

**U.S. Environmental Protection Agency
Office of Research and Development**

**BOARD OF SCIENTIFIC COUNSELORS
EXECUTIVE COMMITTEE MEETING**

**Washington, DC
November 1-2, 2001**

Thursday—November 1, 2001

Welcome, Introductions, and Overview of the Meeting

Dr. Jerry Schnoor (University of Iowa), Chair of the Board of Scientific Counselors (BOSC), called the meeting to order at 9:15 a.m. He welcomed Dr. Bill Chaimedes (Georgia Institute of Technology) and Dr. Don Mattison (March of Dimes) to their first BOSC meeting. He quickly reviewed the meeting agenda, noting that there was only one draft Laboratory/Center report available because most of the site visits had to be rescheduled. He mentioned that since the last BOSC meeting, H.R. 64 has passed the House Science Committee (this bill calls for a Deputy Administrator for Science and 5-year term for the Assistant Administrator for Research and Development [AA/ORD]); the new AA/ORD has been nominated by President Bush; and EPA-ORD has been involved in responding to the tragic events of September 11. Dr. Schnoor identified the following potential projects for 2002:

- ✧ Review one to three multiyear plans from ORD (the Water Quality and Pollution Prevention Plans were reviewed by the Research Strategies Advisory Committee [RSAC] of the Science Advisory Board [SAB]). There are 16 plans of which 6 are available for review—Sources/Character of Fine Particles of Air Pollution, Endocrine Disruptors, Mercury, Global Climate Change, Water Quality, and Pollution Prevention.
- ✧ Measuring performance in a research arm of a mission agency (benchmarking, target indicators, outcomes, GPRA, productivity goals).
- ✧ Environmental security—what is ORD's role? (drinking water, bio- and chemical sensor development, water supply protection, water treatment plants, distribution systems, air monitoring, genetically modified organisms [GMOs]).
- ✧ Risk Assessment Paradigm: cumulative risk, mixtures of chemicals, measuring performance.
- ✧ Issues of large import to EPA-ORD (sensing bio- and chemical weapons, water quality criteria, TMDLs, and nonpoint source pollution).

Dr. Schnoor asked the BOSC members to submit, by 9:00 a.m. on Friday, written responses to the following questions regarding performance measures:

- ✧ Are the goals and objectives of the EPA-ORD Strategic Plan and GPRA goals and measures adequate to measure performance?

- ✧ How can the impact of EPA-ORD be measured?
- ✧ Does EPA-ORD need a separate list of performance measures and target indicators?
- ✧ How should EPA-ORD benchmark itself against similar organizations? Which ones?

He identified five continuing challenges for ORD: (1) demonstrating that ORD's efforts result in sound science, good advice, and actually reducing risk to human health and the environment; (2) satisfying the many customers of ORD (Program Offices, Regions, states, and the public); (3) balancing human versus ecological health research; (4) integrating social and behavioral sciences into EPA-ORD; and (5) maintaining flexibility and nimbleness in priority setting, shifts in research program, and anticipating future environmental issues (Goal 5, ORD Strategic Plan).

With regard to the multiyear plans, Dr. Schnoor indicated that a decision had to be made regarding how many and which plans the BOSC would review. He noted that the Pollution Prevention Plan is posted on the Web; Dr. Peter Preuss (EPA-ORD) agreed to ascertain which multiyear plans are available on the Web. Dr. Chameides suggested that the executive summaries of the six available plans be distributed to the BOSC members.

Teleconference to Discuss Draft Laboratory/Center Review Reports

Dr. Schnoor suggested that a teleconference be scheduled for 1:00 - 3:00 p.m. EST on December 17, 2001, to discuss the draft Laboratory/Center review reports. He agreed to obtain comments from those members who cannot participate in the call. One Board member requested that copies of the responses to the self-study questions be distributed along with the draft reports. Shirley Hamilton (EPA-ORD) indicated that she did not have complete copies or electronic versions of the responses to the self-study questions to distribute to the BOSC members. It was agreed that each Subcommittee Chair or Vice Chair would send a copy of the response to self-study questions to Beverly Campbell (SCG), who will prepare electronic files for distribution to the Board members.

AA/ORD Remarks and Update

Mr. Henry Longest, Acting AA-ORD, presented an update on ORD activities to the BOSC. He noted that ORD has gained 13 FTEs (full-time equivalents) to focus on integrating science into the regulatory process. He indicated that Dr. Preuss served on a task force that examined the role of science and ORD in the regulatory process. The Administrator is committed to involving science in the regulatory process, which is a significant shift from the past. Mr. Longest added that the BOSC is helping to improve the science at EPA by strengthening the effectiveness of ORD.

With regard to planning and developing the ORD budget, Mr. Longest indicated that ORD staff meet with each Deputy Assistant Administrator (DAA) to describe ORD's research. Comments from the DAAs are considered and the budget is revised as warranted. He noted that the Program Offices are recognizing that ORD is serious about its Strategic Plan and five goals; Goal 1 is to support the Program Offices—to help them make good decisions and to provide technical support.

Mr. Longest mentioned that scientists/engineers at the National Risk Management Research Laboratory (NRMRL) have been asked to provide expertise on the issue of terrorism and drinking water systems. He stated that the review of the drinking water standard for arsenic has been completed and the standard will remain at 10 ppb. Dr. Bill Farland, Acting Deputy AA/ORD, noted that the Administrator has made a commitment to spend approximately \$20 million on additional arsenic research to fill in some of the information gaps, eliminate some of the uncertainties, and identify effective technologies for managing small systems (97 percent of all systems that will have to implement the new standard are small systems).

Mr. Longest stated that ORD has been providing information and support for the ongoing cleanup efforts in New York City. The environmental response team out of Edison, NJ, has been providing assistance, and Gary Foley's Laboratory delivered equipment and set up three air monitoring stations in the city. There is some concern about the effects of asbestos on the workers at the site and EPA staff have been monitoring and advising the workers. Dr. Farland noted that Region 2 has been working with ORD on the New York City cleanup effort. He suggested that the Communications Subcommittee may want to use this collaboration as one of the case studies.

President Bush has announced his intention to nominate Paul Gilman as the new AA-ORD. Mr. Longest speculated that Senate confirmation would occur early next year; in the interim, Dr. Gilman will be working at ORD as a consultant. Mr. Longest noted that Dr. Gilman's knowledge of the Washington bureaucracy and the budget process will be beneficial to ORD.

Dr. Farland mentioned that he had the opportunity to attend one of the Laboratory/Center reviews and is looking forward to reading the reports. He expressed his hope that the BOSC would review one or more of the multiyear plans. Mr. Longest suggested that the BOSC could examine how well ORD's planning efforts have moved across the risk paradigm.

