

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

**BOARD OF SCIENTIFIC COUNSELORS
EXECUTIVE COMMITTEE MEETING**

**Washington, DC
May 7-8, 2001**

Monday—May 7, 2001

Introduction and Overview

Dr. Jerry Schnoor (University of Iowa), Chair of the Board of Scientific Counselors (BOSC), called the meeting to order at 12:45 p.m. He welcomed the BOSC members to the meeting, and noted that there was a full agenda to cover in 1½ days. He indicated that the objectives of the meeting were to: provide the BOSC members an update on ORD activities, discuss with Dr. Ray Loehr areas of possible interaction with the Science Advisory Board's (SAB) Research Strategies Advisory Committee (RSAC), identify additional candidates for the Laboratory/Center Subcommittees, discuss the workplan prepared by the Communications Ad Hoc Subcommittee, present updates on the strategic plans of the Laboratories/Centers, and formulate the list of self-study questions and the site visit agenda. Dr. Schnoor reviewed the charge to the BOSC with regard to the Laboratory/Center reviews. Dr. Small asked about the likelihood that new Laboratory/Center Directors may be appointed with the new Administration. Dr. Peter Preuss (Director, NCER) replied that some changes are possible, but he did not expect all five of the Directors to change.

Approval of the January 25-26, 2001, BOSC Meeting Minutes

Dr. Schnoor asked if there were any comments on the January meeting minutes. When there were no comments, he asked for a motion to approve the minutes. Dr. Elaine Dorward-King (Rio Tinto Borax) made a motion to approve the January meeting minutes, and Dr. Juarine Stewart (Clark Atlanta University) seconded the motion. The January meeting minutes were approved unanimously by the BOSC Executive Committee.

Activities of the Research Strategies Advisory Committee (RSAC)

Dr. Ray Loehr (Chair, RSAC) provided an overview of the RSAC, which is a Standing Committee of the SAB. The RSAC provides broad advice to the EPA Administrator on research planning, management, and budget development for use by the Agency in its long-term budget planning process. The RSAC also provides a point of focus for the SAB to consider the overall directions of intramural and extramural research programs of EPA, provides a forum to discuss issues that cut across Agency programs, and advises the Executive Committee and Standing Committees on questions to consider in research review. The RSAC consists of one or more members from the Standing Committees of the SAB, and is augmented, as appropriate, by consultants to assure proper expertise and balance. Dr. Loehr noted that the RSAC is requested to provide annual testimony directly to Congress on matters related to the ORD budget and to broad science and technology issues.

In FY 2001, the RSAC will:

- ✧ Continue to review EPA plans, strategies, and science and technology budgets.
- ✧ Ensure that the complex scientific outreach and communication needs of EPA are met, including the need to reach throughout EPA and to the broader domestic and international scientific community for scientific and engineering knowledge relevant to EPA policy or regulatory issues.
- ✧ Coordinate and oversee scientific quality assurance and peer review practices throughout EPA.
- ✧ Develop processes to ensure that appropriate scientific information is used in decision making throughout EPA.
- ✧ Develop, understand, and utilize a comprehensive inventory of scientific activities conducted by the Agency (the Science Inventory).

Dr. Loehr provided several examples of RSAC activities, including: evaluating how EPA obtains and uses science from other sources, interacting with Congress, and interacting with Agency officials. He mentioned that he had written a letter to the EPA Administrator (as an individual) urging an early selection of the Assistant Administrator for ORD. The RSAC intends to conduct an Advisory related to the implementation of the Peer Review Process using two topics as illustrations—bioaccumulation factors (report on bioaccumulation of mercury and the human health methodology for deriving ambient water quality criteria) and the risk characterization handbook. The RSAC also plans to develop an Advisory on the Science Inventory, and is considering an Advisory on Cross-Agency Science Planning.

Dr. Loehr indicated that the RSAC's major effort for the remainder of 2001 is an evaluation of peer review and how EPA acquires, evaluates, and uses science. This effort will result in a commentary for the new EPA Administration. The commentary will offer guidance to help the Agency acquire the best science and to interpret that information for environmental decisions. (Dr. Loehr's presentation handout is provided in Attachment 1.)

Dr. Schnoor asked if there were any questions for Dr. Loehr. Dr. James Clark (Exxon Mobil Research & Engineering Co.) asked if the commentary on how EPA obtains and uses science from other sources is available to the BOSC. Dr. Donald Barnes (SAB Staff Director) responded that the commentary should be on the Web site within a week. Dr. Loehr pointed out that the document is not final until it is approved by the Executive Committee. Dr. Herb Windom (Skidaway Institute of Oceanography) asked if the RSAC will be looking at the STAR Program. Dr. Loehr replied that the RSAC will be reviewing individual reports, not the STAR Program. With regard to joint efforts between the RSAC and the BOSC, Dr. Loehr stated that the RSAC is interested in ORD's multiyear plans as well as metrics for success. Dr. Clark asked what percentage of the Agency's science is planned and managed within ORD. Dr. Loehr responded that he did not have an answer to that question. Dr. Ann Bostrom (Georgia Institute of Technology) asked if the RSAC plans to look at the public comment process and how EPA handles public comments. Dr. Loehr replied that this will be considered in the review. The intent of the review is to determine how knowledge is brought into the Agency, how the linkages with these outside organizations function, and how to institutionalize the interaction. Dr. Bostrom commented that such a review should be conducted at a higher level.

Dr. Schnoor asked if there is something the BOSC could do to ensure that the Agency is generating and using good science. Dr. Mitch Small (Carnegie-Mellon University) mentioned that it may be beneficial to look at how and from what source(s) Congress obtains science advice. Dr. Loehr noted that it is not just the quality of the science, but whether the science is used appropriately. It is this latter issue that prompted the National Research Council (NRC) to stress the need for a Deputy Administrator for Science and Technology—placing a scientist at the decision-making level. Dr. Barnes pointed out that science is

not the only motivation in decision making; science does not always provide the answer, it just informs the process. Dr. Preuss asked how the RSAC identified this list of activities that it plans to undertake. Dr. Loehr replied that he was not certain how the list was generated. Dr. Barnes said that the Agency requested some of the reviews (e.g., the peer review process review).

State of ORD

Mr. Henry Longest (Acting Assistant Administrator, ORD) thanked the BOSC members for their work on behalf of ORD. He reported that ORD is well-positioned to lead Agency science, and ORD is making a difference in Agency decisions through credible, relevant, and timely research results and technical support that inform EPA policy decisions. (Mr. Longest's presentation is provided in Attachment 2.) Mr. Longest noted that making decisions with sound science requires: (1) relevant, high quality, cutting-edge research in human health, ecology, pollution control and prevention, and socioeconomics; (2) proper characterization of scientific findings; and (3) appropriate use of science in the decision process. ORD contributes through health and ecological research as well as research in pollution prevention and new technology, in-house research and an external grants program, and problem-driven and core research.

Mr. Longest stated that the ORD FY 2002 President's budget is \$535 million, and there will be hearings this week on the FY 2002 budget. He pointed out that the FY 2001 enacted budget (\$574 million) is higher than the FY 2002 President's budget because of the earmarks. In FY 2001, there were earmarks totaling \$42 million (7%). Since 1998, the percentage of earmarks has ranged between 7% and 9%, and until 2001, ORD had to fund these earmarks from the base budget by reducing other programs. Dr. Small commented that ORD's budget has declined if inflation is taken into account.

Mr. Longest noted that ORD subjects earmarked projects to rigorous peer review. Dr. Schnoor asked what ORD does if the quality of the science is not acceptable. Dr. Preuss commented that ORD has asked for revised proposals based on peer reviewers' comments. ORD continues this process until the institution submits a proposal that is acceptable to the peer reviewers. He noted that this practice is unusual among government agencies and a number of institutions are not pleased with it. Dr. Windom suggested a post-audit of an earmarked project to determine if the peer review of the proposal was instrumental in ensuring good science. Dr. Loehr added that there are peer reviews of ongoing earmarked projects as well as review of the proposals. He believes that there is a benefit to these reviews and that they improve the quality of the science. Dr. Bostrom said that it might be informative for Congress to do a post-audit comparison of earmarked research and competitive research. Dr. Johnson commented that the earmarked projects could provide a greater return on investment when compared to the competitive projects because these large, earmark-funded centers do a substantial amount of research and have significant resources at their disposal. Dr. Preuss mentioned that EPA is ready to sign a contract with the National Academy of Sciences (NAS) that involves the development of metrics of success. He noted that these metrics could be used to evaluate both earmarked and competitive research.

