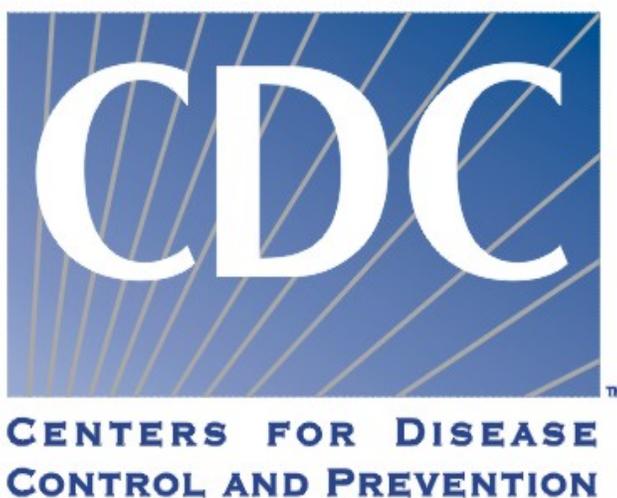


**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for Environmental Health/
Agency for Toxic Substances and Disease Registry**



**Board of Scientific Counselors Meeting
May 4-5, 2006
Atlanta, Georgia**

Record of the Proceedings

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ATTACHMENT 1

List of Participants

BSC Members

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Dr. Alan Ducatman
Ms. Becky Norton Dunlop
Dr. Miguel Fernandez
Dr. Janvier Gasana
Dr. Lois Gold
Mr. Scott Holmes
Dr. Nancy Kim
Dr. Harold Koenig
Dr. Ronald Laessig
Dr. Roger McClellan
Dr. Geary Olsen
Dr. Daniel Wartenberg
Dr. Gayle Windham
Dr. Raymond Yang

Designated Federal Official

Dr. Thomas Sinks
Executive Secretary

Ex-Officio Members

Dr. Lee Sanderson (NIOSH)
Dr. Hal Zenick (EPA)

CDC Representatives

Dr. Howard Frumkin
(NCEH/ATSDR Director)
Dr. Henry Abadin
Dr. Drue Barrett
Dr. Mark Bashor
Dr. Sharunda Buchanan
Mr. Gary Campbell
Ms. Leslie Campbell
Dr. Selene Chou
Ms. Diane Dennis-Stephens
Dr. Christopher DeRosa
Mr. Mike Donnelly
Dr. Andrew Dunnenberg
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Dr. Paul Garbe
Ms. Athena Gemella
Mr. Tim Hack
Ms. Olivia Harris
Ms. Arnetra Herbert
Dr. Heraline Hicks
Dr. James Holler
Mr. Nabil Issa
Dr. Vikas Kapil
Mr. Shirley Little
Ms. Karen Long
Ms. Jennifer MacDonald
Ms. Sandra Malcom
Dr. Susan Metcalf
Dr. Moiz Mumtaz
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Dr. Ken Orloff
Dr. James Pirkle
Dr. James Rabb
Ms. Julie Racine-Parshall
Dr. Marilyn Radke
Dr. Stephen Redd
Ms. Barbara Rogers
Mr. Kenneth Rose
Dr. Kevin Ryan
Ms. Marissa Scalia
Dr. Franco Scinicariello
Mr. Joe Sigalas
Dr. Yee-Wan Stevens
Ms. Dorothy Sussman
Ms. Jana Telfer
Mr. Charles Weir
Dr. Clement Welsh
Dr. Mildred Williams-Johnson
Dr. David Williamson

Member of the Public

Dr. Megan Latshaw (Association of
State and Territorial Health Officials)

ATTACHMENT 2

Acronyms Used In This Report

APRHB	— Air Pollution and Respiratory Health Branch
ASTHO	— Association of State and Territorial Health Officials
BSC	— Board of Scientific Counselors
CCEHIP	— Coordinating Center for Environmental Health and Injury Prevention
CDC	— Centers for Disease Control and Prevention
CTS	— Community Tribal Subcommittee
DLS	— Division of Laboratory Sciences
DOE	— Department of Energy
DTEM	— Division of Toxicology and Environmental Medicine
EEHS	— Division of Emergency and Environmental Health Services
EHHE	— Division of Environmental Hazards and Health Effects
EHSB	— Environmental Health Services Branch
EJ	— Environmental Justice
EPA	— U.S. Environmental Protection Agency
EPH	— Environmental Public Health
FDA	— Food and Drug Administration
HDS	— Health Department Subcommittee
HHS	— Department of Health and Human Services
IHS	— Indian Health Service
IPCS	— International Program for Chemical Safety
IRIS	— Integrated Risk Information System
NCEH/ATSDR	— National Center for Environmental Health/ Agency for Toxic Substances and Disease Registry
NER	— National Report on Human Exposure to Environmental Chemicals
NGOs	— Non-Governmental Organizations
NIOSH	— National Institute for Occupational Safety and Health
NOA	— Naturally Occurring Asbestos
NTP	— National Toxicology Program
PART	— Program Assessment Rating Tool
PHA	— Public Health Assessment
POPs	— Persistent Organic Pollutants
PPRS	— Program Peer Review Subcommittee
PRTs	— Peer Review Teams

EXECUTIVE SUMMARY

The Department of Health and Human Services and the Centers for Disease Control and Prevention (CDC) National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) convened a meeting of the Board of Scientific Counselors (BSC) on May 4-5, 2006 in Atlanta, Georgia.

The Coordinating Center for Environmental Health and Injury Prevention (CCEHIP) presented an update on the goals management process. The inventory and discovery phase and the goal action planning process will be completed by the end of 2006. CCEHIP will convene three workshops in July and August 2006 to obtain input from internal and external partners on the health protection goals for chemical and radiation exposures, healthy communities, and healthy travel and recreation. CCEHIP will release its FY'07-FY'09 goal action plans for public comment over the next six months.

NCEH/ATSDR presented an update on its budget, current events, pending science and program activities, and the CDC Director's FY'06 discretionary decisions. The NCEH/ATSDR Director requested guidance from the BSC in designing a national environmental public health (EPH) agency. The BSC divided into four subgroups to provide input on NCEH/ATSDR's priority issues, activities and structure. NCEH/ATSDR will use the BSC's valuable and comprehensive guidance as the foundation in designing the national EPH agency. NCEH/ATSDR will provide an update on actions taken in response to the BSC's recommendations at the next meeting.

The Program Peer Review Subcommittee (PPRS) requested guidance from the BSC in improving the overall peer review process. PPRS will meet with NCEH/ATSDR senior management over the next month to discuss this issue in more detail. PPRS will use the BSC's extensive recommendations in its ongoing evaluation of the peer review process.

The Community and Tribal Subcommittee is continuing to focus on health disparities and environmental justice issues, PPRS's peer review process, and tribal initiatives. The Health Department Subcommittee (HDS) solicited the BSC's approval on its EPH workforce recommendations. HDS now intends to shift its focus to emergency response, improved surveillance systems, or other priority issues requested by the BSC or NCEH/ATSDR. The BSC **unanimously approved** the HDS recommendations.

PPRS presented the peer review reports for the Division of Toxicology and Environmental Medicine (DTEM) and the Air Pollution and Respiratory Health Branch (APRHB). The DTEM Director and former APRHB Chief presented the programs' responses to the respective reports. The BSC **unanimously approved** both the DTEM and APRHB peer review reports.

CDC and the Division of Laboratory Sciences (DLS) described efforts that are underway for the pandemic influenza planning process. CDC is limiting animal infections,

attempting to block human-animal interactions, and conducting major coordination and planning activities. CDC is also establishing time-lines in response to federal tasks outlined in the "National Strategy for Pandemic Influenza."

DLS is identifying laboratory methods and will conduct an analysis to obtain more knowledge on factors that change the virulence and transmissibility of influenza. DLS's exciting laboratory techniques are expected to improve surveillance, detect significant shifts much earlier, and provide better guidance for influenza vaccine development.

The BSC's major business items focused on replacements for seven members whose terms have expired and the EPH conference that will be held in December 2006. The BSC's consensus recommendations, action items and agenda items were noted for the record.

Consensus Recommendations

- *HDS's report and recommendations are accepted.*
- *The DTEM peer review report is accepted.*
- *The APRHB peer review report is accepted.*

Action Items

- *Dr. Sinks will provide the new CTS members with an updated inventory of NCEH/ATSDR's health disparities and EJ projects.*
- *Dr. Janvier Gasana will serve as the new CTS Chair and Dr. Fernandez will serve as a CTS member for a one-year term.*
- *Dr. Nancy Kim will serve as the new HDS Chair and Dr. Windham will serve as an HDS member for a one-year term.*
- *NCEH/ATSDR will arrange for PPRS to convene a conference call on June 8, 2006, but will attempt to schedule a face-to-face meeting if requested by a majority of members.*
- *Dr. Nolan will distribute a list of agenda items for the next meeting based on e-mail requests submitted by individual BSC members.*
- *DLS will provide the BSC with a brief update by e-mail on activities of the Delisting Workgroup.*
- *NCEH/ATSDR will summarize the subgroups' responses to the three strategic questions and distribute to the BSC for review and comments.*

Agenda Items

- *Presentation on NCEH/ATSDR's global health portfolio, including activities in India, the U.S.-Mexico Border and multinational laboratory support.*
- *Update on NCEH/ATSDR's actions taken in response to the BSC's guidance on designing a national EPH agency.*

The Chair opened the floor for public comments at all times as noted on the published agenda. The next BSC meeting will be held on December 6-7, 2006.