Given ORD's responses to the recent terrorist attacks, the need for flexibility is evident. Dr. Jim Clark (Exxon Mobil Research & Engineering Co.) asked how ORD can maintain and fund such flexibility. He noted that the Office of Management and Budget (OMB) has asked agencies to determine how much the response has cost. Mr. Longest replied that ORD is working to figure out how much has been spent and how much more will be needed. He stressed the need to convince OMB and others that research includes technical support. Dr. Rae Zimmerman (New York University) indicated that the residents of New York City were concerned about air quality, and she praised EPA's risk communication efforts. Dr. Farland mentioned that the dust at the site contained high levels of lead and asbestos; therefore, EPA provided expertise with regard to worker risk and safety. Dr. Herb Windom (Skidaway Institute of Oceanography) asked if ORD has a technical support mission. Dr. Farland replied that ORD created a catalog of technical support activities that it will perform in support of the Program Offices. These activities are recognized as part of ORD's research program. However, contingencies always arise that were not identified in the budget. ORD tries not to include a contingency fund in its budget because that portion usually is cut by EPA management or by Congress. Dr. Windom asked if funds for capacity building were included in the budget. Dr. Farland responded that capacity building is included in the overall budget; although it has been reduced over the years, it remains an important part of ORD's program.

Dr. Ann Bostrom (Georgia Institute of Technology) asked if ORD has been involved with the Anthrax issue. Dr. Farland replied that ORD facilities have the capability for handling Level III; he added that ORD is working with the Centers for Disease Control and Prevention (CDC) to ensure that ORD staff understand the procedures and protocols for handling anthrax. Dr. Bostrom asked about EPA's communication with other agencies with regard to the anthrax issue. Dr. Farland replied that the CDC is the government lead on the issue and EPA has maintained good lines of communication with that agency. However, EPA has not played a role in the anthrax issue to date. Dr. Bostrom asked about communications with other agencies pertaining to the response and cleanup efforts in New York City. Dr. Farland indicated that Jim Makris' office has the lead with regard to emergency response, and Mr. Makris is in direct contact with the Federal Emergency Management Agency (FEMA), which is the lead government agency for the response effort. Dr. Farland added that Gov. Whitman, the EPA Administrator, has been holding an EPA-wide 1-hour conference call, three times each week, to coordinate the EPA response since the September 11 attack. All AAs and Regional Administrators have participated in these calls.

Returning to the issue of technical support, Dr. Jim Bus (Dow Chemical Co.) asked how ORD serves its EPA clients. He noted that the model has changed in industry. Unlike in the past, industry now uses technical support to translate the science to the customer. The challenge to ORD is to deliver technical

support to key customers. Dr. Clark commented that the bioremediation demonstration following the Exxon Valdez was a good example of how ORD shifted its resources to respond to an emergency situation and provide technical support. Dr. Bostrom asked if ORD could shift resources to address terrorism issues. Mr. Longest replied that it is possible, but the purpose of the grants program is to enable ORD to shift its focus without hiring new staff and changing the focus of its inhouse research. Dr. Preuss noted that the ORD Laboratories/Centers are assessing their inhouse capabilities. He pointed out that there has to be a balance between investing in a grants program that enables ORD to shift its focus quickly and building internal capabilities and capacities to provide technical support. Mr. Longest used the PM research program to illustrate how the view of ORD has changed—from an organization that manages research to one that conducts quality research to obtain needed answers.

BOSC Member Disclosures

Each BOSC member present at the meeting identified his/her employer, scientific interests, funding sources (e.g., grants, consulting fees) and other sources of income (e.g., investments), as well as memberships and affiliations with professional and political organizations. Ms. Hamilton indicated that all Board members are required to complete the OGE-450 form each year. Dr. Schnoor reported that he received funding from EPA, U.S. Agency for International Development (USAID), World Bank, National Science Foundation (NSF), and Department of Defense (DoD). He also edits for John Wiley and Sons. Dr. Bonnie McCay receives funding from the National Oceanic and Atmospheric Administration (NOAA) and NSF. She serves on several boards (e.g., Ocean Studies Board) and has received a paid consultancy from one group. Dr. Mattison reported that the March of Dimes is a registered lobbying organization; however, he is not a registered lobbyist. He is an adjunct faculty member at Columbia University and University of Pittsburgh, and he serves on two Institute of Medicine committees as well as EPA's Children's Health Committee. Dr. Jim Johnson (Howard University) receives funding from EPA, Department of Energy (DOE), NSF, and General Electric. He also serves on two National Research Council (NRC) boards. Dr. Clark administers research funded by Exxon-Mobil that is conducted by institutions and consulting groups. He serves on committees of the American Petroleum Institute and the American Chemistry Council, and he is on a University of Maryland advisory board and the Society of Environmental Toxicology and Chemistry (SETAC) board. Dr. Zimmerman receives funding from NSF and EPA. She also is working with the National Drinking Water Advisory Council, examining the health effects of distribution systems, and she serves on a chemical stockpile disposal committee. Dr. Windom receives funding from EPA, NSF, and NOAA. His laboratory conducts trace element analysis for EPA's Environmental Monitoring and Assessment Program (EMAP), and for ORD's Gulf Breeze Laboratory. He also is working with the State of Texas and has been retained by attorneys to provide advice with regard to Superfund sites in Georgia. Dr. Bostrom just completed a 2-year position at NSF. She receives funding from the Food and Drug Administration (FDA) and CDC, and she is a subcontractor on a grant application that was submitted to EPA. She also serves on a transportation research board. Dr. Bus works on a number of collaborative agreements with EPA, and serves as the co-leader of an American Chemistry Council research initiative, which funds research in academic centers. He also is a member of the Board of Directors of the CIIT Centers for Health Research in Research Triangle Park, NC, which has applied for EPA funding. In addition, he serves on various boards and committees, is an active member of a SETAC committee, and serves as adjunct faculty at Michigan State University. Dr. Juarine Stewart (Clark Atlanta University) directs a research center that is funded by the National Institutes of Health (NIH). A number of her graduate students receive funding from NSF. Dr. Chameides receives funding from the National Aeronautics and Space Administration (NASA), NSF, and EPA. He also serves at the Chair of the Air Quality Management Committee of the National Academy of Sciences (NAS). In addition, he has been hired by the Department of Justice to serve as an expert witness on issues pertaining to power plants. Dr. Elaine Dorward-King (Rio Tinto Borax) serves on academic advisory boards in CA and TX, as well as on the board of a non-profit research organization.

Ms. Hamilton informed the BOSC members that if they have any potential conflict with an item on the agenda of a BOSC meeting, they should disclose it at the outset of the meeting. Dr. Preuss added that

Don Barnes (EPA) is on tomorrow's agenda and he will summarize the General Accounting Office (GAO) report on conflict of interest and federal advisory boards. Ms. Hamilton indicated that the BOSC needs to consider conflicts of interest when selecting subcommittee members.

Upcoming Laboratory/Center Reviews

Dr. McCay, Chair of the National Environmental Research Laboratory (NERL) Subcommittee, reported that the review has been rescheduled for December 18-20, 2001. The other members of the Subcommittee are Dr. Juarine Stewart (Vice-Chair), Dr. Shelly Miller, Dr. Mark Robson, Dr. Edward Liebow, and Dr. Yoram Cohen. Dr. Miller will be unable to attend the December site visit, so Dr. McCay is seeking another Subcommittee member. She posed several questions to the Subcommittees that had completed their site visits. What is the best format? Are the poster sessions useful? How much time should be devoted to presentations and how much to discussions? Dr. Dorward-King, Vice-Chair of the NRMRL Subcommittee, replied that she found the poster sessions to be very useful. It was an excellent method for interacting with post-docs and ORD staff. The Subcommittee members divided up the posters so they each spoke with different individuals. Dr. Zimmerman, Chair of the National Center for Environmental Assessment (NCEA) Subcommittee, agreed that the poster session was very useful for interacting with staff. She emphasized the need for a question and answer session.