Mr. Longest presented a breakdown of ORD's budget by goal—clean air, clean water, safe food, safe communities, waste management, global risks, quality environmental information, and sound science. He provided a projection of the Agency science and technology (S&T) funding needs for FY 2002 through FY 2006, and noted that Agency S&T is projected to increase by \$15 million per year. Because the ORD workforce cost grows \$8-9 million annually and the cost of infrastructure is growing rapidly, the \$15 million increase will not be adequate to keep up with inflation. Dr. Dorward-King asked how often earmarks are consistent with ORD's priorities. Mr. Longest replied that some earmarks have been consistent, and he agreed that ORD look at this issue. Dr. Preuss estimated that 15-20 percent of the earmarked projects may be consistent with EPA priorities. Dr. Clark asked what is included in infrastructure costs. Dr. Farland replied that this includes funds for remodeling, expanding, and maintaining ORD facilities. In closing, Mr. Longest asked the BOSC members to examine whether the risk paradigm organization of ORD is effective when conducting their review of the Laboratories/Centers. Is the exposure work leading into effects work, and is the effects work leading all the way up to assessment?

Dr. Bostrom asked how the hiring freeze has affected ORD. Mr. Longest replied that it wiped out all vacant positions and ORD is just now moving forward to fill executive and management positions. Dr. Bostrom asked about post-docs, and Mr. Longest responded that the freeze affected EPA post-docs; however, ORD has access to other post-docs. Dr. Farland mentioned that there has been no increase in ORD purchasing power. Dr. Preuss commented that a study by the American Chemical Society indicated that ORD's purchasing power has declined by 60%.

Public Comment

Dr. Schnoor asked if there were any public comments. No comments were provided.

BOSC Discussion of Laboratory/Center Review Process

Dr. Schnoor mentioned that several of the Chairs had identified Subcommittee members, but because Dr. Barnes asked that the Subcommittee members not be members of the SAB or its Standing Subcommittees, those individuals could not serve on the BOSC Laboratory/Center Subcommittees. Therefore, some of the Subcommittees are incomplete. For those individuals who were not on the SAB or any of its Standing Subcommittees, Shirley Hamilton (Designated Federal Officer) already has processed the necessary paperwork.

Dr. Schnoor suggested going through the list of members for each Subcommittee. He asked that the BOSC members identify potential candidates for those Subcommittees that need members. The members of the Subcommittees who have been approved as well as potential members are identified in Table 1.

Table 1. BOSC Laboratory/Center Subcommittees

National Center for Environmental Assessment (NCEA) Subcommittee	<p>NCEA Director: George Alapas, DPA (Acting)</p> <p>Chair: Rae Zimmerman, PhD Vice Chair: Donald Mattison, MD</p> <p>Members: Michael R. Greenberg, PhD Anne Fairbrother, DVM, PhD</p> <p>Potential Members: Dennis Paustenbach, PhD Carol Henry, PhD Elaine Faustman, PhD Jane Koenig, PhD Kimberly Thompson, DSc</p>
National Center for Environmental Research (NCER) Subcommittee	<p>NCER Director: Peter W. Preuss, PhD</p> <p>Chair: James Clark, PhD Vice Chair: James H. Johnson, Jr., PhD</p> <p>Potential Members: Richard Di Giulio, PhD Herb Ward, PhD Joan Ehrenfeld, PhD Steve Goodbred, PhD Kimberly Thompson, DSc Barbara Johnston, PhD Mary English, PhD John Rogers, PhD Judith Weiss, PhD</p>

<p>National Exposure Research Laboratory (NERL) Subcommittee</p>	<p>NERL Director: Gary Foley, PhD</p> <p>Chair: Bonnie J. McCay, PhD Vice Chair: Juarine Stewart, PhD</p> <p>Potential Members: Shelly Miller, PhD Petros Koutrakis, PhD Allen Roebach, PhD Lynn Hildemann, PhD Dennis Paustenbach, PhD Alison Cullen, PhD Pat Kinney, PhD Bruce Egan, PhD Bert Hakkinen, PhD</p>
<p>National Health and Environmental Effects Research Laboratory (NHEERL) Subcommittee</p>	<p>NHEERL Director: Lawrence Reiter, PhD</p> <p>Chair: James S. Bus, PhD Vice Chairs: Herbert L. Windom, PhD Daniel Acosta, Jr., PhD</p> <p>Members: Fred Miller, PhD Kenneth L. Dickson, PhD</p>
<p>National Risk Management Research Laboratory (NRMRL) Subcommittee</p>	<p>NRMRL Director: E. Timothy Oppelt</p> <p>Chair: Mitchell J. Small, PhD Vice Chair: Elaine Dorward-King, PhD</p> <p>Potential Members: David Allen, PhD Janet Herring, PhD William Ball, PhD Amy Zander, PhD Andrea Dietrich, PhD Phil Singer, PhD</p>
<p>Communications Ad Hoc Subcommittee</p>	<p>Chair: Ann Bostrom, PhD Vice Chair: Elaine Dorward-King, PhD</p> <p>Members: Steven C. Lewis, PhD, DABT Caron Chess, PhD Anna Harding, PhD</p>

Discussion of Communications Ad Hoc Subcommittee Work Plan

Dr. Bostrom provided a draft work plan for the communications review to the BOSC members (see Attachment 3). She noted that the plan includes a few paragraphs of background and a description of the process to be used by the Subcommittee to conduct the review. The review will be focused on the communication of research results to the various ORD audiences. Dr. Dorward-King noted that communications within and among Laboratories/Centers should be addressed by the Laboratory/Center Subcommittees. The Communications Ad Hoc Subcommittee will work with the Laboratory/Center Subcommittees to develop specific communications questions for the site visits. Dr. Farland asked Dr. Bostrom if the focus included results from both intramural and extramural research. She replied that it would include both types of research results. Dr. Farland commented that if intramural results are included, the review will expand beyond NCER. He suggested that the Communications Ad Hoc Subcommittee work with the communications staff at the various Laboratories/Centers. Dr. Bostrom

agreed and noted that the data gathering efforts will focus on those who are responsible for communicating the science. Dr. Preuss said that ORD has numerous mechanisms to communicate results (e.g., Web sites, meetings, workshops) and yet most of the Agency believes that ORD is not doing a good job communicating research results. He asked the Subcommittee to determine if there is some explanation for why the Agency believes ORD is not doing a good job communicating research results. The Program Offices believe there is more information available than ORD is communicating. What can ORD do to improve? If the recipient perceives that ORD is failing at communicating results, does that automatically mean that ORD is a failure? Dr. Rae Zimmerman (New York University) asked how ORD became aware of these complaints. Dr. Preuss replied that this is a common complaint at meetings with the Program Offices.

Dr. Bostrom asked if it would be possible to have an intern collect some data for the Communications Ad Hoc Subcommittee. Dr. Preuss said that he would check on that possibility. Dr. James Bus (Dow Chemical Co.) indicated that the Program Offices and other customers should be interviewed or surveyed to determine why they believe ORD is not communicating results. Dr. Bostrom said that she would like the Subcommittee to do a couple of case studies. Dr. Windom commented that part of the evaluation should be to determine if ORD's products are being used. Dr. Bostrom noted that the Subcommittee will develop a list of self-study questions and will work with ORD to identify two case studies for which they will interview ORD staff and the target audience to determine what was effective and what failed. She added that the Subcommittee also plans to examine current planning and management of communications. In addition, the Subcommittee will look at how other agencies handle media relations and communications. Dr. Bostrom indicated that she would like to schedule a meeting of the Subcommittee during which the members would discuss the study process and develop the questions and instruments. She proposed that representatives of the Communications Ad Hoc Subcommittee attend the NCER site visit. Dr. Dorward-King stated that attendance at other site visits may not be necessary. Dr. Bostrom noted that the second meeting of the Communications Ad Hoc Subcommittee would focus on reviewing the case studies and the responses to the self-study questions from the other Subcommittees. She agreed that the communications review report should not be finalized until the Laboratory/Center reports have been completed (in February 2002); therefore, Dr. Bostrom estimated that the final communications report would be ready to present to the BOSC in May 2002.

Dr. Windom asked if the communications review will include RFAs and how they are used to communicate research needs. Dr. Bostrom responded that RFAs would be beyond the scope of the review. She reiterated that the focus of the review is how well the science is being communicated and whether it is being acted upon. Dr. Windom noted that NCER has to communicate research needs to the research community. He stressed the importance of this communication in engaging that community in extramural research. Dr. Bostrom agreed and asked that the BOSC members e-mail her their comments on the draft work plan.

Schedule of the Laboratory/Center Site Visits and Review Reports

Dr. Schnoor asked the Subcommittee Chairs to complete their self-study questions by mid-May 2001. The Laboratories/Centers need 2 months to prepare their responses. Therefore, the site visits should be scheduled from mid-August to October. The next BOSC meeting will be scheduled after the last site visit, probably late October or early November. He asked that the Subcommittees complete draft reports by December 31, 2001. A conference call will be scheduled in January 2002, to discuss the drafts and the final reports should be ready for presentation to the BOSC meeting in February 2002.