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR ENVIRONMENTAL HEALTH/
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY**

**BOARD OF SCIENTIFIC COUNSELORS
May 4-5, 2006
Atlanta, Georgia**

Minutes of the Meeting

The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) convened a meeting of the Board of Scientific Counselors (BSC). The proceedings were held at CDC's Century Center offices in Atlanta, Georgia on May 4-5, 2006.

Opening Session

Dr. Patricia Nolan, the BSC Chair, called the meeting to order at 8:40 a.m. on May 4, 2006. She welcomed the attendees to the proceedings and opened the floor for introductions. The list of participants is appended to the minutes as Attachment 1.

Dr. Howard Frumkin, the NCEH/ATSDR Director, presented certificates signed by the CDC Director to recognize the tenures of seven BSC members whose terms have expired: Ms. Becky Norton Dunlop; Drs. Miguel Fernandez, Lois Gold, Harold Koenig, Roger McClellan and Gayle Windham; and Dr. Dennis Paustenbach *in absentia*. The participants applauded the valuable input and tremendous contributions of the outgoing BSC members.

Update on the CDC Goals Management Process

Ms. Karen Long, of the CDC Coordinating Center for Environmental Health and Injury Prevention (CCEHIP), covered the following areas in her report. CDC hired 21 goal team leaders to oversee the 24 health protection goals for healthy people, healthy places, preparedness and global health. The goal team leaders have been involved in an extensive inventory and discovery phase to determine specific activities that will be assigned to each goal area.

To support this effort, existing measures established by *Healthy People 2010* and the Office of Management and Budget Program Assessment Rating Tool (PART) are being used as the foundation in developing the overall framework for the health protection goals. CDC's *2006-2015 Health Protection Research Guide* is being analyzed. CDC's health disparities activities, strategic plans, program reviews and project tracking systems are being reviewed. Meetings are being held with directors and senior staff at both the division and center levels. The inventory and discovery template will drive the goal action plans and will be posted on the CCEHIP web site for wider input. This component of the process will be completed in June 2006. (For more information on CDC's goals process, please go to www.cdc.gov/about/goals.)

The goal team leaders will then implement the goal action planning process until December 2006 to focus on key gaps, collaborative opportunities, core and strategic objectives, and research needs. Assessment and modeling exercises will be conducted as well. The goal team leaders and the CCEHIP science officer will also determine the science, research, evidence base and indicators that will be used to develop and measure the goals and reach health outcomes. The goal team leaders will extensively engage partners in these efforts and will also conduct internal evaluations to ensure the overall goals management process is appropriately conducted.

CCEHIP is responsible for six of the 24 health protection goals: healthy communities, adolescent health, toxic chemical exposures, radiation exposure, healthy homes, and healthy travel and recreation. In February 2006, CCEHIP convened a workshop for the healthy homes goals with both internal CDC partners and external stakeholders. In July and August 2006, CCEHIP will hold three additional workshops for chemical and radiation exposures, healthy communities, and healthy travel and recreation. CCEHIP will use the three upcoming workshops to vet its previous activities with internal and external partners, identify missed opportunities, and determine innovative strategies to collaborate and reach the overall goals.

CCEHIP will post the executive summary and detailed proceedings from the workshops on its web site for public access. CCEHIP hopes that other coordinating centers will convene similar workshops for the other health protection goals to strengthen collaborative efforts among partners and obtain more external input. The goal team leaders and strategy and innovation officers will continue to hold weekly meetings to coordinate efforts with divisions that have responsibility for the healthy places and healthy people goals. CCEHIP expects to release its FY'07-FY'09 goal action plans for public comment over the next six months.

Update on the State of NCEH/ATSDR

Dr. Thomas Sinks is the BSC Executive Secretary and the NCEH/ATSDR Deputy Director. He covered four major areas in his report. First, Congress appropriated ~\$150 million to NCEH and ~\$75 million to ATSDR in FY'06. The President's FY'07 budget recommends ~\$141 million to NCEH and \$75 million to ATSDR. The ATSDR appropriations include CDC's overhead.

Other funding to NCEH/ATSDR includes Congressional appropriations of ~\$27 million in FY'05 and ~\$30 million in FY'06 for terrorism and allocations of ~\$12 million in FY'05 and ~\$5.8 million in FY'06 from the Department of Defense and Department of Energy (DOE). The sharp decrease from FY'05 to FY'06 represents NCEH/ATSDR's shift from analyzing health effects related to exposures from DOE nuclear weapons sites. At the division level, the largest amounts of the appropriations are allocated to the NCEH Division of Environmental Hazards and Health Effects (EHHE) and the ATSDR Division of Health Assessment and Consultation.

In February-March 2006, the CDC Office of Strategy and Innovation directed each center to examine its individual program dollars to determine whether at least 4% of the Congressional appropriation could be aligned with CDC's new health protection goals. The centers were given the following guidance to conduct the analysis. Continuing or new extramural cooperative agreements could be refocused. Existing or new collaborations could be enhanced or created. Existing or new high-impact activities, programs and research could be strengthened or funded. Current activities, programs and research could be reduced or eliminated.

The realignment had to be maintained within existing budget line items established by Congress. Budgets for terrorism, office of directors and the National Institute for Occupational Safety and Health (NIOSH) could not be included. NCEH responded to the directive by revising and realigning its asthma, tracking and lead grants and redirecting staff and dollars to higher priorities and science-focused programs. ATSDR responded to the directive by collaborating with NCEH, the U.S. Environmental Protection Agency (EPA) and state and local health departments; redirecting staff to provide a more community- and site-specific focus; and realigning the cooperative agreement program with PART goals. The total realignment of ~\$59.6 million to CDC's health protection goals represents ~26% of NCEH/ATSDR resources, 31.7% of NCEH's total budget, and 13.5% of ATSDR's total budget.

Second, an announcement was made in April 2006 that each coordinating center could compete for \$1 million from the CDC Director's discretionary budget to conduct new

innovative projects for one year with existing mechanisms. Of the eight projects NCEH/ATSDR submitted to the CDC Director's innovation fund, five were approved. The awards range from \$25,000-\$150,000 and the projects focus on remote sensing to detect and evaluate urban health islands during heat waves; motor vehicle injury prevention in India; unmanned aerial vehicle for public health emergency response; global tobacco laboratory capacity; and the tracking of radiation doses from medical diagnostic procedures.

Third, NCEH/ATSDR is continuing its planning efforts for the 7th National Environmental Public Health Conference that will be held on December 4-6, 2006 in Atlanta, Georgia. Mr. Scott Holmes is representing the BSC on the planning committee. The new building that will house CCEHIP, NCEH/ATSDR and the National Center for Injury Prevention and Control is projected to be completed in May 2007.

Four, NCEH/ATSDR has four key science and program activities that are pending. NCEH investigated VX hydrolysate at an Indiana site, the process of transporting this chemical across U.S. highways, and the ecological safety of placing the material in the Delaware River. NCEH's testimony before a Congressional committee in 2005 included a fairly certain determination that ~35% of the VX would be effectively processed into hydrolysate and the transport of the chemical across U.S. highways would be safe. However, NCEH noted that EPA's data were inadequate to determine whether the material could be safely placed in the Delaware River. NCEH's report on VX hydrolysate is currently undergoing the clearance process and will be released to the public in June 2006.

NCEH participated in a federal interagency workgroup to re-analyze EPA's risk assessment of a safe level of perchlorate in foods and drinking water. NCEH also added perchlorate to its National Health And Nutrition Examination Surveys and developed a state-of-the-art method to measure the chemical in urine. NCEH expects to complete its analysis of perchlorate and publish these data in peer-reviewed journals over the next few months.

ATSDR annually receives an average of 30 petitions from Congress, state delegates, grassroots organizations or individuals to conduct site investigations. ATSDR acts on ~60% of these petitions and forwards the remainder to NIOSH, state and local health departments or other agencies with more appropriate responsibility. Two pending petition responses are summarized below.

An investigation of beryllium at an Ohio site focuses on take-home exposures from workers and public health consequences to these environmental exposures. ATSDR

concluded that ongoing beryllium emissions are not causing a current public health hazard and data are inadequate to determine whether previous emissions or take-home exposures present health consequences. However, ATSDR has offered to obtain and test blood samples from community members with an interest in determining their personal sensitivity to beryllium.

The target populations of the limited sampling plan include persons who reside 1¼ miles near the facility, community residents with a diagnosis of sarcoidosis, household contacts of plant workers, and workers of two machine shops in the area. ATSDR will disseminate referrals for medical care and follow-up to persons with positive test results.

ATSDR took several actions to publicize the availability of the sampling plan. Advertisements were placed in local newspapers to announce public access meetings that would be held. A press release was distributed to the community and a notice was posted on the ATSDR web site. A fact sheet and other information were mailed to the target populations. ATSDR will revise the sampling plan based on public comments submitted and will continue to inform the community about all activities.