Dr. McCay asked if the Subcommittees were going to conduct followup site visits. Dr. Schnoor replied that no followup visits were planned. Dr. McCay asked how the Ad Hoc Communications Subcommittee was interacting with the Laboratory/Center Subcommittees. She requested the presence of a Communications Subcommittee member at the NERL site visit; however, no one is available to attend. Dr. Bostrom pointed out that the Communications Subcommittee added questions to the self-study questions that were submitted to the Laboratories/Centers. Dr. Bus, Chair of the National Health and Ecological Effects Research Laboratory (NHEERL) Subcommittee, stated that their lunch session with the Division Directors and staff scientists from around the country was useful. He also noted that the social hour the evening before the site visit provided time for some informal interaction with staff. He mentioned that their presentation sessions were very interactive. The Subcommittee members also toured the new facility in Research Triangle Park, NC. Dr. Windom, Vice-Chair of the NHEERL Subcommittee, said that it was helpful to have Steve Lewis from the Communications Subcommittee present during the site visit. Dr. Windom thought the one-on-one discussions during the coffee breaks were more useful than the poster session. Dr. Stewart asked if there was time to talk to staff without management present. Dr. Windom replied that they had such an opportunity during lunch. Dr. Dorward-King stated that they had a session with post-docs and another session with the staff.

Dr. Schnoor asked if there were any suggestions for an additional member for Dr. McCay's Subcommittee. Dr. Chameides suggested Barry Ryan at Emory University. Dr. Schnoor suggested Peter Thorne (indoor air exposure expertise) as a possible Subcommittee member, and another BOSC member suggested Doug Dockery at Harvard. Dr. McCay asked Ms. Hamilton if it would be possible to bring in a new Subcommittee member before the December site visit. Ms. Hamilton replied that it would be possible if she received the information quickly. If the individual is already working with EPA, the process would move much faster. Dr. Chameides agreed to assist Dr. McCay in identifying an additional Subcommittee member.

Dr. Clark, Chair of the National Center for Environmental Research (NCER) Subcommittee, stated that the NCER site visit has been rescheduled for January 2002. He has plans to develop a series of followup questions. Steve Lewis (member of the Communications Subcommittee) will be attending the NCER site visit. Dr. Bostrom indicated that she would like to attend that site visit in lieu of or in addition to Steve. It was agreed that both Drs. Lewis and Bostrom will attend the NCER site visit.

Laboratory/Center Site Visits

National Risk Management Research Laboratory Site Visit. Dr. Dorward-King, Vice Chair of the NRMRL Subcommittee, reported that the site visit was conducted in August. A draft report has been prepared and was provided in the meeting notebook. Prior to the site visit, the Subcommittee members participated in a conference call during which they divided up the review in terms of the self-study questions. Each member took responsibility to lead the discussion pertaining to his/her assigned questions. The Subcommittee member also volunteered to draft the section of the report that addressed those questions. The members agreed that a rough draft of the report was to be completed before departing the site visit. Therefore, the final morning of the site visit was dedicated to writing and addressing specific questions. Dr. Dorward-King noted that the presentations were excellent and the staff shared information and their opinions freely. With regard to the Subcommittee's findings and recommendations, she indicated that NRMRL had made progress in moving toward its new mission following the reorganization. However, internal and external communications remain a challenge. Weak communications could be an impediment to continued progress and high performance. She indicated that benchmarking is another challenge; NRMRL also needs a rigorous evaluation of research projects, as well as an evaluation of human resource needs to determine if the Laboratory has an appropriate balance.

NRMRL staff indicated that they would like the BOSC to interact with them on a more frequent basis, perhaps twice a year rather than every 2 years. Dr. Preuss stated that he and Dr. Farland have been working on a proposal that will allow more frequent interaction between the Laboratories/Centers and the BOSC. Dr. Clark asked if there was any public participation at the NRMRL site visit and Dr. Dorward-King replied that there was not. Dr. Windom asked if there was any discussion of the work force needs, or the need for flexibility. Dr. Dorward-King replied that the work force issue was discussed in detail. Eighty percent of NRMRL staff had an engineering focus prior to the reorganization; the work force slowly is shifting to add ecologists and biologists to improve the balance between ecology and human health. She noted that NRMRL is filling vacant slots with such expertise, but the Subcommittee did not believe that this approach was adequate. They recommend that NRMRL develop and implement a plan that will effect this work force shift in a shorter time frame. Dr. Dorward-King mentioned that there is tension among the post-docs; they believe they are being used in the short term to fill the expertise gaps. Although most of them desire a career with EPA, few believe they will be offered a job at NRMRL.

Dr. Schnoor noted that NRMRL's strategic plan needs to be updated. Dr. Dorward-King asked if that recommendation should be strengthened in the report. She noted that the senior managers thought they were implementing the strategic plan, but the staff did not make the same connections. It could be a communication problem. Dr. Dorward-King indicated that NRMRL is doing a good job on technology and expertise transfer; the Laboratory holds workshops and rolls out tools (e.g., models) they have developed. NRMRL also has significant drinking water treatment expertise that could be useful in addressing potential terrorism threats. She noted that NRMRL is focused primarily on state and regional customers. Dr. Schnoor asked if NRMRL staff talked about how their plan fits into the ORD Strategic Plan. Dr. Dorward-King replied that the two plans are very consistent, but they did not do a cross-match between the two plans. She commented that there are some items in NRMRL's strategic plan that should be removed. Dr. Schnoor suggested that the Subcommittee ask NRMRL to update its plan and show how the plan links to the ORD Strategic Plan.

Dr. Schnoor indicated that a template should be developed for the Laboratory/Center reports so that they parallel one another. He speculated that the draft NRMRL report may be used as that template. Dr. Bostrom asked about the statement that internal communication needs effort (on page 9 of the draft report). She thought this comment was too oblique. Dr. Dorward-King responded that NRMRL has good communications staff, all of whom work in the technology transfer part of NRMRL, and they do a good job at getting a message out once it has been identified. However, the Laboratory needs staff who can identify the messages that must be disseminated. It appears that NRMRL lacks this type of communication expertise. Dr. Bostrom asked that this be clarified in the report. Dr. Schnoor asked Dr.

Bostrom to assist in redrafting that section of the report to clarify this issue. Dr. Bostrom asked if the Subcommittee had recommended that NRMRL prepare a communication strategy. Dr. Dorward-King replied that she would verify that such a recommendation is included in the draft report. Dr. Schnoor asked if benchmarking is addressed in the report. Dr. Dorward-King replied that it is mentioned on the middle of page 6. She asked if there were any comments on the report format. Dr. Bus stated that the NHEERL report would be structured around the self-study questions. Dr. Schnoor noted that the NRMRL report also is structured around the self-study questions.

