

**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
December 6-7, 2006
Atlanta, Georgia**

Record of the Proceedings

TABLE OF CONTENTS

	<u>Page</u>
Attachment 1: List of Participants	A1-1
Attachment 2: Acronyms Used In This Report	A2-1
Executive Summary	-i-
Meeting Minutes	1
December 6, 2006	
Town Hall Forum.....	1
Overview of the BSC	1
Overview of the Community/Tribal Subcommittee	3
Overview of the Health Department Subcommittee	4
Overview of the Program Peer Review Subcommittee	5
Town Hall Forum Discussion.....	6
Opening Session of the Official BSC Meeting	9
Observations on the 2006 National EPH Conference	9
Update on NCEH/ATSDR Activities.....	13
Public Comment Period	16
Overview of CDC's Science and Public Health Activities	17
December 7, 2006	
Subcommittee Reports	25
PPRS.....	25
HDS	29
CTS	31
Public Comment Period	34
Update on the CDC Goals Process	34
BSC Business	36
Closing Session	37

ATTACHMENT 1

List of Participants

BSC Members

Dr. Patricia Nolan, Chair
Mr. Angelo Bellomo
Dr. Janice Chambers
Dr. Alan Ducatman
Dr. Gary Evans
Dr. Janvier Gasana
Mr. Scott Holmes
Dr. Nancy Kim
Dr. Geary Olsen
Dr. Jonathan Patz
Dr. Cynthia Warrick
Dr. Daniel Wartenberg
Dr. Paul Wax

Designated Federal Official

Dr. Thomas Sinks, Executive Secretary

Ex-Officio Members

Dr. Brenda Weiss (NIEHS)
Dr. Hal Zenick (EPA)

CDC/NCEH/ATSDR Representatives

Dr. Henry Falk (CCEHIP Director)
Dr. Howard Frumkin
(NCEH/ATSDR Director)
Mark Bashor
Kris Bisgard
Ben Blount
Mary Jean Brown
Sharunda Buchanan
Leslie Campbell
Andrew Dannenberg
Christopher DeRosa
Tina Forrester
Bruce Fowler
Athena Gemella
Olivia Harris
Arnetra Herbert
Jim Holler
Monty Howie
Steven Inserra

Sandy Isaacs
Annie Latimer
Shirley Little
Sandra Malcom
Michael McGeehin
Ed Murray
Kenneth Orloff
Christine Pfeiffer
Jamie Rayman
Susan Robinson
Barbara Rogers
Kenneth Rose
Eric Sampson
Joshua Schier
Anne Sowell
Dorothy Sussman
Jana Telfer
Carolyn Tylenda
Stephen Vindigni
Clement Welsh
Lynn Wilder
Mildred Williams-Johnson

BSC Subcommittee Members

Earl Hatley (CTS)
Richard Matheny, Jr. (HDS)
Gayle Windham (HDS)

Town Hall Speakers and Other Members of the Public

Steve Fischbach
(Rhode Island Legal Services)
Carol Henry
(American Chemistry Council)
Richard Jackson
(California State Public Health Officer)
Dave Jacobs (Public)
Keith Johnson (North Dakota)
Amy Kyle
(University of California at Berkeley)

Maureen Lichtveld (Tulane University
School of Public Health and
Tropical Medicine)
Paul Locke (John Hopkins Bloomberg
School of Public Health)
Jane Malone
(Alliance for Healthy Homes)
Rita Messing
(Minnesota Department of Health)
Michelle Morrone (Ohio University)
Marlon Mouse
(University of California at Berkeley)

Debra Nagan (New York City
Department of Health)
Samuel Nixon, Jr.
(Lott Carey International)
Carl Osaki (University of Washington)
Jake Pauls (Building Use and Safety
Independent Consultant)
Amanda Raziano (Association of
State and Territorial Health Officials)
Ralph Scott (Alliance for Healthy Homes)
Jacques Samarut (Lyon, France)
Marian Sorenson-Alachi (Public)
Michelle Samara Tim (New Jersey
Local Health Department)