ATSDR released a health consultation on naturally occurring asbestos (NOA) at a California high school in 2005 and is now developing a health consultation on EPA's community-based sampling. ATSDR is treating NOA at the site as true asbestos based on EPA's guidelines. Efforts will be made to re-analyze the samples, adequately identify asbestos fiber lengths, and place the fibers in a different risk assessment model.

ATSDR recently petitioned the National Toxicology Program (NTP) to perform bioassays on NOA or other materials found in asbestos environments, collect more data on hazards from this chemical, and convene an expert panel to design appropriate study methods. ATSDR will continue with its health consultation over the next two years while NTP attempts to gather additional data, advance the science and make evidence-based conclusions on NOA.

The BSC made three key suggestions for NCEH/ATSDR to consider in refining its current and future activities.

- Acknowledge that the approach of submitting investigator-initiated research projects without expert guidance from NCEH/ATSDR's external advisory body will minimize public credibility. Extensively engage and solicit guidance from the BSC in future opportunities to propose projects under the CDC Director's innovation fund. For example, NCEH/ATSDR

could electronically distribute each proposed project to all BSC members for review and comment prior to submission to the CDC Director.

- Explore the possibility of conducting biological sampling in exposed communities to assist individuals in addressing their personal exposures.
- Strongly urge NTP to avoid inexpensive or inappropriate methods to collect additional data on NOA. Advise NTP to use existing inhalation studies on well-characterized materials, research on manmade fibers and other “platinum” standards.

Guidance on NCEH/ATSDR’s Future Goals, Directions and New Priorities

Dr. Frumkin announced that the United States has no agency with responsibility for environmental public health (EPH). As a result, NCEH/ATSDR is now asking the BSC to identify the nation’s needs and be aware of three critical components in designing an effective EPH agency.

First, the BSC should consider the characteristics of an “ideal” EPH agency. Assessment, policy development and assurance are the three core public health functions that guide the ten essential public health services. Health status should be monitored to identify community problems. Health problems and hazards in the community should be diagnosed and investigated. Persons should be informed, educated and empowered about health issues. Community partnerships should be mobilized and actions should be taken to identify and solve health problems.

Policies and plans that support individual community health efforts should be developed. Laws and regulations that protect health and ensure safety should be enforced. Individuals should be linked to necessary personal health services and the provision of health care should be assured when otherwise unavailable. A competent public health and personal healthcare workforce should be assured. The effectiveness, accessibility and quality of personal and population-based health services should be evaluated. Research should be conducted to develop new insights and innovative solutions to health problems.

Second, the BSC should consider the development of EPH over time. For example, historical sanitarian issues include clean water, sewage management, food safety and vector control. Post-1970 issues include toxic chemicals, radiologic hazards and air pollution. Emerging issues include global climate changes, environmental justice (EJ), urban design and architecture, and preparedness.

Third, the BSC should consider several important constraints. The EPH agency should reflect NCEH/ATSDR's current budget of ~\$250 million and workforce of ~800 staff. The EPH agency should be consistent with Congressional intent for NCEH/ATSDR to focus on specific priorities for lead poisoning prevention, EPH tracking, asthma, toxic chemicals and EPH laboratories. The EPH agency should address current and future environmental health challenges, including population growth, climate changes, impending resource scarcity for petroleum and water, land use and transportation trends due to urbanization and sprawl, persistent health disparities, and a decline in the environmental health workforce.

The EPH agency should be consistent with CDC's new goals, directions and priorities. CDC adopted six strategic imperatives under the Futures Initiatives to strengthen health impact, customer-centricity, public health research, leadership, global health impact, and effectiveness and accountability. CDC developed 24 health protection goals for healthy people, healthy places, preparedness and global health. The EPH agency should compliment rather than duplicate EPH activities conducted by federal, state and local agencies, academic institutions, non-governmental organizations (NGOs) and industry. EPH initiatives implemented by these groups include research, capacity building, public education, technical support and policy.

The EPH agency should respond to the needs and concerns of the U.S. public as NCEH/ATSDR's ultimate customer. A Gallup poll was administered in March 2006 to ~1,000 adults to obtain public opinion on the environment. The national survey showed that Americans were most concerned about toxic waste contamination of soil and water and least concerned about global warming. These results have remained relatively stable over time from 1989-2004.

A survey was published in 2000 on public perceptions of the link between the environment and disease. Americans believed environmental factors played the most important role in sinus problems and allergies and the least important role in learning disabilities. The survey also showed that Americans believed air pollution, toxic waste and contaminated drinking water were the most significant environmental problems in causing health effects to persons. Electromagnetic fields created by power lines were found to be the least important problems. The overarching result of the survey was that Americans believed the environment has a tremendous impact on health.

In addition to considering the EPH characteristics, development over time and constraints, Dr. Frumkin also asked the BSC to answer the following questions in designing the national EPH agency. (1) On what issues should the agency concentrate its resources, such as vector control, climate change, gene/environment interaction,

chemical toxicity or air pollution? (2) On what activities should the agency concentrate its resources, such as capacity building, bench research, epidemiologic research, or support to state and local health departments? (3) What is the most effective structure for the EPH agency? Dr. Frumkin emphasized that CDC's ability to implement the BSC's recommendations may be limited by legal authorities, jurisdictions and mandates of other agencies to conduct these activities.

The BSC was extremely pleased that NCEH/ATSDR responded to its previous request to restructure the agenda with interactive discussions and opportunities to provide more guidance and input. However, several members acknowledged that this effort should not be limited to BSC meetings held twice per year. As a result, the BSC advised NCEH/ATSDR to solicit feedback from staff on the same questions on an ongoing basis. The BSC was also pleased that NCEH/ATSDR recognized the critical need to partner with other governmental agencies and NGOs in designing the national EPH agency.

The BSC identified other EPH priorities that were excluded from Dr. Frumkin's presentation, such as social disruption, mental health, diet, a clear definition of "environment," gene/ environment interaction, and the need for a more holistic approach. Several members emphasized the critical need to prioritize EPH issues because environmental risks are uncertain, but will require tremendous resources and funding.

Dr. Frumkin asked the BSC to divide into four small subgroups to discuss the three specific questions in more detail. He clarified that the EPH issues described in his presentation should be viewed as examples. Each subgroup should feel free to provide guidance on additional areas in designing the national EPH agency.

Subgroup Reports on Question 1

Dr. Nolan reported that Subgroup 1 advises NCEH/ATSDR to direct its resources to the following issues. Important opportunities offered by CDC's healthy places and preparedness goals should be used to more closely focus on environmental health and correct inaccurate perceptions about relationships between environmental factors and health. The possibility of shifting from risk assessments to attributable risks in establishing environmental health priorities should be explored. For example, the current focus on obesity would lead to more attention on the built environment.

Susceptible populations should be identified in place-based environmental health goals to determine settings where persons spend the most time and are most vulnerable. The indoor air pollution program should be merged with vulnerable populations and place-based goals to strengthen these activities.

Dr. Fernandez reported that Subgroup 2 advises NCEH/ATSDR to direct its resources to the following issues. A holistic approach should be applied in addressing pollution, toxic chemicals and other EPH issues in air, water, food and soil. For example, the healthy places goals should be designed to address the needs of all communities collectively rather than the small microcosm of an individual area.

More emphasis should be placed on collecting data and evaluating chemical mixtures of toxins that may cause important exposures to humans. Efforts should be made to identify opportunities to prevent, respond to and prepare for environmental disasters. Strategies should be implemented to increase public knowledge, disseminate accurate information, and provide solid education on EPH for public officials and stakeholders to make more informed decisions.

Dr. McClellan reported that Subgroup 3 advises NCEH/ATSDR to direct its resources to the following issues. The tension in conducting “health,” “health-based” or “public health-based” activities in the general U.S. population, states, cities or small communities should be addressed. Underlying data should be collected, compiled, interpreted and disseminated to increase public understanding of health outcome patterns in terms of morbidity and mortality. For example, airborne particulate matter only accounts for 1% of the attributable risk for cardiovascular and respiratory diseases, but the remaining 99% of this risk is not explained to the public.

Efforts should be avoided in developing emergency preparedness initiatives or other activities that politicize or drive the EPH field. Instead, more emphasis should be placed on basic or fundamental EPH issues, such as clean water, healthy and non-contaminated food, and appropriate sewage treatment. Concerns about outcomes should not serve as a priority because science is not equivalent to research. Moreover, NCEH/ATSDR’s traditional research may be only a small component compared to the EPH activities of other agencies. Science should be applied to decisions about important EPH issues.

Mr. Holmes reported that Subgroup 4 advises NCEH/ATSDR to direct its resources to the following issues. Funding should be leveraged with state and local agencies to strengthen training and development of the EPH workforce. Emphasis should be

placed on emerging issues, such as wastewater reuse as water becomes more of a depleted resource.

Nitrates, bacteria and other substances that contaminate water supplies and private wells should be widely disseminated to the public. Gaps should be filled in old environmental laws to address present issues of risk. For example, old emergency response laws are designed to respond to rather than prevent chemical spills. NCEH/ATSDR's leadership role in EPH tracking should be maintained to enhance the collection of baseline data.