Dr. Clark asked if the NRMRL Director had seen the draft report, and Dr. Dorward-King stated that she had not sent the Laboratory a copy of the report. Dr. Preuss pointed out that once the report is submitted to the BOSC for review, it is a public document and can be sent to the Laboratory. He suggested that the Subcommittees include an interim step, which would allow the Laboratory/Center to review the draft to correct any factual errors before it is submitted to the BOSC Executive Committee and becomes a public document. Dr. Schnoor suggested that the Subcommittees brief the Laboratory/Center managers on what the report will contain before departing the site visit. Dr. Schnoor preferred not to submit the reports to the Laboratories/Centers before that are presented to the BOSC Executive Committee. Ms. Hamilton mentioned that she will need drafts of the reports by December 7, if they are to be discussed during the December 17 conference call. Dr. Johnson proposed some type of quality assurance review before the reports are submitted to the Executive Committee and made public. Dr. Schnoor asked if each of the Subcommittee members signed off on the draft NRMRL report before it was submitted to the Executive Committee, and Dr. Dorward-King indicated that the members did not sign off on the draft before it was sent out. Drs. Chameides and Schnoor believed that the Laboratories/Centers should not receive the report before the Executive Committee. It was agreed that every Subcommittee member would review the draft report before it is submitted to the Executive Committee, and the Laboratories/Centers will have the opportunity to comment on the draft after it is presented to the Executive Committee. Therefore, all Subcommittee members should have signed off on the draft reports before they are sent to Ms. Hamilton on December 7.

National Center for Environmental Assessment Site Visit. Dr. Zimmerman, Chair of the NCEA Subcommittee, reported that Michael Greenberg was unable to attend the site visit. The Subcommittee was impressed with the quantity and quality of the information provided. The members also thought the poster session was very helpful. It was agreed that NCEA needs to do a better job of getting information out to its audiences. Dr. Zimmerman mentioned that NCEA's leadership has changed from Dr. Farland, who is a scientist, to Dr. Alapas, who is a public administrator. However, there was good continuity in leadership. Dr. Zimmerman stated that the Subcommittee members asked additional questions during the site visit to clarify some of the responses to the self-study questions provided by NCEA. She suggested the need to standardize the information provided by the Laboratories/Centers if these reviews are conducted on a more frequent basis in the future. She noted that the addition of graphics would improve NCEA's planning and integration materials. Dr. Zimmerman thought it was difficult to relate NCEA's projects to the mission and goals, as well as to relate the projects to the ORD and EPA strategic plans. The Subcommittee asked NCEA to sort its projects by goal; some projects apply to one goal and others apply to several goals. She thought every Subcommittee should ask the Laboratory/Center to define this relationship. Dr. Zimmerman reported that the Subcommittee invested substantial time talking to NCEA about its customers. Most of the customers reside in EPA's regulatory programs. The site visit also included discussions about planning within the risk paradigm and how the paradigm is incorporated into NCEA's work. NCEA conducts a few cutting-edge risk assessments and develops models to be used by the Program Offices for conducting assessments. The Center also coordinates work on risk that bridges other Laboratories/Centers.

Dr. Zimmerman indicated that the Subcommittee has not yet developed a set of recommendations for NCEA. Some time was devoted to a discussion of integrating ecological and human health risk assessment. The site visit also included a discussion of flexibility and how NCEA responds to new issues as they arise. Dr. Zimmerman noted that the program is balanced between intramural and extramural

research. There was some concern that NCEA did not have the time and expertise needed to interface with the extramural researchers.

Dr. Bus pointed out that many of these issues surfaced during the first NCEA review. Dr. Schnoor commented that NCEA indicated in that first review that the staff did not want to conduct risk assessments or prepare criteria documents. Dr. Preuss stated that NCEA used to conduct about 80 percent of all of the Agency's risk assessments; now NCEA performs only the more complex risk assessments, and the others are conducted by the Program Offices. Dr. Zimmerman said that the issue of benchmarking was raised during discussions of performance evaluation and measures of success. She noted that diagnostic measures and approaches as well as evaluative tools are needed to measure success. Dr. Bus pointed out that risk assessments are only as good as the data that flow into them. During the NHEERL site visit, he did not sense that NCEA provided that Laboratory much guidance. Dr. Zimmerman responded that NCEA provided some case studies that involved work with other Laboratories. Dr. Bus stressed the importance of having the research in sync with the risk assessment.

For future site visits, Dr. Schnoor suggested that the Subcommittees ask the Laboratories/Centers about GPRA goals and measures. The NCEA Subcommittee received a list of the professional societies that include NCEA staff in their membership; however, Dr. Zimmerman thought it would be more useful if the Laboratory identified how many staff belong to each society to determine if there is diffusion among the various professional societies. Dr. Zimmerman noted that NCEA had very few post-docs, but had a number of AAAS fellows. Dr. Johnson asked if EPA was doing anything to attract high school students into environmental careers. Dr. Preuss replied that EPA has a number of programs to attract students into environmental careers; however, most of these programs target students above the high school level. Dr. Mattison asked if the Subcommittee members received any information about how actively the Center is consulted by states and other EPA Offices. Dr. Zimmerman responded that NCEA is consulted quite frequently by EPA Program Offices, but there was little mention of the states. She noted that NCEA has a very active Web site; there is a need to assess who is using the site and what information is being accessed.

Dr. Bus asked if the research done by one Laboratory/Center flows to the other Laboratories/Centers. Dr. Preuss commented that the multiyear plans may be the most effective tool for improving such integration. He noted that there is little interaction between the Laboratories and STAR grantees. Dr. Bostrom stated that communication of results from one Laboratory/Center to another is a key issue.

National Health and Ecological Effects Research Laboratory Site Visit. Dr. Bus, Chair of the NHEERL Subcommittee, reported that Ken Dickson was unable to attend the site visit, but Steve Lewis, a member of the Communications Subcommittee, was able to attend. In 1995, ecology and toxicology was combined in NHEERL. Senior management has worked hard and is committed to incorporating this change into the culture of NHEERL, but it is a work in progress. NHEERL has expressed some concern about its ability to access the highest quality scientists. There was some discussion about Title 42, which enables NIH to attract nationally recognized scientists without the constraints of the civil service pay scale. The site visit also included discussion of communication challenges. The Subcommittee was not convinced that NHEERL has structured its communications to ensure that science plays a role in Agency decisions. The new facility is excellent and it has the potential to attract talented, world-class scientists to ORD. Dr. Johnson asked if the Subcommittee members discussed their findings with NHEERL staff before departing, and Dr. Bus replied that the members identified the fundamental issues on which the recommendations will be focused. Dr. Windom, Vice-Chair of the NHEERL Subcommittee, agreed that Laboratory management is committed to the integration of ecology and human health. There was some discussion about developing teams to assist in this integration process. Dr. Bus mentioned that the teams are making some decisions with which the individuals do not agree, but he believes that NHEERL will reap the benefits from the team approach in the future. NHEERL also had some concern about the number of staff who are past retirement age but have not retired. Dr. Bus indicated that there was no public participation in the site visit.

Dr. Mattison asked if NHEERL had documented cases where they were unable to attract quality scientists. Dr. Preuss mentioned that ORD has lost senior staff, particularly at the Division Director level, because EPA salaries were not competitive. Title 42 could help overcome that problem; it also would enable ORD to appoint scientists for a defined period of time (e.g., 2 years), allowing the Laboratories/Centers to change their expertise as needed. Dr. Schnoor asked if NHEERL is involving its customers in the inputs and outputs of the Laboratory. Dr. Bus replied that NHEERL has identified its clients, but the Laboratory does not involve them in planning inputs and outputs. Dr. Windom noted that NHEERL has engaged its clients for the coastal program, but not other programs. Although NHEERL views the Program Offices as a client, it did not identify performance measures relative to this customer.