Self-Study Questions

Dr. Schnoor presented a list of generic self-study questions that resulted from the January meeting and he asked the BOSC members to provide their comments. Dr. Zimmerman suggested a question about the

criteria used by the Laboratories/Centers to set their research portfolios. How are all the research results used to set research priorities, select projects, set the research agenda, and discharge the mission of the Laboratory/Center? What are the metrics of success? Dr. McCay suggested adding the risk paradigm to one of the questions. Dr. Schnoor agreed and proposed adding it to the question on integration with other Laboratories/Centers. Dr. Clark thought it should be clear that integration includes planning, prioritizing, implementing, and communicating results. Dr. Dorward-King suggested adding a question about how the Laboratory/Center ensures that it has the appropriate resources to conduct the research. What are the problems and challenges to accomplishing your mission and objectives? Dr. Windom noted that this should include workforce challenges. Dr. McCay proposed including a question about how they have responded to the recommendations in the previous reports. Dr. Schnoor replied that the Directors will do some of that in their presentations tomorrow.

Dr. Schnoor asked if there should be specific questions for each Laboratory/Center. Dr. Johnson suggested that the current list of questions be reordered (e.g., the second set of questions should be first). Dr. Schnoor agreed to rearrange the questions. Dr. Small proposed that the BOSC members review the specific questions in the previous Laboratory/Center reports and provide any specific questions tomorrow. Ms. Hamilton provided a copy of each Laboratory/Center report to the BOSC members immediately following the meeting.

Tuesday—May 8, 2001

Dr. Schnoor reconvened the meeting at 9:00 a.m., and stated that most of the day's agenda was devoted to the Laboratory/Center presentations. He noted that Dr. Reiter would be the first presenter so that Dr. Bus, Chair of the NHEERL Subcommittee, could hear that presentation before he leaves.

Dr. Preuss provided some background on the presentations. He mentioned that the ORD Strategic Plan (SP2K) has been published and is available for the BOSC members. With the completion of SP2K, the Laboratories/Centers have moved forward on finalizing their plans. Dr. Preuss commented that most of the Laboratories/Centers had begun preparing their plans prior to the SP2K, and each plan takes a slightly different approach; however, all of them are consistent with ORD's Strategic Plan. Dr. Preuss said that these presentations should give the BOSC members a broader view of each Laboratory's or Center's strategic planning process before they conduct the site visits.

NHEERL Strategic Plan Presentation

Dr. Larry Reiter (Director, NHEERL) provided an update on NHEERL's strategic plan. (Dr. Reiter's presentation is provided in Attachment 4.) Within NHEERL, strategic planning includes both an organizational component (NHEERL Organizational Strategy) and a scientific component (NHEERL Research Plans). The NHEERL Organizational Strategy is linked to ORD's SP2K through five strategic goals, and it identifies approaches or actions that NHEERL needs to take to achieve these strategic goals. There was Laboratory-wide participation in the development and implementation of the strategy and it is linked to research planning. NHEERL is developing multiyear implementation plans for major scientific programs. These plans are linked to ORD's SP2K and the multiyear plans. NHEERL's research plans are based on a framework that identifies key "effects" issues in ORD strategies, and NHEERL obtains input from other ORD organizations and regional representatives. Dr. Reiter also mentioned that NHEERL's research plans emphasize problem solving—"sound science is the foundation of our success; solving problems is the measure of our success."

NHEERL's strategic focus/challenge is to create a corporate culture that supports ORD. The organizational strategy aligns the workforce and business practices to support the corporate culture. It capitalizes on the full array of expertise (multidisciplinary, health/ecology, cross-organizational) and

establishes a shared responsibility (“purpose of many, power of one”). Dr. Reiter noted that the strategy is implemented at all levels of the organization.

There is Laboratory-wide participation in designing the implementation of the organizational strategy, which includes strategic approaches/actions, desired outcomes, and success measures. The NHEERL Director visited each Division to roll out the strategy and to encourage continuous communication and feedback. To promote “shared responsibility,” there was a management retreat, action plans, and Division meetings. In addition, a number of rewards and incentives have been identified.

Dr. Reiter provided a number of examples of implementation actions for each of the five goals of the NHEERL Organizational Strategy. For Goal 1: Support Agency Mission, the examples included initiate/support rotational assignments, multiyear research implementation plans, and Divisional reviews (quality/impact). For Goal 5: Anticipate Future Environmental Issues, the examples included rotational assignments (intra/inter laboratory), emerging issues workgroup (e.g., genomics/information technology), and the NHEERL symposium.

The objectives of the multiyear implementation plans are to:

- ❖ Improve **relevancy** and **responsiveness** to Agency needs.
- ❖ Engage NHEERL scientific staff in strategic planning.
- ❖ Identify the **critical paths** for research needed to resolve key scientific questions.
- ❖ Develop **programs** to address Agency problems (not just collection of projects).
- ❖ Insure **timeliness** of research products.

Dr. Reiter described the structure of the Multiyear Implementation Plan Steering Committee and listed the multiyear plans under development: Aquatic Stressors, Endocrine Disruptors, Air Toxics, Drinking Water, Safe Communities (TSCA/FIFRA), Human Health Risk Assessment, and Particulate Matter (PM). He noted that the first two on this list are pilot Multiyear Implementation Plans and the PM plan follows the NAS/NRC recommendations. To give the BOSC an idea of the structure of these plans, Dr. Reiter used the plan for Aquatic Stressors as an example. The overall objective of the Aquatic Stressors plan is to develop the means to identify, assess, and manage aquatic stressors, including contaminated sediments. The five specific research areas are: nutrients, habitat, toxic chemicals, suspended/bedded sediments, and diagnosis. For the nutrients research area, NHEERL will define and quantify relationships between loading and ecological responses for major aquatic resource types. For habitat, NHEERL will provide the scientific basis for assessing the role of essential habitat in maintaining healthy populations of fish, shellfish, and wildlife. For the toxic chemicals area, NHEERL will develop scientifically defensible approaches for estimating risk of toxic chemical exposures to aquatic life and aquatic-dependent wildlife. For the suspended/bedded sediments area, NHEERL will demonstrate the scientific foundation for establishing sediment criteria that support aquatic life use. For the diagnosis area, NHEERL will provide a framework for interpreting cause/effect relationships to determine primary sources of biological impairment, and allocate causality among multiple stressors to aquatic ecosystems.

The critical path for the nutrients research program is: (1) develop conceptual model for receiving water bodies/endpoints, (2) identify and assess existing information, (3) develop classification scheme for receiving water bodies/endpoints, (4) develop standard methods and procedures for assessment endpoints, and (5) determine nutrient load—water body response relationships.

In summary, Dr. Reiter stated that multidimensional (organizational/scientific) strategic planning is underway at NHEERL and it is explicitly linked to both EPA and ORD strategic plans. He added that NHEERL’s strategic planning will be accomplished through extensive and protracted NHEERL, ORD, Program, and Regional involvement.

Dr. Clark asked how much urgency and priority is being placed on strategic planning, given that the staff are doing this along with their regular workload. Dr. Reiter replied that each staff member has been told that strategic planning is very important and he has visited each Division to get them on board and to stress this importance. He is working to communicate the importance of strategic planning and to get the staff committed, but it takes time and sustained energy. Dr. Dorward-King asked where NHEERL was in the implementation process. Dr. Reiter responded that the plan has been rolled out and each Division has met to determine what it can do to help meet the five goals. The Divisions also have identified important components that must be done even though they cannot do them. NHEERL is moving forward with implementing the plan. One area that NHEERL has just started to implement is career development and succession planning. He has asked the Divisions to identify the types of expertise that will be needed over the next 5 years. Dr. Windom asked how NHEERL is encouraging integration among disciplines. Dr. Reiter said that he has asked the Divisions to develop programs that cut across the Divisions to help facilitate integration. He noted that the biggest challenge to integration within NHEERL is geographic dispersion. Bringing the Divisions together to plan collaborative research and sending scientists to other Divisions to give talks are enhancing the spirit of cooperation and helping to create a sense the NHEERL is a national laboratory and not a group of individual Divisions. Dr. Johnson expressed some concern that there are no external members on the Steering Committee.

NCEA Strategic Plan Presentation

Dr. Vanessa Vu (NCEA, Associate Director for Health) provided an overview of NCEA's Strategic Plan, some highlights of the plan, and a description of the future challenges. (Dr. Vu's presentation is provided in Attachment 5.) She indicated that NCEA's Strategic Plan was consistent with SP2K and ORD's research strategies and plans. NCEA's plan includes three components: Administrative & Management Plan, Ecological Risk Assessment Implementation Plan, and Human Health Risk Assessment Implementation Plan. The strategy provides a roadmap for NCEA to achieve ORD's five organizational goals, and it delineates NCEA's shared vision, mission, and values. It also identifies future directions and priorities to improve the science underlying EPA's risk assessments and risk management decisions. It defines priorities for more effective and efficient scientific information management and administrative/management support, and it provides a strategy for enhanced organization capabilities to meet future environmental challenges.