Subgroup Reports on Question 2

Dr. Nolan reported that Subgroup 1 advises NCEH/ATSDR to direct its resources to the following activities. The credibility of CDC and NCEH should be used to clearly define "biomonitoring" in the context of human health. Biomonitoring should continue to be used as a mechanism to shift the focus on toxicology and place a stronger emphasis on concentrations in humans in addition to exposure criteria. Data collection should be expanded to include disease endpoints for environmentally-sensitive disease states. Efforts to define "environmental health diseases" continue to be difficult.

Both science and communications expertise should be available when education and communications are provided in emergency situations and all other activities. Actions that will be taken to address disease clusters should be identified before these issues are found. For example, a clearly defined process should be established to respond to clusters that will be discovered when biological samples are collected and biomonitoring is performed for other reasons. NCEH should have knowledge of CDC partners that have responsibility for food, water or other general sanitation issues. NCEH should focus on interactions between basic sanitation and infectious disease control or pesticide use.

Research should be promoted to enhance biomonitoring, concentrations in humans and remediation. Studies should also be performed on relationships among human health effects, environmental stress and exposures, and the impact of social disruption on mental and physical health. Sampling should be incorporated into emergency response events to build an exposure and absorption database. Data should continue to be collected for ongoing research, monitoring and data banking for environmental issues. NCEH/ATSDR should serve as the leader in ensuring that these efforts are designed with confidentiality protections.

Workforce development, communication and packaging experiences that are available throughout CDC and at other sources should serve as models in designing the national EPH agency. For example, the NCEH laboratory conducts several training programs. Colorado State University will offer an online course in computational toxicology and pharmacology beginning in 2007. A new “technical career management” division should be added to the national EPH agency to mentor and reward staff growth in scientific expertise; recruit young scientists; and remain up-to-date on new scientific methods, modeling and analyses.

NCEH/ATSDR should discontinue its cruise ship activities and reassign responsibility for this program to the Division of Global Migration and Quarantine. ATSDR’s Hazardous Substances Emergency Events Surveillance System should be restructured as a “data morgue.” NCEH/ATSDR should be willing to “bleed” for any data that are collected. Biomonitoring approaches should be matched with data collection efforts. Toxicological profile-type of information should be available for this information. Strategies should be developed to terminate research on particular compounds.

Mr. Holmes reported that Subgroup 2 advises NCEH/ATSDR to direct its resources to the following activities. More emphasis should be placed on database development and EPH tracking. Online training should be provided to strengthen EPH workforce development. NCEH should add its EPH competencies to existing models in this effort, such as the Food and Drug Administration’s (FDA) online university of ~200 courses and ATSDR’s case studies and modular training courses.

Linkages should be made to poison control centers to provide toxicological training to physicians and other groups. The NCEH laboratory should maintain capacity to develop methodologies, conduct research, and serve as the gold standard in methodologies for states and industry. NCEH’s emergency response web site with electronic links to databases and other resources should be widely publicized to local health departments. NCEH should continue to serve as the leader in gathering and compiling solid EPH information in one source for broad public access. NCEH/ATSDR should serve as a team leader in the field.

Dr. Windham reported that Subgroup 3 advises NCEH/ATSDR to direct its resources to the following activities. A stronger focus should be placed on monitoring exposures, health outcomes, vector control and other issues that impact EPH. The solid capacity of the NCEH laboratory should be maintained to rapidly develop new assays, measure environmental exposures, and transfer this technology to state health departments.

Findings from the National Report on Human Exposure to Environmental Chemicals (NER) should be interpreted and disseminated to the public. Collaborations should be established with internal partners, schools of public health and other external stakeholders to enhance the EPH workforce and implement effective strategies in this effort. For example, salaries to EPH professionals should be competitive. Scholarships, signing bonuses and other incentives should be provided to increase interest in EPH as a career.

Training programs should be packaged and distributed to current EPH professionals. Activities should be developed in consultation with state and local health departments and regional centers to plan and prepare for emergencies and other EPH disasters. NCEH/ATSDR should serve as a repository for sanitation functions, laboratory assays and other EPH information; develop solid methods and capacity to fulfill this role; and rapidly distribute new data. For example, EPH information could be readily available and accessible on secure web sites.

Dr. Gold reported that Subgroup 4 advises NCEH/ATSDR to direct its resources to the following activities. All EPH projects should be designed to place various environmental exposures in a larger context; focus on a long-term outlook to ensure the continuity of activities over time; and incorporate risk into an appropriate perspective whenever possible. For example, attributable risk to a population should be analyzed.

More emphasis should be placed on outreach and education, the inclusion of biomonitoring data in a human health context, and communication to the public on health trends and the role of the environment. Coordination should be strengthened among agencies that conduct similar EPH activities, such as ATSDR's toxicological profiles and EPA's Integrated Risk Information System (IRIS). State and local grantees should be encouraged to establish partnerships with schools of public health to address training and practice in addition to basic research.

Subgroup Reports on Question 3

Dr. Koenig reported that Subgroup 1 advises NCEH/ATSDR to design the EPH agency with the following structure. NCEH's insularity should be broken down as much as possible. NCEH/ATSDR's skills and needs in neurotoxicology, neuroscience, cancer, respiratory health, reproductive effects and other technical areas should be more clearly represented in the organizational structure.

New “technical forums” that include NCEH/ATSDR staff with technical expertise should be added to support each division. Senior management should be excluded from these discussions, but should provide resources and opportunities for the technical forums to regularly convene closed meetings, improve communications, enhance skills and strengthen knowledge. The technical forums would add flexibility to NCEH/ATSDR’s structure and enhance the internal EPH workforce.

Dr. Ducatman reported that Subgroup 2 advises NCEH/ATSDR to design the EPH agency with the following structure. More emphasis should be placed on information that is posted on the NCEH and ATSDR web sites. Coordination should be strengthened and formal organizational agreements should be established with EPA, the National Institute of Environmental Health Sciences, and the Nuclear Regulatory Commission. The NCEH structure should be redesigned to maximize outreach to state officials with decision-making authority.

The organizational structure should highlight the strengths and minimize the weaknesses of both NCEH and ATSDR, particularly NCEH’s solid clinical capabilities and ATSDR’s outstanding outreach capacity. NCEH should determine its potential role in upcoming debates about potential health outcomes from nuclear power plants. Consideration should be given to revising NCEH/ATSDR’s existing mission statement before the organizational structure is redesigned.

Dr. Laessig reported that Subgroup 3 advises NCEH/ATSDR to design the EPH agency with the following structure. The solid capacity and expertise of staff must be maintained regardless of NCEH/ATSDR’s organizational structure. Projects and activities conducted by the Division of Regional Operations should be clearly defined. A new division or office under the NCEH/ATSDR Office of the Director should be added to specifically focus on the built environment.

Dr. Zenick reported that Subgroup 4 advises NCEH/ATSDR to design the EPH agency with the following structure. The existing organization should be overlaid with five “functional communities” for preparedness and response; investigative assessment/intervention prevention; education and communication; monitoring and surveillance; and healthy places and health promotion. Each area should be designed with strategic planning, research and implementation components. Expertise would be obtained from the other functional communities as needed. The focus areas will improve NCEH/ATSDR’s capacity to identify data deficiencies and gaps, determine research needs, and take advantage of collaborative opportunities with EPA and other agencies.

Consideration should be given to combining some of the existing functions because the divisions are still separated despite the NCEH/ATSDR consolidation. For example, the NCEH Division of Emergency and Environmental Health Services (EEHS) and EHHE could be integrated. The ATSDR Division of Toxicology and Environmental Medicine (DTEM) could be restructured as the “Division of Medical Toxicology.” DTEM’s “Environmental Medicine” component could be moved to the new EHHE/EEHS division.

Open Discussion on the BSC’s Guidance

The BSC made additional suggestions for NCEH/ATSDR to consider in designing the national EPH agency.

- Use individual BSC members as “EPH instructors” to advance the knowledge base of NCEH/ATSDR staff.
- Discontinue the project on motor vehicle injury prevention in India.
- Clearly distinguish between basic and applied research. Minimize the focus on basic research because NCEH/ATSDR does not have sufficient capacity and capabilities to adequately conduct this activity. Publish NCEH/ATSDR’s excellent applied research methods.
- Expand ATSDR’s existing training program for emergency residents to include Hispanic-serving health professions schools and other academic institutions; a broader geographic area; and other disciplines, such as pharmacology and toxicology.
- Increase communication and coordination with internal and external partners to strengthen the EPH research portfolio. For example, NIOSH has substantial capacity in exposure assessments. EPA maintains a tremendous research program. The National Institutes of Health is shifting to a clinical disease orientation.
- Increase involvement in ongoing discussions about the role of the environment in trade, energy and technology because these issues will have environmental and health implications.
- Strengthen toxicological expertise to interpret biomonitoring results.

Dr. Frumkin summarized key issues and common themes from the three breakout sessions and the open discussion. For question 1, the subgroups advised NCEH/ATSDR to direct its resources to the following issues:

- Emergency response and preparedness.
- The built environment and healthy places.