Performance Measures

Dr. Preuss made a brief presentation (see Attachment 1) on how to measure the success of a research program in a regulatory agency, using the STAR Program as an example. He mentioned that the NAS has published two reports on the topic of measuring success (one was titled *Evaluating Federal Research Programs – 1999*). These reports identified three criteria—quality, relevance, and leadership—to be used for measuring success. They also indicated that both applied and basic research programs could be evaluated meaningfully on a regular basis, and that expert review—which includes quality review, relevance review, and benchmarking—is the most effective means of evaluating federally funded research programs. Dr. Preuss noted that none of the reports on measuring performance have addressed the issue of benchmarking so that the evaluator can define success.

Dr. Preuss presented a table that identified potential evaluation measures for the STAR Water and Watershed Program. The four potential goals identified in the table were: (1) influence on the scientific community, (2) influence on decision-makers, (3) influence on stakeholders, and (4) relevance to watershed assessment. For each of these goals, potential evaluation measures were identified in the table. For example, the potential measures identified for the goal of stakeholder acceptance and use of STAR Water and Watershed tools were:

- ❖ Knowledge and use of STAR results by potential users (e.g., local watershed groups, county planners, NGOs within and outside of research watersheds).
- ❖ Number of stakeholder Web sites that reference STAR results.
- ❖ Number of citations of STAR projects in stakeholder publications.
- ❖ Number of communities served.

Dr. Preuss also presented a program design/evaluation model that illustrated a shift in ORD's focus from activities and outputs towards customers reached, short-term outcomes, intermediate outcomes, and long-term outcomes. The goals identified when the STAR Program was created in FY 1995 fit well with the approach described by the NAS and the SAB for evaluation of research programs. These goals include: (1) achieve excellence in research; (2) focus on the highest priority environmental science and engineering needs to assist EPA in its mission; (3) achieve high levels of accountability and integrity; (4) leverage resources and form partnerships; (5) communicate/integrate research results; and (6) develop the next generation of environmental scientists. Criteria and measures are needed to evaluate the success of a program. Dr. Preuss identified the following criteria for the STAR Program: relevance; responsiveness; timeliness; high-quality science; use by EPA Program Offices, Regions, states, and local governments; significance (research "makes a difference"); communication of results; and education of the environmental cadres of the future. Dr. Preuss identified a number of measures for each of these criteria. Under relevance for example, one of the measures is whether the ORD research program is planned jointly with the EPA Program Offices and Regions. He closed his presentation by listing eight reviews of the STAR Program or its components that have been conducted during the past 4 years,

including the BOSC review of NCER and the STAR Program in 1998, and the SAB/BOSC review of the STAR Program in 1999.

Dr. Preuss noted that annual performance measures are identified in the multiyear plans. He also pointed out that there is no process in place to collect information from grantees with regard to how their research has been used at EPA. Dr. Zimmerman stressed the need to transfer the research results to the customers. Dr. Preuss referred to a number of items (e.g., STAR Reports, Research Capsules) that NCER is using to communicate results to its customers. He mentioned that NCER now requires electronic submission of progress and final reports, which include lists of publications. He also noted that NCER organizes approximately 12 progress review workshops each year to communicate research results to Program Offices, Regions, and the ORD Laboratories/Centers. In addition, the NCER Web Site is being redesigned to improve its utility to customers.

Dr. Preuss reported that the NAS has initiated an overall evaluation of the STAR Program; the review panel selection process has begun. He has recommended that the panel include a BOSC member and an SAB member. He noted that if the BOSC elects to review the STAR Program, its efforts could be coordinated with the NAS review. Dr. Bostrom asked if the NAS review will include social science, and Dr. Preuss replied that it will not. Drs. Bostrom and Windom stressed the importance of social science in the review. Dr. Preuss explained that the NAS was reticent to develop one set of criteria for the STAR Program, because the NAS did not believe that it could be applied to all STAR projects; the NAS prefers to look at STAR's individual components. Dr. Chameides added that the NAS is reticent to identify specific measures because they may be taken out of context, which will result in the generation of numbers that are basically meaningless. He expressed some concern about identifying objective metrics for assessing performance. Are we undervaluing the ability of an organization to internally assess success? He believes that an organization should develop goals and measure its success by the degree to which it achieves its goals. Dr. Mattison pointed out that any list of criteria should relate to the mission and goals. Dr. Dorward-King commented that any metrics would have to be associated with particular objectives or goals. However, they can be subjective; not all measures will be quantitative.

Dr. Bostrom asked if there was any convergence in the various STAR Program evaluations. Dr. Preuss replied that some reviews were conducted by academicians and others by GAO, and each group has its own perspective and bias. If there was an approved approach for evaluating ORD research programs, the GAO reviews may discontinue in the future. Dr. Preuss stated that he has no way of assessing how well the STAR Program is doing relative to other research programs. Drs. Chameides and Windom pointed out that critics can always attack the criteria and measures. Dr. Johnson expressed some concern that the criteria could be used to eliminate research for which it will be difficult to measure its impact. Dr. Bus stressed the importance of assessing the customers' needs before establishing goals and performance measures. Dr. Preuss pointed out that ORD has defined a set of goals, and identified how those goals will be reached. Now, ORD needs to determine what metrics can be used to determine success.

Dr. Mattison asked if Dr. Preuss had any comments on the three homework questions identified by Dr. Schnoor. Dr. Preuss replied that he had no preconceived notions about this issue. His presentation was just a draft to stimulate the discussion. He recommended that discussion of performance measures be expanded at a future meeting to which all of the Laboratory and Center Directors are invited.

Dr. Johnson stated that he served on a radioactive waste management committee that discussed benchmarking and many of these same issues. He agreed to share the report developed by that committee with the BOSC. Dr. Johnson suggested that the BOSC develop a bibliography and the members do some reading on this topic before the next discussion. Dr. Clark commented that ORD has many customers to serve. He asked if there is a hierarchy among the customers. Dr. Dorward-King agreed that measuring performance is a topic that the BOSC should address. She noted that ORD needs to identify multiple indicators that can be measured to track progress in achieving objectives. Dr. Schnoor asked if the members would like to discuss this topic at the next meeting. Dr. Zimmerman recommended that the

members do some reading and thinking before meeting with the Laboratory/Center Directors to discuss this issue. Dr. Bus mentioned that companies often identify metrics that change the behavior of the organization, because when the behavior changes, the culture changes. Dr. Johnson expressed some concern about trying to address performance measurement on a fast track, when the NAS is addressing it on a much longer time frame. Does ORD need something to use before the NAS effort is completed? Dr. Preuss replied that there is no short-term need, but it is an important issue within ORD. However, he pointed out that the NAS is examining only the STAR Program. He believes that this issue will involve more than a consultation from the BOSC.