ATTACHMENT 2

Acronyms Used In This Report

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
COI	— Conflict of Interest
CTS	— Community/Tribal Subcommittee
DEG	— Diethylene Glycol
DFO	— Designated Federal Official
EHSB	— Environmental Health Services Branch
EJ	— Environmental Justice
EPA	— U.S. Environmental Protection Agency
EPH	— Environmental Public Health
FACA	— Federal Advisory Committee Act
FDA	— Food and Drug Administration
GIS	— Geographic Information Systems
HDS	— Health Department Subcommittee
HHS	— Department of Health and Human Services
HSEES	— Hazardous Substances Emergency Events Surveillance
MOH	— Ministry of Health
NCEH/ATSDR	— National Center for Environmental Health Agency for Toxic Substances and Disease Registry
NHEC	— National Hispanic Environmental Council
NIEHS	— National Institute of Environmental Health Sciences
NIOSH	— National Institute for Occupational Safety and Health
NIS	— Sodium-Iodide Symporter
OTA	— Office of Tribal Affairs
OTPER	— Office of Terrorism Preparedness and Emergency Response
PER	— Preparedness and Emergency Response
PHAs	— Public Health Assessments
PPRS	— Program Peer Review Subcommittee
PRTs	— Peer Review Teams
SSA	— Site-Specific Activities
TCAC	— Tribal Consultation Advisory Committee
TDI	— Toluene Diisocyanate
TSH	— Thyroid-Stimulating Hormone
USDA	— U.S. Department of Agriculture

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 December 6-7, 2006 in Atlanta, Georgia.

The BSC held a Town Hall Forum in conjunction with CDC's "2006 National Environmental Public Health Conference." The Chairs of the BSC and its three subcommittees presented detailed overviews to assist the participants in providing input. The BSC received extensive feedback, comments and suggestions from >15 environmental public health (EPH) leaders, state and local health departments, advocates, students and academic institutions throughout the country.

The BSC then opened its regular meeting. The BSC and NCEH/ATSDR extensively discussed the National EPH Conference, particularly the value of this event with respect to a return on NCEH/ATSDR's investment of staff time and resources. Several BSC members made suggestions for NCEH/ATSDR to consider in convening national conferences in the future.

Leadership from the NCEH/ATSDR Office of the Director provided updates in several areas: senior staff appointments, new programmatic developments, ongoing and new EPH initiatives, the budget, and ATSDR's revised dioxin soil policy guideline. The BSC commended NCEH/ATSDR on its ongoing and new initiatives and made a number of suggestions to refine these activities in the future.

A panel of NCEH/ATSDR staff made five presentations on CDC's ongoing science and public health activities: (1) an outbreak investigation of diethylene glycol associated illness in Panama; (2) research on perchlorate exposure in the U.S. population; (3) a study on the relationship between environmental exposure to toluene diisocyanate and respiratory effects; (4) development of CDC's "First National Nutrition Report on Human Levels of Selected Dietary and Nutritional Indicators in the U.S. Population;" and (5) progress on CDC's framework for action on healthy housing.

The BSC commended CDC and its partners on the outstanding scientific studies, public health investigations and other activities. Several BSC members made suggestions for CDC to consider while further refining these initiatives.

Chairs of the Program Peer Review Subcommittee, Health Department Subcommittee, and Community/Tribal Subcommittee reported on their respective activities following the previous BSC meeting. The BSC members and NCEH/ATSDR leadership provided each subcommittee with extensive guidance in response to the reports and specific requests for input.

The Director of the Coordinating Center for Environmental Health and Injury Prevention (CCEHIP) provided an update on the CDC goals process. The BSC was pleased with the tremendous amount of progress that has been made on this initiative. Several members commended NCEH/ATSDR on its shift in focus from a single agent to a more integrated place-based approach that includes socioeconomic, genetic, ecological and physical factors. A number of BSC members made suggestions for CCEHIP to consider in its ongoing involvement with the CDC goals process.

The BSC reviewed the action item and agenda items that were raised over the course of the meeting.