- Clean water, sewage sanitation and other basic EPH issues.
- The collection of solid data.
- Indoor air pollution, wastewater reuse and contamination.
- The need to take a holistic approach and consider the contextual framework while conducting activities.
- A comparison of risks that may be associated with chemicals and those from other sources.
- A shift from risk assessment to attributable risk.

For question 2, the subgroups advised NCEH/ATSDR to direct its resources to the following activities:

- Outreach and education.
- Workforce and professional development.
- Surveillance, data collection and biomonitoring.
- The transfer of laboratory technology to states and other users.
- Emergency response and preparedness.
- The role as an information repository and data source for other users.
- A focus on applied rather than basic research, including the development and standardization of research methods.

For question 3, the subgroups advised NCEH/ATSDR to design the EPH agency with the following structure:

- Functional groups across NCEH/ATSDR.
- Technical forums to support the existing organizational structure.
- More effective and closer coordination with other agencies.
- Stronger linkages with states.
- Enhanced outreach to state decision-makers.

Dr. Frumkin thanked the subgroups for providing valuable input and reiterated that NCEH/ATSDR deeply values the BSC's expert advice. He announced that the subgroups' responses to the three questions will be summarized and distributed to the BSC for review and revision if necessary. He confirmed that feedback by the subgroups and NCEH/ATSDR staff would be used as the foundation in designing the national EPH agency.

Public Comment Period

Dr. Nolan opened the floor for public comments; no attendees responded.

Update on the Program Peer Review Process

Dr. Daniel Wartenberg, the Program Peer Review Subcommittee (PPRS) Chair, reported that PPRS will not conduct another program peer review until October 2006. An evaluation is underway to develop strategies to strengthen the overall peer review process. Based on the four program peer reviews conducted to date, PPRS has identified several areas that need improvement.

BSC members should chair rather than serve as members of peer review teams (PRTs). The self-assessment questionnaires should be streamlined, validated and refined with a more self-oriented focus. Several staff members continue to view the peer review questionnaires as confrontational, evaluative and burdensome. The purpose of site visits to “verify and clarify” should be more clearly defined. The current process of selecting individual reviewers to serve on PRTs should be reconsidered. The current approach of programs selecting two partners to participate in the peer review should be reassessed to minimize bias. The questionnaires should be modified with a stronger emphasis on issues related to disparities, fairness, outreach, the workforce, and internal and external collaborations and communications.

The peer review process should be consistent with both CDC’s mission and issues that are relevant to NCEH/ATSDR management and staff. Most notably, Dr. Frumkin has asked PPRS to conduct functional rather than structural peer reviews. However, PPRS is challenged in responding to this request because some functions are cross-cutting throughout different NCEH/ATSDR programs. PPRS must also consider various complexities while conducting peer reviews, such as the effectiveness of management; the relevance and scientific quality of products; the usefulness of outreach to partners; prudent allocation of resources; and future goals for improvement.

To support the evaluation of the peer review process, PPRS is interviewing PRT chairs and program leaders and administering questionnaires to PRT members. Feedback provided to PPRS to date has focused on three major themes. Input should be obtained from more than two partners during peer reviews. The senior management questionnaire should be improved to emphasize the critical need for leadership to be much more involved in the initial peer review and the program’s ongoing self-

assessment process over time. Internal and external collaborations and interactions should be more clearly described, evaluated and prioritized.

An interview with a program leader resulted in a recommendation for programs to conduct self-assessments on an ongoing basis through conference calls with staff. Formal self-assessments should be performed on an annual or biannual basis. The program leader also informed PPRS that the peer review process was extremely valuable, generated enthusiasm among staff, and facilitated a reassessment of priorities and redirection of resources.

Dr. Wartenberg announced that PPRS will attempt to convene a face-to-face meeting with Drs. Frumkin and Sinks over the next month to discuss the peer review process in more detail. He asked the BSC and NCEH/ATSDR to make suggestions in the following areas for PPRS to consider during the upcoming meeting.

- Assessment of the existing peer review strategy.
- The need for two BSC members to serve on each PRT.
- Documentation needed for peer reviews.
- Revisions to the questionnaires.
- A comprehensive approach to identify and evaluate input from partners.
- Periodic program updates to maximize the usefulness of self-assessments.
- Increased involvement by senior management.
- Stronger emphasis on disparities and diversity issues.
- Functional rather than structural peer reviews.

The BSC noted that an objective and critical peer review is one of the most important roles of any external advisory body. Several members made recommendations in response to PPRS's request for guidance on the peer review process.

- Clearly communicate senior management's expectations and needs of the peer review process. For example, Dr. Frumkin is interested in the peer review process serving as an overarching framework and critical thought process on NCEH/ATSDR's configuration of current programs; maximal impact on public health; quality of the science; and future direction. The peer review process should also be designed as a cross-cutting analysis of NCEH/ATSDR's functions. Dr. Frumkin does not view the BSC's role as providing guidance on NCEH/ATSDR's continuous quality improvement during the peer review process.

- Obtain clear guidance from Dr. Frumkin on specific functional areas that should be examined during peer reviews.
- Identify effective strategies to reinvigorate senior management's attention to, endorsement of and involvement in the peer review process. For example, site visits could be restructured for senior management to meet with PRTs for a longer period of time. Senior management could meet with program leaders after each peer review to discuss the PRT's report and determine actions that will be taken to respond to the recommendations.
- Revise the questionnaire to obtain more input from external partners and less feedback from the program's self-assessment. For example, questions to programs should be brief and limited to a few areas: (1) What are the program's most significant past accomplishments? (2) What are the program's current activities? (3) What strategies are the program implementing to prioritize activities? (4) What are the program's future plans? (5) What are the program's potential impediments?
- Shorten the five-year review process with a review cycle of every two or three years.
- Assign two BSC members to serve on each PRT.
- Revise the questionnaire to obtain more input on the program's allocation of funds, personnel and other resources.
- Establish a formal follow-up process for the program to describe actions that were taken in response to the PRT's recommendations and state whether these changes were helpful or not useful.
- Consult with Dr. Zenick during the evaluation to obtain lessons learned on EPA's peer review process of divisions and programs.
- Encourage senior management to compile a written list of "anticipated" outcomes of the peer review prior to the site visit and then compare these expectations with the PRT's "actual" findings.

With no further discussion or business brought before the BSC, Dr. Nolan recessed the meeting at 4:45 p.m. on May 4, 2006.

Subcommittee Reports

Community and Tribal Subcommittee (CTS). Dr. Nolan reconvened the meeting at 8:44 a.m. on May 5, 2006 and yielded the floor to the first presenter. Dr. Miguel Fernandez, the CTS Chair, reported that two BSC members, four community and tribal

members, and the Designated Federal Official serve on the CTS. The CTS's current areas of focus are summarized as follows.

First, the CTS is continuing to provide guidance to CCEHIP and NCEH/ATSDR on health disparities and EJ activities. The need for NCEH/ATSDR programs to utilize CCEHIP's draft EJ policy in developing activities, structuring programs and conducting evaluations was emphasized. Efforts are being made to fill existing gaps in the products, impact and community groups affected by NCEH/ATSDR programs. Tier 1 projects completed in the first quarter of 2006 and tier 2 projects scheduled for completion later in 2006 are being reviewed.

Guest speakers joined the May 3, 2006 CTS meeting by conference call to present key findings from the "Access to Health Care for Residents of the Anniston, Alabama Superfund Site" project and the "Bell Gardens, California Asthma Study." The CTS was extremely pleased to learn that the California Department of Health Services used its EJ checklist in the *ATSDR Public Health Assessment (PHA) Guidance Manual* to conduct a retrospective evaluation of the health study. The next three projects that will be evaluated from health disparities and EJ perspectives are "Defining U.S.-Mexico Border of Childhood Asthma Prevalence and Risk;" the "Tribal Nations Clinician Training in Environmental Exposure Project;" and the "Wingate Road Municipal Incinerator and Landfill, Ft. Lauderdale, Florida."

Second, the CTS provided the following feedback to PPRS on the peer review process and questionnaires. Health disparities and EJ components should be included in peer reviews. "Partners" and "customers" should be clarified and specifically identified. Peer review reports should be provided to the CTS in coordination with its meetings. A preliminary evaluation should be made on whether NCEH/ATSDR offices and divisions did or did not include health disparities and EJ components in original peer review reports. The CTS will make recommendations to PPRS on incorporating these issues as a standardized part of the document before the final draft of the peer review report is submitted. The CTS will also provide ongoing evaluation and monitoring of the EJ strategy in the peer review process.

Third, the CTS is continuing to make recommendations to NCEH/ATSDR to strengthen tribal relationships. Support and funding should be provided for tribal clinician training. A collaboration should be established with the Indian Health Service (IHS) to analyze health trends in Indian Country. A new partnership should be developed with IHS's 11 funded tribal epidemiological centers to resolve barriers to collecting data in Indian Country.

The CTS's recommendations to the BSC are outlined as follows. Assistance should be provided to NCEH/ATSDR in developing an EJ strategy and revising preliminary tools. The use of the *ATSDR PHA Guidance Manual* by external sources should be widely publicized. The selection of peer-reviewed studies should be reevaluated on the basis of the quality and quantity of appropriate community engagement. A determination should be made on whether NCEH can change its approach to increase direct community participation in activities. For example, the Environmental Health Services Branch (EHSB) uses state and local health department to engage communities in EPH services.