Dr. Chameides cautioned the Board members against the idea that they can identify 5 to 10 metrics to measure performance. Dr. Bostrom warned against underestimating the importance of numbers. These numbers have substantial value, particularly in communications. Dr. Chameides replied that an organization can generate numbers that make a mediocre program appear to be successful. Numbers are not the entire story of success. Some metrics are subjective. An organization should have enough confidence in itself to identify objectives that cannot be measured by quantitative metrics. Dr. Johnson pointed out that one of ORD's customers is Congress. It is important that Congress knows that ORD does good science. This depends primarily on ORD's reputation, which cannot be measured quantitatively. Dr. Preuss asked what EPA could do to convince Congress that ORD's science is sound. Dr. Chameides suggested that the best way to convince Congress would be through external peer review of ORD programs. Dr. Bostrom suggested that EPA needs to do a better job of communicating with Congress. She noted that there are other agencies that do a much better job of marketing themselves to Congress. Dr. Preuss indicated that ORD needs to know how to conduct a credible evaluation of its programs—an evaluation that would be acceptable to EPA, the scientific community, and Congress.

Dr. Schnoor asked the members to review the three homework questions and to submit their responses in the morning when the meeting reconvenes.

Friday—November 2, 2001

Approval of the May 7-8, 2001, BOSC Meeting Minutes

Dr. Schnoor asked if there were any comments on the May 7-8, 2001, meeting minutes. When there were no comments, he asked for a motion to approve the minutes. Dr. Stewart made a motion to approve the May meeting minutes, and Dr. Johnson seconded the motion. The May minutes were approved unanimously by the BOSC Executive Committee.

EPA-ORD Communications Ad Hoc Subcommittee Plan

Dr. Bostrom indicated that the charge to the Communications Subcommittee is to examine how effectively ORD-funded research results currently are communicated, both within and beyond the Agency, and how they might be more effectively communicated. The goal of the Subcommittee is to help ORD more effectively disseminate ORD's research products, to explain their significance, and to assist others inside and outside the Agency in applying them.

She reminded the BOSC members of the comments on the NCERQA Communications Strategy that were made by the Subcommittee that reviewed NCER in 1998. That Subcommittee stated that the development of the plan was a noteworthy accomplishment but that:

- ❖ It was not clear whether formal efforts were made in developing the draft plan to obtain input or feedback from client groups about their needs and concerns.

- ✧ Consideration of ways to reach Agency audiences could begin in the initial RCT discussions with Program and Regional Offices and other parts of ORD when decisions are made about RFAs and research objectives.
- ✧ Existing routine contacts with target audiences also might elicit input on existing or proposed communications.
- ✧ Materials generated by NCERQA, including those for the Web site, should undergo some clarity and pertinence review from client audiences, just as they undergo technical review for scientific accuracy.
- ✧ Targeting 11 different audiences as identified in the plan may be too ambitious; NCERQA should prioritize among them.
- ✧ NCERQA management should devise and deliver an effective reward system for its staff, ORD scientists, and Program Office staff who interact in integration and communication activities.

Dr. Bostrom stated that the Communications Subcommittee will: (1) follow up on the 1998 NCERQA Communication Strategy, (2) look more broadly at needs and processes for communicating ORD research results within EPA, and (3) examine how effectively ORD-funded research results currently are communicated beyond EPA (possibly benchmark against other research funding agencies or research organizations). A representative of the Subcommittee will attend the Laboratory/Center site visits if possible, and the entire Subcommittee will meet in Seattle in conjunction with the SRA meeting. There also are plans to conduct a site visit at NCER and EPA Headquarters (communication office). This visit will be scheduled following receipt of the responses to the self-study questions (see Exhibit 1). The Subcommittee may follow up the site visit and case studies with an e-mail/paper survey. The Subcommittee expects to submit a draft report to the BOSC in May 2002.

Dr. Bostrom indicated that she would like to select one case study for which EPA staff think they communicated results successfully and another case study for which EPA staff think they were less than successful in communicating results. Dr. Preuss commented that dioxin would be the best example; however, it is not a representative case. He agreed to work with Dr. Bostrom to identify the cases to be examined. Dr. Schnoor asked when the responses to the self-study questions are expected, and Dr. Bostrom replied that she expects to distribute the questions by December 1, 2001, and would request the responses by January 31, 2002.

Exhibit 1. Draft Self-Study Questions for NCER Communications Review

Proposed Cases: Arsenic? Particulate Matter? Dioxin?

1. Describe an example of a successful communication of research findings. (Provide materials developed for this, such as press releases, Web sites, etc.)
 - ✧ Was this a communication that you or someone else initiated? If someone else, who?
 - ✧ What were your communication goals?
 - ✧ To whom did you communicate the findings?
 - ✧ How did you communicate the findings? In other words, what channels/approaches did you use (e.g., telephone, e-mail, newsletter, workshop presentation, Web, press release, etc.)?
 - ✧ What EPA staff or outside researchers were involved in the communication effort?
 - ✧ Why do you consider this example a success?
 - ✧ What factors inside or outside the Agency helped create the success (e.g., resources, staff/management support, researcher interest, the nature of the research findings, etc.)?
 - ✧ What would you do differently next time?

◇ Have you developed any records or other means for others in the Agency to learn from your success? In other words, what approaches have you used to pass on to others at EPA what you learned from this success?

2. Describe an example where the communication could have been improved. (Provide materials developed for this, such as press releases, Web sites, etc.)

- ◇ Was this a communication that you or someone else initiated? If someone else, who?
- ◇ What were your communication goals?
- ◇ To whom did you communicate the findings?
- ◇ How did you communicate the findings? In other words, what channels/approaches did you use (e.g., telephone, e-mail, newsletter, workshop presentation, Web, press release, etc.)?
- ◇ What EPA staff or outside researchers were involved in the communication effort?
- ◇ Why do you think this example could have been improved?
- ◇ What factors inside or outside the Agency contributed to this being less than a success (e.g., resources, staff/management support, researcher interest, the nature of the research findings, etc.)?
- ◇ What would you do differently next time?
- ◇ Have you developed any records or other means for others in the Agency to learn from your experience? In other words, what approaches have you used to pass on to others at EPA what you learned from this example?

Other Self-Study Questions:

What is the status of current planning and management of communication of research results?

Do you have or are you planning to develop a strategic communications plan?

What staff work on communication of research results? How are they organized?

What resources are available for research results communication efforts, and how are they managed/allocated?

How do you assess the needs for communication of research results?

How do you assess the success of your research results communications efforts? What are your goals for these? What performance measures do you use?

What communications products and tools (e.g., S-O-S or Capstone reports, Research Capsules, workshops, annual/final reports, Web site) do you have to communicate research results? How do you assess their quality? How do you evaluate their use? How do you update them?

How, where, and to what extent are your research results being used in criteria documents, decision documents, and Agency guidelines? How were these communicated?

(For NCER) How have you responded to the 1998 BOSC review of the NCERQA Communications Strategy?

(For NCER) How, where, and to what extent are STAR research results being used in criteria documents, decision documents, and Agency guidelines? How were these communicated?