Preparation of the strategic plan and implementation plans was an integrated effort of multidisciplinary teams. There was active participation across the Center and substantial input from other ORD organizations and the Agency. Dr. Vu indicated that the plans are expected to be published in 2001.

NCEA's mission is to: (1) support ORD's goals by serving as EPA's national resource center for environmental risk assessment, (2) identify risk assessment issues and provide solutions through consultation and development of improved methods and guidance, (3) conduct risk assessments of highly complex and novel issues, and (4) promote application of consistent and integrated risk assessment methods across EPA. NCEA's administrative and management emphases include: outreach program, information management, diverse workforce plan, and organizational climate. NCEA's science themes include: improving human health risk assessment, improving ecological risk assessment, integrating human health and ecological assessment, and integrating risk assessment and risk management. The program activities for these four theme areas are risk assessment methods research, assessments of stressors or sites of national significance, and guidance and support.

To improve the scientific foundation of human health risk assessment, NCEA will incorporate advanced mechanistic understanding of the "exposure-dose-effect" continuum as the scientific basis for improved risk assessment methods. This will involve harmonizing cancer and non-cancer assessments, characterizing risk to susceptible populations, and assessing aggregate risk and cumulative risk. For the human health risk assessment area, NCEA will conduct risk assessment methods research and apply advanced mechanistic data in risk assessment of contaminants of special importance to Program and

Regional Offices (e.g., air pollutants, drinking water contaminants, endocrine disrupting chemicals, and persistent organic pollutants).

For the ecological risk assessment program, NCEA will: (1) improve the science of ecological risk assessment by conducting research on risk methods, completing exemplary ecological risk assessments, and continuing development of ecological risk guidelines; (2) develop ecological risk assessment approaches for place-based assessments; and (3) integrate human dimensions into ecological risk assessments. Place-based assessments will include watershed ecological risk assessment and improving problem formulations in ecological risk assessment. For ecological stressors, NCEA will provide stressor identification guidance by developing diagnostic approaches for identifying probable aquatic stressors from information concerning biological receptors of interest, and developing a computerized decision support system to assist with stressor identification. In addition, NCEA will develop approaches to evaluate ecological risks associated with potentially invasive species.

For integration of human health and ecological risk assessment, NCEA will assess the ecological and health risk of mercury exposure to humans and wildlife, conduct multiple projects focusing on identifying the consequences of global change and climate variability on human and ecological health, contribute to the U.S. Global Change Research Program National Assessment, and conduct risk assessments of selected endocrine disruptors. With regard to integrated assessments, NCEA will coordinate the problem formulation phase of an integrated assessment combining human and ecological health with cultural values (Arctic integrated assessment), conduct a watershed assessment integrating ecological condition and economic values, and investigate how personal values effect the perception of ecological risk.

For integration of risk assessment and risk management, NCEA will develop a framework(s) and a suite of tools, systems, and methods for use in evaluation of the impacts of risk management decisions on human health and the environment. Other areas of focus are comparative risk assessment and risk communication.

NCEA's strategy includes the foundation of a high-performance assessment center. The strategy encourages integrated and innovative science within NCEA and ORD via internal grants. It promotes collaboration and outreach programs (ORD, EPA, federal agencies, states, local agencies, and national and international scientific organizations). NCEA will participate in shaping ORD's future research agenda by identifying key research needs, and the Center will develop advanced information management systems to facilitate risk assessment.

Dr. Vu provided several examples of outreach within ORD, within EPA, and outside EPA. With regard to organizational capabilities, the strategy calls for the expansion of NCEA's capacity in ecological risk assessment to improve the balance between ecological and human health risk assessment, acquisition of new expertise to address emerging issues, continuation of support of the AAAS fellowship and post-doc programs, and leveraging of internal and external expertise centers.

In closing her presentation, Dr. Vu identified the following future challenges:

- ❖ NCEA Strategic Plan identifies the need for expansion into new research areas.
- ❖ Requires new scientific expertise in face of flat resources.
- ❖ Leveraging internal and external expertise becomes more critical for the near future.
- ❖ More emphasis of NCEA's role as a leader for environmental assessment center, not a "doer" of standard risk assessments.

Dr. McCay asked if NCEA had human dimensions expertise. Dr. Vu replied that NCEA currently relies on outside expertise, but there are plans to recruit someone with this expertise. Dr. Zimmerman asked how NCEA balances the integration and coordination role with performing actual work. Dr. Vu said that NCEA is developing a draft framework of how to improve integration. She noted that it is the health

scientists (not the ecologists) that are having a problem with integration. Dr. Dorward-King asked how NCEA identified the most important problem-driven areas on which to focus its work. Dr. Vu indicated that they look at problems from two perspectives—contaminant-specific and place-based. Dr. Bostrom noted that there are no additional resources for new staff, but there is a need for new expertise. Will NCEA shift the skills mix through new hires following retirements? Dr. Vu agreed that NCEA has an aging workforce, which is one reason they support the post-doc program. They will gain some needed expertise through new hires following retirements; however, because NCEA has a small staff, it must rely on outside expertise as well. Dr. Stewart asked if NCEA staff have been involved in the strategic planning process. Dr. Vu responded that the staff are excited about the strategic plan but they are not pleased with the administrative reporting component. The challenge is to increase the number of accomplishment reports to help communicate the results of NCEA's research. Dr. Small asked how NCEA is addressing the problems identified in the previous BOSC review. Dr. Vu replied that NCEA is working to eliminate its deficiencies. The BOSC recommended that NCEA prepare a strategic plan, improve integration, and become more of a leader/catalyst rather than a "doer" of research. Dr. Vu said that NCEA has drafted a strategic plan and is actively working to improve integration and become more of a leader/catalyst. Dr. Windom asked if NCEA should more narrowly focus its research given its small staff and budget. Dr. Vu replied that NCEA is expanding certain areas, but in each area, NCEA selects key issues on which to focus. She noted that much of NCEA's work is conducted in conjunction with other Laboratories. She agreed that NCEA has to be very selective, without ignoring the many important areas.

NERL Strategic Plan Presentation

Dr. Gary Foley (Director, NERL) presented an overview of the NERL Strategic Plan. (Dr. Foley's presentation is provided in Attachment 6.) NERL's mission is to develop, evaluate, apply, and integrate exposure methods, measurements, databases, and models to reduce uncertainty for exposure assessment, risk assessment, and risk management. Exposure is defined as contact of a chemical, physical, or biological agent with the outer boundary or an organism. Exposure is quantified as the concentration of the agent in the medium in contact, integrated over the time of duration of that contact. Exposure route is the way a chemical or pollutant enters an organism after contact (by ingestion, inhalation, or dermal absorption).

Within the risk paradigm configuration of the Laboratories/Centers, NERL conducts research to measure, characterize, and assess exposures and to support compliance with environmental regulations and policies. The Office of the Director is in Research Triangle Park, NC, and NERL has Divisions in Las Vegas, NV; Athens GA; Cincinnati, OH; and Research Triangle Park, NC. NERL's workforce consists of 475 federal employees, 187 contractors, 100 SEE enrollees, and 36 non-federal post-docs. Since 1995, hiring has shifted to accommodate the change in NERL's mission. The workforce emphasis is in critical research areas (e.g., human exposure, landscape characterization). Dr. Foley presented NERL's strategic planning timeline, which indicated that a draft strategic plan was ready for review in January 1997. Multiyear planning and workforce planning began in late 1997, and the Strategic Plan was placed on the Internet in August 1998. Overview documents on 14 topics were prepared and they were placed on the Intranet for EPA use in March 1999. Dr. Foley reported that the strategic plan will be updated annually.

Challenges in human exposure research include: (1) merging together the deterministic, physical world with the stochastic world of human choice and will, and (2) accounting for total human exposure—all routes of exposure, all important pathways, all relevant chemicals, and exposures of both the general population and susceptible groups. Dr. Foley stated that NERL's human exposure research program delivers human exposure models that are founded in human exposure measurements affecting human receptors. He presented a diagram that depicted how NERL's human exposure products are applied to Agency problems (e.g., aggregate/cumulative risk, particulate matter, drinking water). Dr. Foley also used a diagram to illustrate the exposure-dose-effects continuum.

Challenges in ecological research include: (1) changing regulatory perspective, (2) ecosystem management as a future goal, and (3) assessing relative risk for decision making. Ecological research topics include landscape ecology, multimedia modeling, regional vulnerability analysis, biological indicators, environmental chemistry, multimedia/receptor/stressor risk assessment, Superfund methods, and process research and field studies. Dr. Foley presented a diagram that depicted the relationships among science topics, tool kit, collaborators, products, and client applications.