Dr. Fernandez also reported on the CTS's business items. The expiration of Dr. Fernandez's term in June 2006 will leave the CTS with only one BSC member and no chair. Representation by three BSC members is a critical need to ensure the CTS's continuity. The CTS membership should be expanded to represent more ethnic diversity, new immigrants and migrant farmworkers, rural areas, and geographical regions other than the East and Southeast. NCEH/ATSDR should support the attendance of CTS members at BSC meetings. The CTS will convene two conference calls in June and September 2006 and hold a face-to-face meeting in December 2006.

The BSC made two key suggestions in response to the CTS's update. First, the CTS's proposed collaboration with IHS's tribal epidemiological centers should be limited to solid studies and activities that are clearly defined and have sufficient power. The CTS should engage the ATSDR Division of Health Studies in this effort. Second, EPA should be represented on the CTS as an *ex officio* member to provide additional expertise on health disparities issues and deliver messages back to EPA about environmental health issues from community and tribal perspectives.

Dr. Sinks also made several follow-up comments to the CTS update. First, the petition process for communities to request site investigations of environmental health problems is limited to ATSDR. NCEH only "assists" state health departments that are responding to site-specific issues. Second, the CTS should include a non-site-specific study in its reviews of NCEH/ATSDR projects from an EJ and health disparities perspective. For example, the CTS could evaluate findings from the lead poisoning, asthma, laboratory or health tracking programs by race/ethnicity.

Third, the CTS should continue its communications and collaboration with PPRS to ensure NCEH/ATSDR is held accountable to EJ and health disparities issues in the peer review process. This effort could be strengthened by including new indicators on peer review questionnaires to measure each program on its performance in terms of EJ and health disparities. A CTS member could also serve on PRTs. Fourth, the CTS

should continue to challenge NCEH/ATSDR in maintaining and disseminating an updated inventory of health disparities and EJ projects and including important activities that have been omitted.

Health Department Subcommittee (HDS). Dr. Gayle Windham, the HDS Chair, covered the following items in her report. HDS discussed several issues during its January and March 2006 conference calls. An update was provided on the BSC's guidance to HDS during the November 2005 BSC meeting. Potential recommendations were made on the EPH workforce. HDS members volunteered to serve on the planning committee for the EPH conference. HDS's future focus areas as proposed by Dr. Sinks were discussed, including NCEH/ATSDR's program announcements to health departments; linkages between EPH tracking activities and ATSDR's PHAs; and refined investigations of chemical incidents.

CDC and the Corporate University made a series of presentations on workforce training and development, management and leadership courses, emergency preparedness training, competencies, performance standards, and training to state and local health departments during HDS conference calls. However, HDS noted that most of these activities were primarily targeted to CDC staff. HDS's discussions resulted in strong support of EHSB's "National Strategy to Revitalize EPH Services," goals and ten-year plan. HDS also acknowledged that the Environmental Health Leadership Institute and an EPH Service Corps serve as models of worthwhile programs.

HDS is now soliciting the BSC's approval on its recommendations regarding the EPH workforce. CDC should consolidate internal workforce efforts and expand these activities to state and local health departments and other external sources that need training. HDS and the BSC should monitor NCEH's progress toward workforce development. NCEH should use and disseminate the 14 core competencies for environmental health practitioners. CDC should define and package training needs.

Existing programs should be compiled into core curriculum packages for each competency. Corporate University programs should be provided to health departments. Alternative training methods should be developed for health departments, such as online technologies, self-study programs, training programs with a CDC "shadow," train-the-trainer approaches and regional training courses. Curricula should be created in the areas of data skills, epidemiologic issues, cultural competency and evidence-based practices. Dr. Sinks confirmed that NCEH/ATSDR has several efforts underway to enhance training and workforce development. Moreover, NCEH/ATSDR will strengthen its emphasis in this area based on the BSC's guidance.

Dr. Windham also reported on HDS's business items and next steps. The expiration of Dr. Windham's term in June 2006 will leave HDS with no chair and the possible need for new members. Consideration should be given to permitting subcommittee chairs whose terms have expired to continue serving as members. A regular meeting schedule should be established for HDS to convene monthly or bimonthly conference calls. Support should be provided for HDS to hold an annual face-to-face meeting prior to BSC meetings.

After approval of the EPH workforce recommendations, HDS will shift its focus to emergency response, improved surveillance systems, or other priority issues requested by the BSC or NCEH/ATSDR. Dr. Sinks asked HDS to place two additional items on its future agenda. First, strategies should be developed to leverage extramural awards to states and build stronger and more effective linkages across all grantees. Second, an informal survey should be administered to health departments on the potential impact of deploying NCEH and ATSDR staff at state and local levels.

The BSC advised HDS to ensure its EPH workforce recommendations include local health departments. Dr. Koenig offered to assist HDS in identifying existing programs that can be tailored for NCEH/ATSDR's specific training purposes.

A motion was properly placed on the floor and seconded by voting members for the BSC to adopt HDS's recommendations and forward the report to NCEH/ATSDR for action. The motion was **unanimously approved** with no further discussion.

Public Comment Period

Dr. Megan Latshaw, of the Association of State and Territorial Health Officials (ASTHO), provided a state perspective on the BSC's future direction. ASTHO's collaborations with CDC are limited to a few divisions. States typically have no knowledge about appropriate CDC staff to contact for assistance. ASTHO and EHSB are currently developing a contact card to provide states with CDC contact information.

Dr. Latshaw asked the BSC to consider three suggestions for states to improve EPH activities in the field. The BSC should advise CDC to improve its cross-cutting services to state health agencies. The BSC should recommend that CDC appoint an ASTHO representative to serve as a formal HDS liaison member. The BSC should use the State Environmental Health Director's Group that represents each state and territory as a resource in its future deliberations.

Peer Review Reports and Program Responses

DTEM. Dr. Wartenberg reported that the DTEM peer review report reflects diverse opinions among individual PRT members about the quality and effectiveness of DTEM's products and overall program. The PRT found DTEM to be a large and complex division that conducts numerous activities, particularly the development of toxicological profiles. The PRT identified several strengths in DTEM. Substantial outreach is provided to affected communities. Toxicological profiles are disseminated in both English and Spanish. Numerous grants are awarded to minority institutions. DTEM's accomplishments are relevant to ATSDR's mission. Staff performance is responsive and of high quality.

The PRT also identified two key weaknesses in DTEM. The aging workforce may not have sufficient capacity to remain up-to-date with rapidly advancing science and cutting-edge technologies in computational methods, toxicology and physiologically-based biokinetic modeling. DTEM's proposed cohort study may not be appropriate for a toxicology program and may be better suited in another CDC division.

The PRT's major recommendations to DTEM are outlined as follows. New technical and scientific staff should be recruited. Existing staff with state-of-the-art skills should be retained. The workforce should be assessed on an ongoing basis. DTEM's self-assessment process should be revised to more closely focus on the impact of its products, such as reaching appropriate audiences and changing the performance of health professionals. Increased encouragement and rewards should be given to staff who publish peer-reviewed papers.

Toxicological profiles should be more carefully and critically reviewed and updated. Most notably, the derivation of reference values should be prioritized. A process should be developed to identify data gaps and research needs. DTEM's proposal to develop an *in vitro* toxicology laboratory is a low priority and should be reassessed. Optimal strategies should be created to identify priority data needs. DTEM's continued involvement with epidemiologic research for the Minority Health and Great Lakes Human Health Effects Research Programs should be evaluated. PPRS unanimously approved the DTEM peer review report on April 24, 2006.

Dr. Christopher DeRosa, the DTEM Director, presented DTEM's response to the PRT's report. He noted that DTEM appreciates the PRT's findings that "DTEM is meeting an important national need" and is generally performing at a high level. The PRT further concluded that "DTEM's program goals and objectives are consistent with this national need."

DTEM identified four cross-cutting themes in the PRT's report. For "training of existing staff," DTEM notes that 97% of staff members have individual development plans linked to individual learning accounts CDC has made available to all employees. Several staff members teach various curricula in academic institutions throughout the country. DTEM will leverage this internal expertise to strengthen and retain staff skills.

For "recruitment and retention," DTEM notes that five positions are currently vacant. Hiring new personnel will be a high priority as DTEM advances to new areas in toxicological and medical science. DTEM is maintaining an inventory of candidates who have expressed interest in filling these positions, particularly in the area of computational toxicology. DTEM will use the PRT's recommendations to build its computational toxicology critical mass. DTEM will also use the peer review process to more thoroughly analyze the toxicological profiles, examine other activities and fill priority data needs.

For "enhanced collaboration," DTEM has already taken steps to strengthen existing partnerships with EPA and NTP and establish new relationships with industry to identify, fill and publish priority data needs. DTEM was pleased to learn that the test rule for 20 priority data needs is expected to be published in July 2006 and will require industry to fill these priority data needs. DTEM will continue to chair a federal interagency toxicology committee that was recently expanded to formally include FDA and NIOSH. DTEM will make efforts to strengthen and formalize its long-standing collaboration with EPA, particularly in the area of reviewing the current criteria to identify priority data needs.