Dr. Chameides noted that one of ORD's roles is to highlight the importance of science and scientific uncertainty. Dr. Dorward-King replied that there are many things that ORD needs to communicate, but the Subcommittee decided to limit its focus to research results. Dr. Zimmerman stressed the need for strong diagnostic tools to determine who is using ORD research results. Dr. Preuss asked who at ORD will receive the self-study questions. Dr. Bostrom responded that the questions will be submitted to NCER and the communications staff. Dr. Preuss asked if the questions will be submitted to the communications staff at each of the Laboratories/Centers or just the Headquarters communications staff. He noted that NCER would play little role in communications associated with the three potential case studies identified by the Subcommittee. Dr. Bostrom replied that the Subcommittee had not yet decided who would receive the questions. Dr. Schnoor asked Drs. Preuss and Farland to identify the individuals to receive the self-study questions. He also asked them to identify a list of potential case studies. Dr. Preuss agreed to provide Dr. Bostrom two lists from which to select the case studies. One list will identify topics for which ORD's communications have been successful, and the other list will include

topics for which ORD's communications have been less than successful. The lists also will identify which group(s) within the Laboratories/Centers performed the communication activities.

Dr. Johnson expressed some concern about the self-study questions. He recommended that the questions be more focused. He was not certain that the responses to the questions would provide the Subcommittee with the information it is seeking. Dr. Bostrom replied that these are the types of questions one has to ask about communications. Dr. Johnson asked how the Subcommittee will determine if the communication was successful based on the information provided. Dr. Bostrom stated that the Subcommittee is relying on ORD to determine what was successful; the Subcommittee then will advise ORD on how to make more of its communications successful. Dr. Johnson asked if it would be possible to determine success relative to a benchmark. For example, instead of asking if ORD reached its target audience, the Subcommittee could ask if ORD reached 75 percent of its target audience. Dr. Bus suggested that the Subcommittee collect some baseline information so that the members can determine what ORD could do to improve communications. Dr. Bostrom indicated that they will use the 1998 NCERQA Communications Strategy as the baseline against which to evaluate change.

Dr. Bostrom stated that the Subcommittee will select two case studies and ask the communications staff to address them. Dr. Preuss suggested that the questions should be submitted to the AA/ORD's communication staff who will coordinate the responses. Dr. Schnoor thought the BOSC should identify the two case studies. Dr. Preuss was concerned that the use of case studies may limit the review. Dr. Bostrom asked if the Subcommittee should eliminate the case studies and just do a survey. Dr. Bus supported the use of case studies because they provide real examples and the opportunity for ORD to learn how to improve. Dr. Preuss pointed out that a case study represents only 1 percent or less of ORD's communication efforts. The case studies do not provide a general picture of the communication efforts in ORD. Dr. Bostrom stated that the Communications Subcommittee provided questions to each of the other Subcommittees. This should help give the Subcommittee a bigger picture of ORD's communication efforts. Dr. Dorward-King suggested that the Subcommittee members review the responses to the communication questions posed to the Laboratories/Centers, analyze that information, and then determine how to proceed with the review. Dr. Bostrom suggested that the Subcommittee members could review the responses to the self-study questions and the results of the site visits at the December meeting in Seattle. She asked each Subcommittee Chair to send her the responses to the communications questions submitted by their respective Laboratories/Centers. Dr. Zimmerman noted that several cases were mentioned in the response they received from NCEA. Dr. Bostrom asked Ms. Hamilton to send her copies of the responses to the self-study questions. Ms. Hamilton replied that she did not have complete copies of the responses; more importantly, she did not have electronic files of the responses. It was agreed that each Subcommittee Chair would send the response from his/her respective Laboratory/Center to Beverly Campbell at SCG. Ms. Campbell will create electronic files for each response and disseminate them via e-mail to the BOSC members. Prior to the December 17 conference call, all BOSC members should have received the draft review reports and the responses to the self-study questions. Dr. Bostrom agreed to revise the Communications Subcommittee self-study questions and distribute them to the BOSC members.

GAO Report on SAB Conflict of Interest

Dr. Barnes reported that the GAO, the investigative arm of Congress, initiated a review of the SAB to determine whether the committees and panels are free of conflicts of interest and whether the committees and panels are biased. Dr. Barnes noted that every individual is biased; the challenge is to balance the bias of the committee or panel. The GAO found that there was a lack of policies and procedures to ensure that SAB peer review panelists are independent and that the panels are properly balanced. There also was a lack of policies and procedures to ensure that the public is sufficiently informed about points of view represented on the panels. Other issues noted by the GAO concerned record maintenance and training.

Dr. Barnes described the SAB's response to the GAO report. The SAB has developed policies and procedures to ensure that peer review panelists are independent and panels are properly balanced (see Attachment 2). These procedures focus on identifying conflicts of interest and ensuring the timely collection and consideration of information pertinent to conflict of interest and balance determination. The SAB also has developed policies and procedures to ensure that the public is sufficiently informed about points of view represented on the panels. In addition, the SAB has developed procedures to ensure that information is collected, maintained, retained, and secured in an appropriate manner. A 90-day schedule for panel selection also was developed. Dr. Barnes stated that this time frame allows the SAB time to publish the charge and the expertise required for a panel in the *Federal Register*, which yields a more diverse group of potential panelists from which to develop the panel. Dr. Bostrom commented that the NAS posts biosketches of selected panelists on the Web for 20 days and requests public comment; the individuals are removed from the panel if a conflict of interest is identified. Dr. Barnes reported that the SAB also developed a list of the information that should be collected from panel and committee members to enable an adequate assessment with regard to conflict of interest (see Attachment 2). Dr. Barnes noted that the NAS is sponsoring a roundtable to discuss the conflict of interest issue. Prior to the September 11 tragedies, Sen. Boxer (CA) had planned to hold hearings in October concerning conflict of interest and advisory activities. These hearings have been postponed, but will probably occur some time in 2002. Dr. Barnes stated that EPA is in the process of drafting a letter to the GAO that identifies a number of Agency concerns. He suggested that the BOSC provide input on this issue before the letter is finalized and submitted to GAO. Dr. Clark asked if advisory boards of other agencies are under the same scrutiny. Dr. Barnes replied that the concern actually initiated with individuals on FDA panels who also were advising the pharmaceutical companies developing the drugs under review. Dr. Barnes expressed some concern about collecting and maintaining additional information from panelists. It will take more time and effort without the guarantee that EPA will receive better advice. Dr. Barnes believes that it will be more difficult to recruit qualified panelists. Dr. Schnoor added that it is difficult to get the panelists to complete and submit the OGE-450 form, and it will be even more difficult if additional information is required. Dr. Barnes pointed out that identification of a conflict of interest does not automatically result in an individual's elimination from a panel. A waiver can be granted for the panelist. He noted that new procedures require that these waivers be tailored specifically for each review. Dr. Schnoor stated that this is of less concern for the BOSC; however, conflicts of interest should be considered when identifying and selecting subcommittee members. He mentioned that the BOSC members currently submit the OGE-450 form. Dr. Barnes pointed out that the 450 form only requests current information. In the future, information will be collected for the past 5 years. Dr. Chameides stated that the NAS form, which is more extensive than the 450 form, is not too difficult to complete. Its purpose is to identify the biases of each individual serving on a panel.