NERL's goal is to become more inclusive, less hierarchical, and team/talent based. NERL's approach to becoming a high-performance organization (HPO) is to:

- ❖ Focus on organizational change as a way to become an HPO.
- ❖ Anticipate best practices as an outcome of being an HPO.
- ❖ Become an HPO through a deliberate process.
- ❖ Call for change to occur throughout the organization.

In January 2001, NERL's senior managers trained with John Pickering (a management consultant), and a steering committee was formed by senior managers who are committed to this concept. In February 2001, an FTE was devoted to being "Change Agent." Branch Chiefs trained with John Pickering in May 2001, and POS will train with Pickering in June 2001. Five additional sessions with Pickering have been scheduled for this year. Dr. Foley closed his presentation by stating that more information on NERL's strategic planning efforts can be found on the Web at <http://www.epa.gov/nerl>.

Dr. McCay asked how NERL could develop a plan without defining its mission and values. Dr. Foley replied that NERL's plan is modeled after ORD's plan and there was some discussion of mission and values. Dr. McCay asked what NERL had done in response to the recommendations from the previous BOSC review. Dr. Foley said that the strategic plan was developed in response to the BOSC recommendations. Another problem highlighted by the BOSC was the excess overhead and administration/management at NERL. Dr. Foley responded that they have made little progress in decreasing this excess. Dr. Stewart asked what has hindered the progress, and Dr. Foley indicated that the administrative/management workload requires that level of staffing to complete the work. Dr. Zimmerman asked how NERL links with NCEA. Dr. Foley said that several work groups have been formed to examine certain issues that should be integrated (e.g., modeling). He agreed that there needs to be more connectivity in this area. Dr. Clark asked how many tasks are inventoried at NERL. Dr. Foley replied that about 200 tasks are inventoried; the Divisions define what tasks are to be included.

Dr. Windom asked about the mechanism for customer feedback. Dr. Foley responded that one mechanism is to get out and talk to the customers, and this is encouraged at all levels. Another means is to survey the customers; this is done occasionally, particularly when NERL issues a significant product. Dr. Windom asked if there has ever been an independent audit of customer feedback, and Dr. Foley replied that no audit has been performed. Dr. Small asked if NERL tracked hits to its Web site. He also asked why the overview documents are available only on the Intranet. Dr. Foley said that the documents were placed on the Intranet because it was faster and easier; because ORD is trying to coordinate what is placed on the Internet, it takes longer to get material on the Web. He also stated that NERL does not monitor the hits on the Intranet, only on the Internet. Dr. Zimmerman asked if having the documents on the Intranet has helped with integration, and Dr. Foley replied that he thought it did help. He keeps the entire database on his laptop so it is easily accessible to share with others. Dr. Zimmerman asked if there are any problems with data restrictions. Dr. Foley acknowledged such problems—some data sets become readily available and others do not. Dr. Zimmerman noted that Berkeley gets around this by making the data available on a Web site that allows users to work with the data sets but not download them.

Dr. Dorward-King asked about the number of years the planning process can span. A 5-year monitoring effort is not adequate. NERL needs to plan over a longer timeframe. How does NERL address this? Dr. Foley replied that the PIs have been asked to lay out a 3-year plan with projects going out for 8 years. He

noted that ORD planning uses a 10-year timeframe. Dr. Foley thought it would be difficult for the PIs to prepare plans for longer periods. Dr. Reiter commented that multiyear planning starts with a problem, the technical issues are extracted, the key scientific questions that need to be addressed are identified, and then the impact of finding the answers to these questions is predicted.

NRMRL Strategic Plan Presentation

Tim Oppelt (Director, NRMRL) provided an overview of NRMRL’s Strategic Plan. (Mr. Oppelt’s presentation is provided in Attachment 7.) He mentioned that NRMRL completed its draft strategic plan before the ORD Vision 2000 meeting and the first draft of the SP2K. The NRMRL Strategic Plan identifies the Laboratory’s vision, core values, core purpose, and envisioned future. It also includes an assessment of forces and trends, strategic goals and actions, and success measures. The plan also allows for continuous reassessment. NRMRL’s core purpose is to provide innovative solutions to the most important environmental problems. NRMRL values the environment; excellence in its research; its people and their professional integrity; and the trust, respect, and appreciation of the American people. The challenging long-term goals are that NRMRL be the first place decision makers come to for solutions and the first place environmental professionals want to work.

Mr. Oppelt identified a number of trends in regulations and standards that affect NRMRL’s strategic plan, including: declining emphasis on new regulatory programs, tougher scientific and cost-benefit test, more competition for resources, regulatory reinvention/harmonization (voluntary CBEP, risk based, multimedia decentralization), changing regional role, and internationalization of environmental protection. Trends in science and technology include molecular biology/genetics, computing and information technology, non-chemical risks, electronics/sensors (real-time management), energy, and materials/remanufacturing. He also identified some trends in environmental priorities: fine particulate matter, global climate change, drinking water, watershed management, sustainable development, pollution prevention, oceans, and reinvention of regulations (behavioral elements).

The NRMRL Strategic Plan identifies four goals: (1) support and strengthen our workforce, (2) develop and sustain an outstanding intramural research organization, (3) integrate risk management across the risk assessment/risk management paradigm, and (4) impact solution of most important environmental problems. Actions to achieve the first goal include preparing a strategic workforce plan, enhancing recruitment, expanding career development, and developing leadership. To achieve this goal, NRMRL has prepared a staffing plan and broadened hiring, formed a recruitment workgroup and developed a brochure, conducted IDP/TQB training, drafted a leadership development program, increased staff at the PhD level (68 to 103 since FY 1997), and increased the number of women and minorities in management positions. There has been a significant shift in NRMRL’s skills mix since 1997:

	<u>1997</u>	<u>2001</u>
Engineering	50%	37%
Physical Sciences	18%	34%
Life Sciences	9%	12%
Social Sciences	3%	6%

To achieve the second goal (intramural research), NRMRL’s strategy is to form research teams, implement full-cost planning, revise the internal grants program, conduct Divisional peer reviews, implement reward systems (IPAs, scientific meetings), and expand equipment and facilities. Since 1997, NRMRL has increased post-docs by 23, hired 42 federal technicians, conducted research team training, designed the expansion of the Cincinnati facilities, proposed expansions at Ada and Edison, funded 27

internal grants, increased peer reviewed publications from 40 to 102, attended Laboratory/Division science seminars, and received 5 Gold, 2 Silver, and 24 Bronze medals.

To achieve the third goal (synthesis/integration), NRMRL's strategy is to refine peer review of the risk assessment/risk management process; broaden its skill mix; promote cross Laboratory/Center research; conduct risk management evaluations (RMEs) for emerging problems; and link exposure, effects, and risk management models. To date, NRMRL has conducted an Office of Science Policy/NRMRL Risk Management Workshop; increased collaboration with NHEERL, NERL, and NCEA (PM, drinking water, pollution prevention, Environmental Technology Verification [ETV] Program, ecorestoration, and watersheds); conducted risk management evaluations and developed protocol; and broadened its skill mix (ecology, systems, economics, urban planning, and water resources).

To achieve the fourth goal (impact), the strategy is to identify key customers and needs, identify key environmental problems, produce research outputs, and develop an impact measurement process. To date, NRMRL has identified key environmental priorities for risk management; identified primary and collateral customers; prepared a protocol for monitored natural attenuation; conducted research on fine PM emissions and control, arsenic control in drinking water, mercury emissions control, contaminated sediments remediation, and watershed management and restoration; developed benign solvent design software; and performed 133 ETV technology verifications.

Mr. Oppelt identified a number of success measures specified in the plan, including routine data collection by goal area, customer service plans, ORD Organizational Survey, impact assessments for major programs, and periodic reassessment of the Strategic Plan. He closed his presentation by identifying the next steps. The NRMRL Strategic Plan will be revised by October 2001. The research priorities will be adjusted to conform to the multiyear plans, it will be updated to include new actions, and it will be revised to align more closely with the ORD Strategic Plan.