For "programmatic evaluation," DTEM notes that resources have been traditionally inadequate to undertake this effort in depth. DTEM agrees with the PRT that a formal process should be developed to update the toxicological profiles. At this time, >50 documents are extremely outdated and do not reflect more recent public health practice at sites, science and data on children's health, hormonally active agents, mixtures, mechanisms of toxic actions and relevance to public health. However, DTEM is aware that health assessors and state partners extensively use the toxicological profiles and 80%-90% of evaluation respondents have rated the documents as "good" or "excellent."

DTEM will administer an online survey in June 2006 to obtain additional input about the utility of the toxicological profiles and solicit suggestions on enhancement. The PRT noted that senior management was unaware of the survey results, but the peer review report was developed before the survey will be posted on the Internet in June 2006. DTEM is currently piloting a logic-based evaluation process with an external partner.

DTEM will take several actions to formally respond to the PRT's report. A detailed response will be prepared and posted on the ATSDR Office of Science Intranet site. Short- and long-term implementation plans will be developed. DTEM will apply the "strengths, weaknesses, opportunities and threats" analysis to assess its progress on a biannual basis. Senior management will be extensively engaged in implementing the PRT's recommendations, particularly suggestions for DTEM to meet with the leadership of EPA, NTP and the National Institute of Environmental Health Sciences to foster additional support in filling priority data needs.

To date, DTEM has filled ~90 of >200 identified priority data needs. More than 50% of the priority data needs were filled by independently-conducted and academically-based research. This outcome suggests that data needs identified in the toxicological profiles are used to provide relevance, priority and a focus more broadly than the federal government.

Dr. DeRosa found the peer review process to be a valuable experience that will reinforce key elements and sharpen DTEM's focus on evaluating the impact and quality of products, services and the overall program. He acknowledged the tremendous efforts of DTEM staff in preparing for the peer review over a one-year period of time.

The BSC commended DTEM on its comprehensive response and efforts to thoroughly address the key points, comments and recommendations outlined in the peer review report. The BSC was pleased with the ongoing collaboration to harmonize and share information between DTEM's toxicological profiles and EPA's IRIS database. EPA is currently challenged by filling critical data needs with IRIS data and its partnership with DTEM's toxicological profiles will greatly advance this area.

The BSC acknowledged that the development of reference ranges will be an extremely expensive and time-consuming undertaking, but DTEM was commended on its focus and efforts in this area. The BSC recognized that reference ranges will play a critical role in future toxicological profiles.

The BSC pointed out that DTEM has made tremendous advances in identifying data needs, but progress in this area has been "sluggish" overall due to ATSDR's restrictive legislation. Drs. Gold, McClellan and Yang made several suggestions for DTEM to consider in strengthening this area.

- Ensure that DTEM maintains its independence while collaborating with EPA on the toxicological profiles.

- Strongly urge CDC programs that focus on obesity to collaborate with the National Center for Toxicological Research because this agency has produced the best data in the world on calorie restriction in rodents.
- Define “needs” and “new science” as important criteria in updating the toxicological profiles. For example, DTEM should now update the DDT toxicological profile to reflect exciting new epidemiology and science on mechanisms of carcinogenesis.
- Serve as the lead entity in CDC to interpret biomonitoring results.
- Use chemicals described in the NER as a source in developing the toxicological profiles.
- Utilize the NCEH/ATSDR consolidation to strengthen collaborations with NCEH, particularly in the area of *in vitro* toxicology.
- Enhance efforts to identify priority data needs. For example, partner with academic institutions and industry-funded researchers. Use the recent breakthrough on the test rule as a solid opportunity to advance the field. Attempt to restructure the Superfund research program to be more responsive to priority data needs.

Dr. DeRosa provided additional details and described several activities DTEM is conducting in response to the BSC’s comments and recommendations. DTEM and the EPA Office of Research and Development are collaborating under a memorandum of understanding to standardize and strengthen the toxicological profiles in the areas of minimal risk levels, specific chemicals to address, and contemporaneous issues of science that can inform EPA’s IRIS database.

DTEM is extremely pleased about the success of its partnership with EPA on the toxicological profiles and will continue to maintain its independence while attempting to reach agreement with EPA on specific chemicals to assess, appropriate methods to utilize and other issues. DTEM, EPA and the World Health Organization International Program for Chemical Safety (IPCS) are sharing the costs of literature searches and peer review activities. DTEM is closely partnering with the NCEH Division of Laboratory Sciences (DLS) to provide a clear context for reference ranges that have been identified in the NER and incorporate this information in the toxicological profiles.

DTEM noted that the PRT questioned its continued epidemiologic research in the Great Lakes Basin. However, the Great Lakes Critical Program Act of 1990 requires reports to be submitted to Congress on the health effects of 11 persistent toxic substances that have been identified. DTEM makes extensive use of the epidemiologic literature in the toxicological profiles and engages expert partners and skilled staff to provide appropriate oversight.

The impact and outcome of the Great Lakes Human Health Effects Research Program can be measured by EPA's recent award to recognize the excellence and contributions of the program in protecting the health of women, children and other vulnerable populations in the Great Lakes Basin. Medals of commendation have also been awarded to acknowledge the outstanding efforts of individual DTEM staff members to the program. DTEM has served as a liaison to the U.S. Department of State in negotiations of the Persistent Organic Pollutants (POPs) Treaty.

DTEM prepared the DDT toxicological profile in 2000 in response to a specific request by the EPA Office of Pesticides in preparation of the POPs negotiations. DTEM's involvement in the President's Summit on Public Health in Africa in 2000 served as the foundation in developing the DDT toxicological profile. In 2000, DTEM presented these data to delegates of the POPs Treaty in Geneva and the International Association of Public Health Associations in Beijing. In response to a request by IPCS, DTEM is on a fast track to develop a concise international chemical assessment document on DDT to inform the dialogue at the upcoming Stockholm Convention in June 2006.

Since the early 1990s, DTEM has proposed substances that should be considered for inclusion in the NER. An amazing degree of concordance has been demonstrated between DTEM's toxicological profiles and chemicals described in the NER. Most notably, 13 of the 14 classes of chemicals addressed in the NER are captured in the toxicological profiles. DTEM and NCEH are continuing to engage in dialogue to maintain consistency between the NER and toxicological profiles.

A motion was properly placed on the floor and seconded by voting members for the BSC to approve the DTEM peer review report and forward the document to the program for action. The motion was **unanimously approved** with no further discussion.

Air Pollution and Respiratory Health Branch (APRHB). Dr. Nolan reported that the PRT found APRHB's goals to be aligned with the missions of CDC and NCEH. The asthma program is APRHB's most robust activity and receives the majority of resources. A significant level of APRHB's resources were diverted to meet emergency needs, such as carbon monoxide and mold exposure problems. APRHB expressed a strong interest in continuing to focus on these issues in the future.

The PRT identified several strengths in APRHB. Strong and innovative strategies are implemented to build capacity for asthma control at state and community levels. Staff are passionate and talented. APRHB's activities during Hurricanes Katrina and Rita were extremely successful. Most notably, APRHB rapidly developed partnerships with

businesses to disseminate information to the public about generators that cause carbon monoxide poisoning.

APRHB has made extensive contributions to the knowledge base on air pollution and asthma. APRHB's successful community programs for asthma control address health disparities issues and contain useful and replicable models. APRHB's excellent asthma surveillance program provides useful evidence that targets health disparities and assists in developing community interventions. APRHB extensively collaborates with communities to enhance asthma control and other human health problems related to air pollution.

The PRT also identified several weaknesses in APRHB. The strategic plan is outdated. The Congressional budget is narrowly focused on asthma control. Staff turnover is significant and has reduced the cadre of experienced scientists with a history of publications. Translational research is under-represented in APRHB's current research portfolio.

The PRT's recommendations to APRHB are outlined as follows. The asthma surveillance program should serve as a foundation for APRHB to continue its focus on asthma epidemiology and control and develop new strategies to address other human health problems related to air pollution. Community partnerships should be used to build translational research. Evaluation studies should be fostered to assess the effectiveness and cost effectiveness of asthma programs in improving asthma outcomes.

An extensive strategic planning and implementation process should be developed to reflect CDC's reorganization under the Futures Initiative and the NCEH/ATSDR consolidation. The updated strategic plan should include more effective approaches to collaborate with CDC and NCEH/ATSDR partners. The strategic plan should be used as a mechanism to better align staff with APRHB's activities. Emergency and disaster response field epidemiology and post-disaster response expectations should be incorporated into the strategic plan.

A formal mentoring program should be established to assist junior scientists in publishing peer-reviewed papers. Management should support senior scientists who serve as mentors. Asthma surveillance should be expanded to better target populations and reduce health disparities in vulnerable populations. Expertise should be leveraged in both funded and non-funded programs. Networks among projects should be fostered to enhance the power of evaluating social and behavioral components in reducing the health burden of asthma.