Action Item

- *NCEH/ATSDR should develop a better process to inform the BSC about relevant Federal Register notices. For example, e-mail messages could be sent to each BSC member when documents are released for public comment in the Federal Register.*

Agenda Items

- *Overview of NCEH/ATSDR's biomonitoring activities.*
- *Joint CDC/EPA presentation on the integration of CDC's healthy places goal and EPA's indicators.*
- *Recommendations from the site-specific activities peer review on the possibility of renaming "public health assessments" and "health studies."*
- *Discussion on strategies to regularly measure and monitor the BSC's guidance on NCEH/ATSDR's future goals, directions and new priorities.*
- *Discussion on feedback given to the BSC during the Town Hall Forum. For example, several speakers emphasized the need to fill knowledge gaps in risk assessments at the local level. The BSC was informed that risk assessments ideally should be used to make rapid decisions on the ground, but public health needs are not being addressed.*

The BSC Chair opened the floor for public comments at all times as noted on the published agenda.

The next two BSC meetings are tentatively scheduled for May 17-18, 2007 and November 15-16, 2007; May 24-25, 2007 was suggested as an alternate date for the first 2007 meeting.

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

**BOARD OF SCIENTIFIC COUNSELORS
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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 in Atlanta, Georgia at the Hilton Atlanta Hotel on December 6, 2006 and CDC's Century Center offices on December 7, 2006.

Town Hall Forum

Dr. Patricia Nolan, the BSC Chair, was extremely pleased that the agenda of the December 2006 BSC meeting was changed to include a Town Hall Forum in conjunction with CDC's "2006 National Environmental Public Health Conference." She emphasized that the BSC welcomed the opportunity to obtain input from leadership, staff, advocates, students and other persons throughout the country with a strong interest in environmental public health (EPH).

To assist the participants in providing feedback to the BSC, Dr. Nolan explained that a series of presentations would be made on the respective purposes, charges and activities of the BSC and its three subcommittees. The four presentations are summarized below.

Overview of the BSC. Dr. Nolan reported that the BSC was chartered in 2004 under Section 222 of the Public Health Services Act. The primary roles of the BSC are to (1) sustain faith in the evidence base for EPH actions; (2) fulfill the need for NCEH/ATSDR leadership to obtain external views, vision and advice; and (3) provide a forum for input from the field.

The current BSC represents a consolidation of ATSDR's former BSC and NCEH's former Advisory Committee to the NCEH Director. The consolidation required a substantial amount of time because the memberships of both groups were reduced and merged into one advisory body with 16 members with overlapping four-year terms. Moreover, the newly consolidated BSC was still required to adhere to Federal Advisory Committee Act (FACA)

rules for a balanced membership in terms of scientific expertise, geographical locations, diversity and gender.

The BSC is governed by FACA rules that require meetings and conference calls to be published in the *Federal Register* and open to the public. The BSC operates with Dr. Nolan as the chair; 15 voting members selected by the HHS Secretary; and four non-voting *ex-officio* members representing the U.S. Environmental Protection Agency (EPA), the National Institute of Environmental Health Science (NIEHS), the National Institute for Occupational Safety and Health (NIOSH), and the Department of Energy. The BSC represents expertise in EPH policy, practice and research.

The BSC collectively provides advice on NCEH/ATSDR's strategic direction and policies, but three formal subcommittees were established and ad hoc workgroups are formed as needed to specifically focus on major issues. Key activities of the BSC and its subcommittees are highlighted as follows. A process was developed for peer reviews of NCEH/ATSDR programs. Oversight was provided for the conduct of four program peer reviews. Advocacy was provided to integrate social and behavioral sciences into all NCEH/ATSDR programs.

Guidance was developed to address health disparities and environmental justice (EJ) issues in NCEH/ATSDR programs. Effective communication was promoted with communities and tribes involved in health assessments and hazardous sites. Advocacy was provided to increase attention to sustaining the EPH workforce. Collaborative efforts were undertaken with NCEH/ATSDR staff to develop criteria to remove chemicals from future editions of CDC's National Report on Human Exposure to Environmental Chemicals. Advice was provided on updating the 1996 dioxin soil policy guideline and encouraging ATSDR, NCEH and EPA to develop a consistent approach to evaluate dioxin in residential soils.