SAB Activities for 2002

Dr. Barnes provided the BOSC members with a list of the planned FY 2002 SAB projects and the status of each project (see Attachment 3). He noted that the SAB recently reviewed the Water Quality and Pollution Prevention multiyear plans. The SAB has been asked to review six or seven plans, but Dr. Barnes does not believe that the Board will have time to review even that number of multiyear plans. He commented that Linda Fisher, EPA Deputy Administrator, and Bill Glaze, Chair of the SAB, will work together to prioritize the SAB's projects. Both have agreed that the SAB should do more than just peer review EPA products. He mentioned that Administrator Whitman was present at the last SAB meeting, and Deputy Administrator Fisher is committed to attending the SAB meetings. Dr. Schnoor thanked Dr. Barnes for his report and expressed his interest in working with the SAB to review ORD's multiyear plans. Dr. Dorward-King pointed out that the BOSC will focus on research management when reviewing the multiyear plans and the SAB focuses on the science. Should the BOSC review the same two plans recently reviewed by the SAB? Dr. Preuss asked when the SAB report on the two multiyear plans will be available, and Dr. Barnes replied that the report will be available on November 28, 2001. Dr. Barnes suggested that there be a liaison between the BOSC and the SAB with regard to review of multiyear plans so that all the important questions are addressed in each review.

BOSC Future Directions/Projects

Dr. Schnoor identified a potential path forward for the BOSC with regard to review of performance measures. He volunteered to collect, organize, and synthesize the comments submitted by the BOSC members (i.e., the homework assignment). He will invite the Laboratory/Center Directors to the next BOSC meeting, and this issue will be the topic of discussion on the morning of the first day of the meeting. The morning of the second day will be reserved for a working session to provide consultation to EPA on this topic.

With regard to the multiyear plans, Dr. Schnoor suggested that the BOSC select two plans—one that is problem driven and one that is core research. He proposed that the plans be distributed to the BOSC members prior to the May 2002 meeting. Writing assignments will be determined and a consultation will be provided at the May meeting.

Next Meeting

Dr. Schnoor reminded the BOSC members of the conference call scheduled for December 17. The call will focus on the review of the first three Laboratory/Center reports. Drafts of the reports must be submitted to Ms. Hamilton by December 7 for distribution to BOSC members. The reports will be revised and finalized before the February 11, 2002, meeting.

The next BOSC meeting will be held in Washington, DC, on February 11-12, 2002. The morning of the 11th will be devoted to a discussion of performance measures with the ORD Laboratory/Center Directors. Dr. Schnoor will ask the Directors to discuss (45 minutes each) how they measure performance at their respective Laboratories/Centers. In the afternoon, the BOSC will review the two remaining Laboratory/Center reports and vote on the first three reports. The morning of the 12th will be reserved as a writing session to finalize the consultation on performance measures. Dr. Preuss commented that measures of success are identified in the ORD Strategic Plan. Dr. Schnoor replied that the discussion will be broader than what is covered in the plans; for example, it will include benchmarking.

Dr. Schnoor will ask the Laboratory/Center Directors to provide comments on the draft Laboratory/Center reports before the February meeting. He indicated that Tim Opell should be sent a copy of the draft NRMRL report as soon as possible. Future reports will not be sent to the appropriate Director until the Subcommittee members have signed off on the report.

Dr. Clark indicated that he may be able to bring the writeup from the NCER site visit to the February meeting if the Subcommittee completes it before departing.

For the May 2002 BOSC meeting, the morning of the first day will focus on review of the Communications Subcommittee draft report. The BOSC also will vote on the two remaining Laboratory/Center reports unless they were already approved during a conference call. The afternoon of the first day will include presentations on two multiyear plans. The morning of the second day will be reserved for a writing session to prepare the consultation on the two multiyear plans. Dr. Schnoor stated that the BOSC review of the multiyear plans will focus on management and peer review. If the BOSC wants to look at the details of the plans, the review should be limited to two plans. Dr. Mattison suggested that the BOSC review the two reports that recently were reviewed by the SAB—Water Quality and Pollution Prevention. The BOSC members agreed to review these two multiyear plans.

Dr. Schnoor asked for a motion to adjourn the meeting. Dr. Bostrom moved to adjourn the meeting and Dr. Stewart seconded the motion. Dr. Schnoor adjourned the meeting at 11:45 a.m.

Action Items

The following action items were identified during the meeting discussions:

- ✧ Dr. Preuss agreed to ascertain which multiyear plans are available on the Web. Dr. Chameides asked that copies of the executive summaries of each available multiyear plan be sent to the BOSC members.
- ✧ The Laboratory/Center Subcommittee Chairs or Vice Chairs will send a copy of the response to self-study questions to Beverly Campbell at SCG. Ms. Campbell will prepare electronic files for distribution to the Board members.
- ✧ Dr. Chameides agreed to assist Dr. McCay in identifying an additional member for the NERL Subcommittee.
- ✧ Dr. Schnoor asked Dr. Bostrom to assist in redrafting the section on page 9 of the draft NRMRL report regarding the statement that internal communication needs effort.
- ✧ Dr. Dorward-King will verify that the NRMRL report recommends that the Laboratory prepare a communications strategy.
- ✧ All subcommittee members will review the draft report and sign off on it before it is submitted to the BOSC Executive Committee. The Laboratory/Center will have the opportunity to comment on the draft after it is presented to the Executive Committee. All Subcommittee members should have signed off on the draft reports before they are sent to Ms. Hamilton on December 7.
- ✧ For future site visits, Dr. Schnoor suggested that the Subcommittees ask the Laboratories/Centers about GPRA goals and measures.
- ✧ Dr. Johnson agreed to distribute a report prepared by a radioactive waste management committee on which he served. This report discusses benchmarking and many of the same issues discussed by the BOSC.
- ✧ Dr. Schnoor asked Drs. Preuss and Farland to identify the individuals who will receive the Communications Subcommittee self-study questions. He also asked them to identify a list of potential case studies. Dr. Preuss agreed to provide Dr. Bostrom two lists from which to select the case studies. One list will identify topics for which ORD's communications have been successful, and the other list will include topics for which ORD's communications have been less than successful. The lists also will identify which group(s) within the Laboratories/Centers performed the communication activities.
- ✧ Dr. Dorward-King suggested that the Communications Subcommittee members review the responses to the communication questions posed to the Laboratories/Centers, analyze that information, and then determine how to proceed with the review.
- ✧ The Communications Subcommittee members will meet in Seattle in December to review the responses to the self-study questions and the results of the site visits. She asked each Subcommittee Chair to send her the responses to the communications questions submitted by their respective Laboratories/Centers.
- ✧ Dr. Bostrom agreed to revise the Communications Subcommittee self-study questions and distribute them to the BOSC members.

- ✧ Dr. Barnes suggested that the BOSC provide input on the letter that EPA is in the process of drafting to the GAO that identifies a number of Agency concerns regarding conflict of interest policies.
- ✧ Dr. Schnoor will invite the Laboratory/Center Directors to the February BOSC meeting and ask them to discuss (45 minutes each) how they measure performance at their respective Laboratories/Centers.
- ✧ Dr. Schnoor will ask the Laboratory/Center Directors to provide comments on their respective Laboratory/Center reports before the February meeting.
- ✧ Dr. Small will send a copy of the draft NRMRL report to Tim Oppelt as soon as possible.

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ATTACHMENT 1:
**How Do We Measure the Success of a Research
Program in a Regulatory Agency?**

Dr. Peter Preuss

**ATTACHMENT 2:
SAB Response to the
GAO Report on Conflict of Interest**

Dr. Don Barnes

**ATTACHMENT 3:
SAB FY 2002 Projects**

Dr. Don Barnes