Asthma program partners at state and city levels should be actively engaged in developing asthma indicators and evaluating the impact of asthma programs in communities. Leadership should support the expansion of partnerships as a formal strategy and encourage staff-to-staff relationships with management follow-up. CDC mechanisms should be applied to seek a better budget alignment from Congress. Linkages between APRHB's surveillance activities and those of other CDC programs should be enhanced. Most notably, coordination should be strengthened with the Behavioral Risk Factor Survey and the EPH Tracking Program.

More emphasis should be placed on keeping program managers and senior staff aware of current programs and progress in the field. Efforts should be continued to sustain public recognition of APRHB's activities; stimulate public health improvement; recruit diverse groups; disseminate strategies and metrics to monitor programs; and ensure changes occur throughout the United States.

Dr. Stephen Redd, the former APRHB Chief, presented APRHB's response to the PRT's report. APRHB identified five critical areas following the peer review that will require attention and prioritization by management. One, resources and personnel will be devoted to developing a consolidated air pollution plan that will be shared with the EPH Tracking Program. Two, a new staff member was hired to clarify internal roles and plans for emergency response activities. A schematic of the response has been created. Content areas for carbon monoxide, poisoning prevention and health effects from mold exposure will be filled by the end of May 2006. APRHB intends to exercise the emergency plan before the 2006 hurricane season.

Three, two staff members were hired prior to the peer review to prioritize the asthma research agenda. An outline to prioritize research topics was drafted. APRHB has submitted two proposals for funding since the peer review was completed. Four, leadership and coordination will be provided to state asthma programs for epidemiologic support and surveillance. APRHB will develop standardized methods to provide technical support to states and collect information on best practices among states. Five, all asthma evaluation activities will be coordinated. Several components of APRHB were reorganized and staff were reassigned to support this effort. Dr. Redd also announced that APRHB proposes to change its name to reflect the asthma component.

Dr. Windham advised APRHB to strengthen collaborations with state health departments. She pointed out that California has developed a wealth of fact sheets on mold and materials on carbon monoxide.

A motion was properly placed on the floor and seconded by voting members for the BSC to approve the APRHB peer review report and forward the document to the program for action. The motion was **unanimously approved** with no further discussion.

Overview of the CDC Pandemic Influenza Planning Process

Dr. Redd reported that influenza is primarily spread by coughing and sneezing; causes several hundred thousand hospitalizations and 36,000 deaths each year; and results in a tremendous economic impact. No evidence has been seen of sustained transmission of avian influenza. A “pandemic” is characterized by a new influenza A virus that emerges in the human population, causes serious illness in humans, and easily spreads from person-to-person. The avian strain that is currently circulating throughout the world meets two of these characteristics.

The H5N1 strain has killed millions of birds and resulted in an important economic problem in many parts of the world. The H5N1 strain is a new virus to humans and has a mortality rate of ~50% in humans. The most significant fear is that the current H5N1 strain could be easily transmitted from person-to-person with a few mutations. A vaccine for the H5N1 strain is not commercially available and the supply of antiviral medications in the United States has still not reached full capacity. Of 206 influenza cases with the H5N1 strain, 113 resulted in deaths.

Many affected countries are constrained in conducting influenza surveillance due to limited capacity and economic factors. The deployment of diagnostic and therapeutic resources to these countries is a significant global issue. A period of six to nine months would be needed to produce an influenza vaccine with current technologies in normal circumstances, but a longer time would be required during a pandemic.

CDC is implementing three major strategies in its pandemic influenza planning process. First, efforts are underway to limit the extent of the epidemic of avian influenza among birds, poultry in particular. Limiting avian influenza among birds will reduce exposure of humans to the avian influenza virus and prevent human cases of disease. The fewer cases of human infection with the avian influenza virus there are, the lower the risk that human to human transmission will occur.” Second, major coordination and planning activities are being conducted. A supplement to the “National Strategy for Pandemic Influenza” was released on May 3, 2006 describing 300 tasks the government needs to accomplish. HHS and CDC are now reviewing this document and developing time-lines

for completing tasks that are assigned to CDC. And third, efforts are underway to build a pandemic influenza plan that would be implemented by CDC's Emergency Operations Center.

NCEH's role in CDC's pandemic influenza planning process includes laboratory diagnosis, refugee activities, geographical information systems and vessel sanitation. In 2005, a \$500 million budget for pandemic influenza was approved and an additional \$550 million will soon be allocated to CDC from a supplemental appropriation.

Dr. James Pirkle is the DLS Deputy Director for Science. He announced that in December 2005, the CDC Director asked DLS to become involved in the pandemic influenza planning process and approved \$5 million for this effort. DLS will identify techniques to better understand the detailed structure of proteins, determine shifts and drifts, and gain more knowledge on factors that change the virulence and transmissibility of influenza. DLS's analysis will include a small fraction of the amino acid structure, post-translational modifications, and the role of glycosylation in the confirmation of proteins.

DLS will apply its expertise in proteins to obtain samples on the structural characterization of hemagglutinin and neurominidase surface proteins. Nasal swab samples of the virus from humans and birds will be cultured for one day. Proteins will then be extracted from the virus. The in-depth structural characterization will be >95% of the complete amino acid backbone. This method will allow DLS to compare very small changes in the amino acid structure from samples submitted from any part of the world. Early differences in the movement of the virus will be traced. Critical areas will be identified in the structure protein that affects human-to-human transmission and the virulence of the virus.

DLS will use the same method to identify all post-translational modifications that have been suggested to date as potentially influential. DLS's goal is to complete the analysis of a sample and collect all data in four hours. DLS hopes to run at least 50 samples per day on one instrument. Samples will be treated prior to being transferred to the DLS laboratory to ensure each specimen is entirely non-infectious. The overarching outcomes of the analysis will be to improve surveillance, detect significant shifts much earlier, and provide better guidance for influenza vaccine development. DLS expects to complete the analysis over the next two years.



BSC Business

Dr. Frumkin announced that NCEH/ATSDR has proposed candidates and alternates to replace the seven outgoing BSC members and ensure the BSC remains balanced in terms of geographical region, gender, ethnicity, subject matter expertise and disciplinary background. HHS will make the final decision on the nominees and inform NCEH/ATSDR about the new appointments over the next few months.

Mr. Holmes and Dr. Sinks made several announcements about the upcoming EPH conference. The possibility has been raised of including a townhall session in the next BSC meeting on December 6-7, 2006 to obtain more external input on NCEH/ATSDR's issues, activities and structure from conference participants. A suggestion has also been made for the three BSC subcommittees to hold individual meetings during breakout sessions on December 5, 2006. The BSC should convene a conference call over the next month to reach agreement on these suggestions because the agenda needs to be published in the near future.

The BSC asked NCEH/ATSDR to consider three suggestions in its ongoing efforts to plan the EPH conference. First, the townhall session should be marketed as an opportunity for stakeholders to meet with "NCEH/ATSDR and its "Board of Scientific Counselors" because the CDC brand name is more recognizable to the public than the BSC and will generate more interest. Second, opportunities should be provided for the public to e-mail suggestions about topics of interest before and after the townhall session. Third, an abstract of the townhall session should be developed and published prior to the conference.

Dr. Sinks announced that all activities and efforts on ATSDR's soil dioxin policy have been tabled until the National Research Council releases its recommendations on a dioxin reference dose.

The consensus recommendations, action items and agenda items raised by the BSC over the course of the meeting are outlined below. The consensus recommendations were properly moved, seconded and unanimously approved by voting members with no abstentions.

Consensus Recommendations

- *HDS's report and recommendations are accepted.*
- *The DTEM peer review report is accepted.*
- *The APRHB peer review report is accepted.*

Action Items

- *Dr. Sinks will provide the new CTS members with an updated inventory of NCEH/ATSDR's health disparities and EJ projects.*
- *Dr. Janvier Gasana will serve as the new CTS Chair and Dr. Fernandez will serve as a CTS member for a one-year term.*
- *Dr. Nancy Kim will serve as the new HDS Chair and Dr. Windham will serve as an HDS member for a one-year term.*
- *NCEH/ATSDR will arrange for PPRS to convene a conference call on June 8, 2006, but will attempt to schedule a face-to-face meeting if requested by a majority of members.*
- *Dr. Nolan will distribute a list of agenda items for the next meeting based on e-mail requests submitted by individual BSC members.*
- *DLS will provide the BSC with a brief update by e-mail on activities of the Delisting Workgroup.*

Agenda Items

- *Presentation on NCEH/ATSDR's global health portfolio, including activities in India, the U.S.-Mexico Border and multinational laboratory support.*
- *Update on NCEH/ATSDR's actions taken in response to the BSC's guidance on designing a national EPH agency.*

Closing Session

Drs. Frumkin and Sinks reiterated their gratitude to the BSC for providing NCEH/ATSDR with enormous insight and wisdom. The BSC applauded the outstanding efforts of Ms. Arnetra Herbert and Ms. Sandra Malcom in making logistical arrangements for a successful meeting.

The next BSC meeting will be held on December 6-7, 2006 in Atlanta, Georgia. With no further discussion or business brought before the BSC, Dr. Nolan adjourned the meeting at 12:00 p.m. on May 5, 2006.

I hereby certify that to the best of my knowledge, the foregoing Minutes of the proceedings are accurate and complete.

Date

Patricia Nolan, M.D., M.P.H.
Board of Scientific Counselors Chair