The BSC devoted the majority of its previous meeting to providing advice on NCEH/ATSDR's strategic direction. The BSC undertook this effort in response to a direct request by Dr. Howard Frumkin, the NCEH/ATSDR Director, for guidance on three questions. One, what issues should NCEH/ATSDR direct its efforts and resources to as the nation's leader in EPH? Two, what activities should NCEH/ATSDR prioritize? Three, what should be the design of NCEH/ATSDR to meet EPH needs?

The BSC made several recommendations in response to Dr. Frumkin's three questions.

Question 1: NCEH/ATSDR's Efforts and Resources

- Emergency response and preparedness.
- The built environment and healthy places.
- Basic EPH issues, such as food, water and waste.
- Collection of solid data that can be used throughout the country.
- Indoor air pollution and wastewater reuse.

- Establishment of a holistic framework for considering risks and exposures.

Question 2: NCEH/ATSDR's Priority Activities

- Outreach and education.
- Workforce and professional development.
- Surveillance, biomonitoring and data collection.
- Laboratory technology development and transfer.
- Applied research and methods development.
- Role as an information repository and data source.

Question 3: NCEH/ATSDR's Design

- Establishment of functional groups across NCEH/ATSDR.
- Utilization of technical forums to support research and programs.
- Enhanced coordination with other federal agencies.
- Development of stronger linkages with state and local agencies.
- Outreach to state and local decision-makers.

Overview of the Community/Tribal Subcommittee (CTS). Dr. Janvier Gasana, the CTS Chair, reported that the CTS operates with a chair, six members and a designated federal official (DFO). The CTS is charged with providing input to the BSC from community and tribal perspectives on the interactions and impacts of NCEH/ATSDR's national and regional policies, practices and programs. At this time, the CTS is primarily focusing on health disparities and EJ.

The CTS is conducting health disparities activities because the nation is increasingly troubled by health disparities between advantaged and disadvantaged populations. The poor have worse health than other populations due to a shorter life expectancy and higher rates or incidence of cancer, birth defects, infant mortality, asthma, diabetes and cardiovascular disease.

Evidence shows that disadvantaged populations are burdened with a disproportionate share of residential and occupational exposures to lead, PCBs, wood dusts, air pollutants and other hazardous substances. Environmental exposures represent an important area of investigation to understand health disparities suffered by disadvantaged populations in the United States.

The CTS's EJ activities are guided by a Presidential Executive Order that was enacted in February 1994 on federal actions to address EJ in minority and low-income populations. The CTS is reviewing and providing guidance to the CDC Coordinating Center for Environmental Health Injury Prevention (CCEHIP) in its ongoing efforts to develop a coordinating center-wide EJ policy.

The CTS has made several recommendations to CCEHIP to refine the draft EJ policy, such as (1) collecting, analyzing and maintaining data on specific populations and other factors

that are known to be associated with health disparities and EJ; (2) institutionalizing EJ as part of the CCEHIP mission; and (3) identifying natural resources in underserved populations.

The CTS is pleased about potential outcomes of CCEHIP's EJ policy. An opportunity will be provided for CCEHIP to obtain feedback on EJ health practices and policies through accessible public documents, notices and hearings. EJ will be an integral component of CCEHIP's internal and external planning and budget processes, programs, policies and activities through cooperative agreements and grants. Staff will be trained in cultural sensitivity, honesty and integrity.

The CTS is currently providing guidance to NCEH/ATSDR on its 31 ongoing and closed health disparities and EJ projects in nine topic areas: asthma prevention and control, lead exposure prevention, special population exposures, environmental health surveillance and tracking, environmental health biomonitoring, EPH capacity building, epidemiology studies, community-specific assessments, and toxicologic information.

