish they had:"

- Stack locations height, temperatures, and velocity
- Better air data that include local meteorology
- Health effects data for environmental justice communities (e.g., asthma statistics, respiratory and cardio-vascular effects). Region 4 often partners with ATSDR and local schools of public health
- Statistical analyses comparing assessment results against background levels

Participants discussed how individuals cultivate their own sources of information through professional contacts within EPA and outside the Agency, Agency workgroups, and professional associations. Participants observed that the region had a "very limited" budget for travel and training. The region doesn't conduct much training; Region 4 brings in a limited number of local trainers and trainers from the Centers for Disease Control and Prevention (CDC).

Participants noted that the regional library had been closed for a short time and recently reopened; many participants were uncertain about the kinds of services offered. Although there are exceptions, a participant noted that "Regional staff don't keep up with the literature, because of time availability and don't have great communication with others across EPA." Staff must be entrepreneurial and sometimes take "heroic action" to get the travel, training funds, and access to information needed. Memberships in professional societies are not supported. Some highly motivated staff work at maintaining contact with other researchers, but that is the exception, not the rule.

One member discussed the need for more resources to cover basic information needs for the region. He reflected that "one person should be the go to person for air databases. Someone should really know about NEI and TRI." Often regional staff go to him for information, but he "wished he knew more....I'm pulled in all directions" since he provides statistical help, biochemical analysis and risk assessments. The Region should more fully staff key science areas supporting Agency decisions and needs more statistical expertise.

Participants then discussed how they prepare packages of information for decisions by managers. Participants noted that staff in the lead program "pull in others" within and outside the region to assemble an analysis. They develop a Powerpoint presentation summarizing the available data and "what does it mean." The assessment "flows up through management." The

lead manager makes a presentation to the Regional Administrator with regional scientists in the room. Participants noted that the Superfund and RCRA programs have specified procedures, milestones, and documentation requirements.

SAB members asked what changes could be put into place that would assist in making good scientific decisions. One meeting participant pointed out that TSCA PCB regulation require an ARAR for a site without respect to risk assessment required under CERCLA. Updating regulations would enable the use of site-characterization data and a CERCLA risk assessment to support remedial alternative selection for sites.

The scientific staff noted that EPA programs differ in how they factor in inputs from the regulated community, environmental groups, and the general public. They noted that involving stakeholders takes a lot of time. When involving environmental justice communities, a lot of time was spent addressing issues that were not very risky, while other issues which carried more risk were not addressed. There was a feeling that the general public should have more trust in scientists and not distract scientists with emotional issues which had little impact to public health. A science assessment undertaken for a non-regulatory effort in a community is likely to have many opportunities for technical training and input. Air decisions would involve a public hearing. Superfund activities follow a structured process for engaging the public.

SAB members asked whether regional staff were aware of SAB and National Research Council reports and advice on integrated decision making and science-based stakeholder involvement. One participant acknowledged that he had "copies of the reports on his shelf" but needed training to increase his awareness of the recommendations and their relevance to his work. He suggested that SAB members seek opportunities to train EPA staff because "people are open to getting training outside their areas." . Others expressed doubt that the SAB's advice would assist them in their day-to-day work. "The SAB is comprised of academics who never stood up in front of a public meeting. The concepts in the reports just don't address what I do."

The SAB committee members asked about efforts to evaluate the Region's use of science after decisions have been made. Participants made the following observations:

- In working with the state of Tennessee on an air monitoring effort using EPA data protocols, one scientist observed that the monitoring went well but the impact of that improved monitoring on public trust is not known. The region has not received direct feedback on how good the science was for making decisions.
- By contrast, the Region has spent more time evaluating the Kinston coal ash event, where the "immensity of the event is amazing." In that case, the region developed a close analysis of clean up.
- The Superfund program conducts five-year reviews
- One member observed that he "often doesn't know the final decision made based on assessment he provided." Sometimes there's a disconnect ... "sometimes I'm too far down to know final decision made"

- Although EPA has recently devoted greater effort in defining measures of success, many measures "are very soft"
- The region does not use social scientists to develop measures of success for voluntary efforts.