Dr. Windom asked how NRMRL identifies its key customers and their needs. Mr. Oppelt responded that NRMRL uses the research planning process and interaction with others in the Agency as a feedback loop. However, he noted that they have done better with internal customers than external customers. He stated that NRMRL has not gone out to the external customers to determine if their needs are being met. Dr. Small asked what organization would be appropriate for benchmarking NRMRL activities. Mr. Oppelt said that the Agricultural Research Service, private organizations that conduct pollution prevention and risk management research, the National Institute of Standards and Technology (NIST), some Department of Energy (DOE) Laboratories, and Battelle may be appropriate. Dr. Zimmerman asked if there will be an additional change in the percentage of engineers at NRMRL. Mr. Oppelt replied that he did not expect that percentage to fall below 37%. He explained that the percentage declined to this level because NRMRL is no longer engaged in developing technologies (the private sector has adequate profit motive to develop technologies). NRMRL now focuses on technology verification. Dr. Clark said that he was surprised to see a decline in industry as an audience priority. With more and more enforcement delegated to the states, NRMRL could be the best arbitrator to distinguish between what is best available technology. Industry is not credible in that role. Mr. Oppelt commented that NRMRL included industry through consulting firms; there is little direct interaction with industry. Dr. Small asked if NRMRL could prepare a matrix that identified the resources, FTEs, cooperative agreements, etc., for each research topic area. He was trying to determine how much of the research is conducted in-house. Mr. Oppelt replied that almost all of NRMRL's contracts are for technicians and some are for field work. Over the past few years, the percentage of research conducted by contractors at NRMRL has declined from about 50% to about 20%. He added that NRMRL has very few cooperative agreements; NRMRL usually works with academia through grants. Dr. Reiter said that NRMRL is the best example within ORD of the shift from managing contractors to conducting intramural research.

NCER Strategic Plan Presentation

Dr. Peter Preuss presented some background on NCER. (Dr. Preuss' presentation is provided in Attachment 8.) It was created in 1995, during the ORD reorganization. NCER's predecessor organization was the Office of Exploratory Research (OER), which was a relatively small office focused on exploratory grants. Unlike the other Offices, Laboratories, and Centers in ORD, NCER was not created from an amalgamation of existing organizations. Staff came to NCER from other Headquarters Offices that were being eliminated. NCER became a new entity without a single unifying culture, and the staff came with different historic outlooks and work ethics. NCER's growth plan required the creation of multiple new systems and new roles for most of the staff. Therefore, the first few years following NCER's creation were spent in developing a functional organization—from forms to peer review, from paper to electronic, and from a budget of \$20 million to \$100 million. It was important to establish a "corporate" identity (i.e., a sense of belonging, a sense of common, shared goals). The early years were spent organizing the processes, acculturating to a new entity, doubling the size of the program annually, and learning to know one another and how to work together.

Work on the NCER Strategic Plan was initiated about 2 years ago, and there was extensive staff involvement (i.e., retreats, focus groups) in its development. There also was extensive customer input through interviews. The first step in the process was to define NCER's vision, mission, and core values. As with the other Laboratories and Center, the NCER Strategic Plan is based on the EPA Strategic Plan and it is directly derived from the SP2K. NCER's plan has three major components: science, process, and people. NCER's vision is to be the NIH of environmental research. NCER's mission is to stimulate the research community to provide innovative ideas and solutions to protect human health and the environment. NCER's guiding principles are:

- ✧ We act with personal integrity by recognizing and respecting each other's roles and needs, and treating one another respectfully.
- ✧ We recognize that personal growth and development are essential to the success of NCER.
- ✧ Our goal of scientific excellence requires competition and external peer review.
- ✧ We ensure that our research results are made available to our customers.
- ✧ We work with our customers to define and respond to their needs.
- ✧ We seek better ways to do business.

The NCER Strategic Plan has three goals: (1) science—to provide customer-driven scientific leadership, (2) process—to improve internal processes, and (3) people—to develop our human resources. The plan covers the timeframe of 2001 to 2006.

ORD's SP2K defines the priority topics and the research strategies/plans lay out broad directions for research. The multiyear plans describe the specific goals, outputs, and outcomes to be attained in a 5-8 year period across ORD. NCER's multipagers describe the contribution that NCER will make to achieving the ORD goals. These multipagers contain: a description of the ORD goal, a summary of the ORD research strategy, NCER's goals and objectives, key science questions to be answered by NCER research, NCER implementation strategy, program progress and expectations (what NCER hopes to accomplish), links to specific Program Office or Regional needs, and annual performance measures. The topics of the multipagers include: Children's Environmental Health; Global Climate Change; Environmental Monitoring and Assessment Program (EMAP); Ecosystem Protection; Economic, Social, and Behavioral Science Research Program; Drinking Water; Human Health Risk Assessment; Particulate

Matter; Technology for a Sustainable Environment; Combustion; Endocrine Disruptors; Wildlife Risk Assessment; Small Business Innovation Research (SBIR) Program; and Mercury.

To achieve the process goal, NCER's strategy is to improve information management (application handling/receipt, awards, Web), build effective teams (media, functional), communicate research results (SOS documents/research capsules, STAR reports, new Web tools and linking), and conduct outreach to the Program Offices and Regions (program involvement, targeted research results reports). Dr. Preuss identified a number of science integration points with ORD Laboratories and Program Offices, including: development of research strategies/plans, multiyear plans, program reviews, Research Coordination Teams (RCTs), drafting RFAs, relevancy reviews, scientist to scientist, awards/results information on the Web, customer-oriented results summaries, and joint research.

NCER's strategy to achieve the people goal is to prepare strategic staffing plans, enhance communications within NCER, empower and delegate, form teams and conduct team training, conduct scientific and administrative training, and increase diversity. In closing his presentation, Dr. Preuss provided a vision for NCER 5 years in the future. In 5 years, any NCER staff member will say that "NCER is a thriving vital, high-performing organization, and a challenging place to work where they are respected as individuals; and they understand and are pleased about how their work contributes to NCER's mission." Within 5 years, NCER will "be able to measure and determine the impact of NCER-sponsored research on Agency decisions, and its research will be fully integrated with work done in ORD Laboratories and Centers."

Dr. Johnson noted that NCER's mission has an external focus, but many of its strategic actions are internally focused. Dr. Preuss replied that NCER is trying to work with the external community in at least three ways: (1) enlisting them in evaluating the work done in the Center, (2) conducting workshops to bring STAR grantees together with EPA staff to discuss their research, and (3) assisting with development of the Nation's environmental research agenda. NCER is discussing how to accomplish this last item, but there are plans to involve the external community in identifying gaps and needs to help shape the research agenda. Dr. Johnson stressed the importance of involving the external community up-front in the development of RFAs. Dr. Clark asked how NCER will know when it integrates with other Laboratories/Centers. Dr. Preuss said that one method is to plan the research with other Laboratories/Centers. EMAP is a good example of a robust intramural program with a strong extramural component working on a variety of related issues. EMAP is planned by all of the participating Laboratories/Centers. Dr. Preuss added that the integration also should be evident in the multiyear plans. Dr. Small asked if NCER has instituted anything to replace the adopt-a-grant program. Are there any barriers to allowing ORD researchers to interact with STAR grantees? Dr. Preuss replied that NCER has tried to lay out a policy that actively encourages ORD scientists to interact with the grantees at all phases of research, except during the application writing phase. NCER also would consider cooperative agreements when appropriate, and changing a grant to a cooperative agreement if necessary. Dr. Preuss mentioned the possibility of an RFA on global climate change and air pollution that would result in a series of cooperative agreements rather than grants.

Dr. Zimmerman asked if there has been an analysis of how NCER's research supports the Agency's priorities. Dr. Preuss said that they are trying to get at that through the evaluations. He noted that the SAB recently looked at this issue with respect to the Water and Watersheds research area. Dr. Acosta asked how the performance of NCER staff is evaluated. Dr. Preuss responded that they are preparing a set of expectations for the Project Officers. Dr. Acosta asked if there are quantifiable measures for NCER staff. Dr. Preuss said that it may be too early in the process to state that there are no quantifiable measurements. Dr. Farland mentioned that NCER staff are evaluated in accordance with the more traditional civil service system because they do not conduct research. Dr. Windom noted that there was no specific mention of other agencies (e.g., NOAA) in the NCER plan. How can NCER do all the required extramural research on a \$100 million budget? Dr. Preuss replied that NCER must leverage resources by actively seeking partnerships with other agencies—issuing joint RFAs. He commented that

Hazardous Algal Blooms is a good example are partnering (five agencies are involved in this partnership). Dr. Preuss said that these joint RFAs have brought in applications from researchers who normally do not apply for EPA grants. He added that he is part of an interagency work group (15 agencies) focused on forming agency partnerships. There is considerable interest in ecology and social science research. Dr. Reiter mentioned that the Committee on Environment and Natural Resources (CENR) also provides a forum for discussion of these issues. Through such discussions, EPA can help shape the research programs funded by other agencies. Dr. Bostrom asked how NCER staff keep current with the science so that they can project future directions. She asked if NCER has considered rotational positions such as those implemented by NSF. Dr. Preuss replied that thought has been given to rotational positions; however, these positions would be less attractive for researchers coming to NCER. At NSF, they have a lot of flexibility; at NCER, the topics are driven by ORD. Dr. Preuss noted that NCER would like to initiate some joint research with industry. A joint effort with the American Chemistry Council is in the planning phase. Dr. Schnoor suggested that technology on genetically modified organisms (GMOs) may be an area of interest to both ORD and industry.

Dr. Schnoor thanked the presenters and informed them that self-study questions will be sent to each Laboratory/Center by the end of May. The BOSC would like to receive written responses to the questions by August 15, 2001. Two-day site visits will be scheduled in September/October. A draft report from each Subcommittee will be forwarded in December 2001, and the reports will be finalized in February 2002. Dr. Bostrom suggested that September 20-21, may be open for site visits because most of the BOSC members had held that date for the next BOSC meeting. Dr. Schnoor informed the Laboratory/Center Directors that the Subcommittee Chairs will contact them to schedule the site visits. Dr. Schnoor asked the Chairs to provide the site visit dates to Dr. Bostrom so that the Communications Ad Hoc Subcommittee can coordinate with them. Dr. Reiter indicated that he would like to meet with the members of the NHEERL Subcommittee before the site visit to discuss the activities they could undertake on behalf of the Laboratory. Dr. Small expressed some concern about holding such a meeting before the review is completed. Dr. Windom said that he would be willing to meet to discuss future activities before the site visit. He thought it may help the Subcommittee members increase their understanding of NHEERL. Dr. Reiter commented that he did not expect the Subcommittee members to review every program in NHEERL. He suggested that the Subcommittee could enlist other experts to review various programs. Dr. Reiter said that the second round of Division reviews has begun and he believes the Subcommittee's input would be quite valuable. Dr. Schnoor said that he is open to the idea of having the Subcommittee meet with NHEERL staff before the site visit.

Dr. Schnoor presented a draft agenda for the Laboratory/Center site visits. Dr. Small suggested that the site visits be conducted at one of the Divisions rather than the Laboratory/Center headquarters. He also proposed that the visit agenda include 2 full days or 2½ days with time for a poster session. The poster session may provide the Subcommittee members opportunities to speak to the scientists individually. Dr. Bostrom supported that suggestion, reminding the BOSC members that there was not adequate time for such interaction during the last review. Dr. McCay asked if the Subcommittee members should be told that these will be standing Subcommittees. Ms. Hamilton indicated that each Subcommittee member will receive a letter stating that their appointment is for the period of 1 year. She noted that EPA personnel limits the appointments to 1 year. Dr. Schnoor stated that the BOSC wants to maintain a list of appointed consultants, similar to the SAB, to shorten the time it takes to involve consultants in BOSC activities. With regard to the site visit agenda, Dr. Dorward-King suggested combining the 11:00 presentation with the 9:00 session so that more time could be devoted to meeting with the scientists. Dr. Schnoor revised the agenda as follows:

Site Visit—Day 1

9:00 am - 10:30 am	Presentation of changes/progress since last report, strategic plans/priorities, self-study report
10:30 am - 10:45 am	Coffee
10:45 am - 11:00 am	Public comment

11:00 am - 12:00 noon Questions and answers with Director (management team)
12:00 noon - 1:00 pm Lunch
1:00 pm - 2:00 pm Tour facilities
2:00 pm - 3:00 pm Fact-finding (BOSC Subcommittee)
3:00 pm - 3:15 pm Coffee
3:15 pm - 4:15 pm Meet with junior and senior scientists
4:15 pm - 5:15 pm Meet with post-docs
7:00 pm - 8:30 pm Poster sessions with researchers

Site Visit—Day 2

8:30 am - 10:00 am BOSC meeting and discussion
10:00 am - 10:30 am Questions for Director et al.
10:30 am - 10:45 am Coffee
10:45 am - 11:00 am Public comment
11:00 am - 12:00 noon Fact-finding (BOSC Subcommittee)
12:00 noon - 1:00 pm Lunch
1:00 pm - 3:00 pm BOSC writing session (closed)
3:00 pm - 3:15 pm Coffee
3:15 pm - 4:30 pm Meet with Director for exist interview

Discussion of Self-Study Questions

Dr. Schnoor indicated that he had revised the self-study questions based on input during yesterday's meeting. He asked if there were any additional comments. Dr. McCay suggested asking the Laboratories/Centers to describe several typical examples of integrated programs and how they were integrated. She thought it may be useful to review a few programs that were integrated as well as one or two that were not, even though they should have been integrated. Dr. Bostrom asked that communications be included in that request. Dr. Small had several questions to add to the list and he agreed to provide them to Dr. Schnoor at the close of the meeting. Dr. Johnson suggested adding a question about communicating results to customers. How did you identify your customers? Who are they? How do you communicate with your customers? How do you assess how well you met your customers' needs? How do you get feedback from your customers? Dr. Bostrom stated that their responses to these questions must include the external community. Dr. Small proposed adding a question about success measures. How do you measure performance? They should be asked to provide the data. Dr. Bostrom suggested including the term "post-audit" in that question.

Dr. Small said he would like to request a transition matrix that identified where the Laboratory/Center was 3 years ago and where it is today. Dr. Bostrom asked if the Laboratories/Centers know who is going to retire. Ms. Hamilton replied that EPA cannot ask the staff when they plan to retire; however, each Laboratory/Center Director can be asked about what they expect to happen. In fact, they recently were asked this question as part of the ongoing workforce analysis. In response to a question about getting copies of the strategic plans, Ms. Hamilton said that they are not ready for distribution to the BOSC. Dr. Johnson suggested asking that the plans be attached to the responses to the self-study questions. Dr. Bostrom expressed some concern about the lack of attention to social science. The Laboratories/Centers should be asked to provide specifics about how they have integrated social and behavioral sciences into their research programs. They also should be asked to provide specifics about how they have integrated human health and ecology into their research programs. In addition, they should be requested to provide examples of how they responded to recommendations from the last BOSC review. Have they implemented the changes proposed in their responses to the reviews?

Next Steps/Next Meeting

Dr. Schnoor agreed to revise the list of self-study questions based on the comments and send it by e-mail on Wednesday to the BOSC members for a final review and approval (see Attachment 9 for the revised list of self-study questions). Dr. Small asked those who comment to copy everyone on the e-mail response. Dr. Johnson said that he may want to add some Laboratory/Center specific questions. Dr. Schnoor asked that the specific questions be kept to a minimum; he also requested that all questions be submitted to him as soon as possible so that all of the self-study questions can be sent out at the same time. Dr. Bostrom said she would e-mail the questions to the Communications Ad Hoc Subcommittee members. Dr. Schnoor supported the idea of a poster session in conjunction with the site visit. Ms. Hamilton said that the Subcommittee Chairs will have to work with the Laboratory/Center Directors to arrange for the poster sessions. Dr. Schnoor presented the following review BOSC Laboratory/Center Review time schedule:

May 7-8	Overview of Strategic Plans from Directors
May 31	Self-study questions sent to Directors
Aug 15	Self-studies returned to BOSC
Sept-Oct	BOSC Subcommittee site visits
Oct-Nov	BOSC meeting
Dec	Draft reports due and forwarded
Jan-Feb	BOSC meeting to approve reports
Feb	BOSC final report to EPA/ORD

Dr. Schnoor said that he would like the Subcommittees to begin preparing their reports before departing the Laboratories/Centers. The Subcommittees also should do an exit interview with the Director. Dr. Johnson asked about what to include in the exit interview. Dr. Schnoor replied that it should include the preliminary recommendations. The Directors also should be asked to correct any factual errors associated with the recommendations/comments. Dr. McCay asked if Laboratory/Center staff can be questioned after the writing session begins and the meeting is closed to the public. Ms. Hamilton replied that fact-finding sessions are permitted in closed sessions. Dr. Bostrom indicated that the Communications Ad Hoc Subcommittee may do a separate site visit with staff involved in communicating research results. She agreed to contact Mike Moore to find out who should be involved in scheduling that site visit.

Dr. Schnoor asked the BOSC members to keep November 1 and 2 open for the next meeting. He then asked for a motion to adjourn the meeting. Dr. Bostrom moved to adjourn the meeting and Dr. Stewart seconded the motion. The meeting was adjourned at 3:35 p.m.

Action Items

The following action items were identified during the meeting discussions:

- ❖ Dr. Preuss agreed to check on the possibility of having an intern collect some data for the Communications Ad Hoc Subcommittee.
- ❖ Dr. Bostrom asked that the BOSC members send her (by e-mail) any comments on the draft work plan for the communications review.
- ❖ The Subcommittee Chairs will contact the Laboratory/Center Directors soon to schedule the two-day site visits for September/October.
- ❖ Dr. Schnoor asked the Subcommittee Chairs to provide the site visit dates to Dr. Bostrom so that the Communications Ad Hoc Subcommittee can coordinate with them.

- ✧ Dr. Schnoor agreed to consider Dr. Reiter's request to meet with the members of the NHEERL Subcommittee before the site visit to discuss the activities they could undertake on behalf of the Laboratory.
- ✧ Dr. Small agreed to provide his questions to be added to the list of self-study questions to Dr. Schnoor at the close of the meeting.
- ✧ Dr. Schnoor agreed to revise the list of self-study questions based on the comments and send it by e-mail to the BOSC members on Wednesday for a final review and approval
- ✧ Dr. Schnoor agreed to send the self-study questions to each Laboratory/Center Director by the end of May.
- ✧ The Laboratory/Center Directors will submit written responses to the self-study questions to the BOSC Subcommittees by August 15, 2001.
- ✧ Dr. Bostrom volunteered to e-mail the self-study questions to the Communications Ad Hoc Subcommittee members.
- ✧ Dr. Bostrom agreed to contact Mike Moore to find out who should be involved in scheduling the site visit with the Communications Ad Hoc Subcommittee.

Board of Scientific Counselors Executive Committee

Chair:

Jerald L. Schnoor, Ph.D.

Professor of Civil and Environmental
Engineering
Engineering Research Facility
University of Iowa
330 South Madison Street, Room 116
Iowa City, IA 52242
Phone: 319-335-5649
Fax: 319-335-5585
E-mail: jschnoor@cgrer.uiowa.edu

Members:

Daniel Acosta, Jr., Ph.D.

Dean, College of Pharmacy
University of Cincinnati
3223 Eden Avenue
Room 136HPB
Cincinnati, OH 45267-0004
Phone: 513-558-3326
Fax: 513-558-4372
E-mail: daniel.acosta@uc.edu

Ann Bostrom, Ph.D.

Associate Professor
Georgia Institute of Technology
School of Public Policy
685 Cherry Street
Atlanta, GA 30332-0345
Receptionist: 404-894-3196
Fax: 404-894-0535
E-mail: ann.bostrom@pubpolicy.gatech.edu

Ann Bostrom, Ph.D. (Current Address)

Program Director
Decision, Risk, and Management Science
Program
Division of Social and Economic Sciences
National Science Foundation
4201 Wilson Boulevard, Room 995
Arlington, VA 22230
Phone: 703-292-7263
Fax: 703-306-0485
E-mail: abostrom@nsf.gov

James S. Bus, Ph.D.

Science Policy Leader and Technical
Director
Health and Environmental Sciences
The Dow Chemical Company
1803 Building
Midland, MI 48674
Phone: 517-636-4557
Fax: 517-638-9863
E-mail: jbus@dow.com

James R. Clark, Ph.D.

Exxon Mobil Research & Engineering Co.
3225 Gallows Road, Room 3A412
Fairfax, VA 22037
Phone: 703-846-3565
Fax: 703-846-6001
E-mail: jrclar3@erenj.com

Elaine J. Dorward-King, Ph.D.

Global Executive, Environment, Health
and Safety
Rio Tinto Borax
26877 Tourney Road
Valencia, CA 91355-1847
Phone: 661-287-5779
Fax: 661-287-5566
E-mail: elaine.dorward-king@borax.com

James H. Johnson, Jr., Ph.D.

Dean, College of Engineering, Architecture,
and Computer Sciences
Howard University
2366 6th Street, NW, Room 100
Washington, DC 20059
Phone: 202-806-6565
Fax: 202-462-1810
E-mail: jj@scs.howard.edu

Donald R. Mattison, M.D.

Medical Director
March of Dimes
Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
Phone: 914-997-4649
Fax: 914-428-7849
E-mail: dmattison@modimes.org

Bonnie J. McCay, Ph.D.

Professor of Anthropology and Ecology
Department of Human Ecology
Cook College, Rutgers The State University
of New Jersey
55 Dudley Road
New Brunswick, NJ 08901
Phone: 732-932-9168
Fax: 732-932-6667
E-mail: mccay@aesop.rutgers.edu

Mitchell J. Small, Ph.D.

Professor of Civil and Environmental
Engineering/Engineering and Public Policy
Carnegie-Mellon University
Porter Hall 119, Frew Street
Pittsburgh, PA 15213-3890
Phone: 412-268-8782
Fax: 412-268-7813
E-mail: ms35@andrew.cmu.edu

Juarine Stewart, Ph.D.

Professor
Department of Biological Sciences
Clark Atlanta University
223 James P. Brawley Drive, SW
Atlanta, GA 30314
Phone: 404-880-6764
Fax: 404-880-6756
E-mail: jstewart@cau.edu

Herbert L. Windom, Ph.D.

Skidaway Institute of Oceanography
10 Ocean Science Circle
Savannah, GA 31411
Phone: 912-598-2490
Fax: 912-598-2310
E-mail: herb@skio.peachnet.edu

Rae Zimmerman, Ph.D.

Professor
Robert F. Wagner Graduate School of
Public Service
New York University
4 Washington Square North
New York, NY 10003
Phone: 212-998-7432
Fax: 212-995-3890
E-mail: rae.zimmerman@nyu.edu

Committee Staff:**Peter W. Preuss, Ph.D.**

ORD BOSC Liaison
U.S. Environmental Protection Agency
Office of Research and Development
National Center for Environmental Research
(8701R)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-6825
Fax: 202-565-2444
E-mail: preuss.peter@epa.gov

Shirley R. Hamilton

Designated Federal Officer
U.S. Environmental Protection Agency
Office of Research and Development
National Center for Environmental Research
(8701R)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-6853
Fax: 202-565-2444
E-mail: hamilton.shirley@epa.gov

Betty J. Overton

Alternate Designated Federal Officer
U.S. Environmental Protection Agency
Office of Research and Development
National Center for Environmental Research
(8701R)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-6848
Fax: 202-565-2444
E-mail: overton.betty@epa.gov

Additional Meeting Participants

Dr. Donald Barnes
U.S. Environmental Protection Agency
SAB Staff Director
Washington, DC
Phone: 202-564-4533
E-mail: barnes.don@epa.gov

Beverly Campbell
The Scientific Consulting Group, Inc.
656 Quince Orchard Road, Suite 210
Gaithersburg, MD 20878
Phone: 301-670-4990
Fax: 301-670-3815
E-mail: bcampbel@scgcorp.com

Dr. William Farland
Acting Deputy Assistant Administrator for
Science
U.S. Environmental Protection Agency
Office of Research and Development
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-3322
E-mail: farland.william@epa.gov

Dr. Gary Foley
Director, NERL
U.S. Environmental Protection Agency
Office of Research and Development (MD-75)
Research Triangle Park, NC 27711
Phone: 919-541-2106
E-mail: foley.gary@epa.gov

Gary Kayajanian
Consultant
Phone: 703-920-0623

Barbara Klieforth
U.S. Environmental Protection Agency
Office of Research and Development (8104R)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-6787
E-mail: klieforth.barbara@epa.gov

Mike Moore
U.S. Environmental Protection Agency
Office of Research and Development
Washington, DC
Phone: 202-564-6722
E-mail: moore.mike@epa.gov

Mr. E. Timothy Oppelt
Director, NRMRL
U.S. Environmental Protection Agency
Office of Research and Development (235)
26 West Martin Luther King Drive
Cincinnati, OH 45268
Phone: 513-569-7418
E-mail: oppelt.tim@epa.gov

Dr. Lawrence Reiter
Director, NHEERL
U.S. Environmental Protection Agency
Office of Research and Development (MD-51)
Research Triangle Park, NC 27711
Phone: 919-541-2281
E-mail: reiter.larry@epa.gov

Judy Rohrer
U.S. Environmental Protection Agency
Office of Research and Development (8101R)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-6636
E-mail: rohrer.judy@epa.gov

Angela Sammarco
The Scientific Consulting Group, Inc.
656 Quince Orchard Road, Suite 210
Gaithersburg, MD 20878
Phone: 301-670-4990
Fax: 301-670-3815
E-mail: asammarc@scgcorp.com

Additional Meeting Participants

Dr. Vanessa Vu
U.S. Environmental Protection Agency
Office of Research and Development
National Center for Environmental Assessment
(8601D)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-564-3282
E-mail: vu.vanessa@epa.gov

ATTACHMENT 1:
**Activities of the Research Strategies Advisory
Committee (RSAC) Presentation**

Dr. Raymond Loehr

**ATTACHMENT 2:
State of ORD Presentation**

Mr. Henry Longest

ATTACHMENT 3:
Work Plan for the Communications Review

Dr. Ann Bostrom

ATTACHMENT 4:
National Health and Environmental Effects
Research Laboratory Strategic Plan Presentation

Dr. Lawrence Reiter

ATTACHMENT 5:
National Center for Environmental Assessment
Strategic Plan Presentation

Dr. Vanessa Vu

ATTACHMENT 6:
National Exposure Research Laboratory
Strategic Plan Presentation

Dr. Gary Foley

ATTACHMENT 7:
National Risk Management Research Laboratory
Strategic Plan Presentation

Mr. E. Timothy Oppelt

ATTACHMENT 8:
National Center for Environmental Research
Strategic Plan Presentation

Dr. Peter Preuss

ATTACHMENT 9:
Revised Self-Study Questions for BOSC
Laboratory/Center Review