In a previous activity, the CTS provided guidance to the NCEH/ATSDR Environmental Health Services Branch (EHSB) on activities and programs to strengthen EPH services workforce and capacity. The CTS advised EHSB to widely publicize its programs outside of the federal government.

Dr. Gasana invited the Town Hall Forum participants to visit the NCEH/ATSDR EJ web site to obtain information on CDC's healthy places and other relevant health protection goals; links to presentations on these goals; and descriptions of activities in each of the nine topic areas. He welcomed input from the participants on strategies the CTS could implement to refine its current focus on health disparities and EJ issues.

Overview of the Health Department Subcommittee (HDS). Dr. Nancy Kim, the HDS Chair, reported that the HDS operates with a chair, seven members with a broad range of expertise, a DFO, and two NCEH/ATSDR staff for administrative and logistical support. The HDS is charged with providing advice and recommendations to the BSC on state and local health department issues that pertain to NCEH/ATSDR's mandate and mission.

One of HDS's major activities was to provide guidance on the environmental health workforce. HDS's key recommendations to NCEH/ATSDR on this issue are highlighted as follows. HDS strongly supported the direction outlined in the "National Strategy to Revitalize EPH Services," its associated goals and the EHSB ten-year plan. The Environmental Health Leadership Institute and an EPH Service Corps should be considered as solid models to advance training at state and local levels. Curriculum should be developed to strengthen epidemiological and data skills.

CDC should clearly define and package training to meet the needs of the EPH workforce. Existing programs should be compiled into core curriculum packages for each competency.

Continuing education units should be offered to health departments as an incentive to complete these courses. Alternative training methods should be developed through online technology, self-study courses, shadow programs, train-the-trainer courses and regional sessions.

The HDS is currently focusing on bridging NCEH/ATSDR programs to meet the needs of state and local health professionals. In this activity, HDS will review strategic planning efforts, goals and objectives of NCEH/ATSDR programs. Dr. Kim encouraged the Town Hall Forum participants to provide HDS with comments on NCEH/ATSDR's collaborations or other issues that are important to state and local health departments.

Overview of the Program Peer Review Subcommittee (PPRS). Dr. Daniel Wartenberg, the PPRS Chair, reported that the PPRS operates with a chair, seven members, a DFO, two liaisons to the other BSC subcommittees, and an NCEH/ATSDR staff member for scientific support. The PPRS is charged with providing advice and recommendations to the BSC on NCEH/ATSDR's program peer reviews.

To fulfill its charge, the PPRS organizes, facilitates and provides a long-term perspective on the conduct of the program peer review process. The PPRS ensures that NCEH/ATSDR peer reviews are independent, scientific, and emphasize self-assessment and improvement. The PPRS adheres to FACA rules by announcing its meetings and conference calls in the *Federal Register* and posting its minutes on the NCEH/ATSDR web site for access by the public.

The PPRS defined a scope and approach to conduct peer reviews of NCEH/ATSDR programs. Efforts will be made to complete three to four reviews each year and review NCEH/ATSDR's entire portfolio over a five-year period. Peer review teams (PRTs) with outside experts and at least one PPRS member are established to perform independent and technical reviews of key NCEH/ATSDR programs. NCEH/ATSDR and the PPRS propose candidates to serve on PRTs. PRT members are then selected based on feedback from the PPRS and availability. Separate questionnaires are distributed to program staff, senior management and partners/customers for each review.

PRT members hold conference calls to develop an agenda, identify specific goals, and decide on a format for the final report. The PRT members make a site visit to the program under review. Final reports developed by PRTs are presented during BSC meetings for review, discussion, comment and formal approval. The NCEH/ATSDR Office of Science provides a tremendous amount of support to the PPRS throughout the entire peer review process by identifying potential PRT members, scheduling conference calls and site visits, and making other logistical arrangements.

The PPRS is extremely pleased with its achievement of implementing a self-assessment process that is designed to verify and clarify the program's activities. These outcomes are then reported to NCEH/ATSDR senior management. PPRS's approach of self-evaluation,

modification and improvement has significantly decreased the typical problems associated with external peer reviews. The PPRS has completed peer reviews of four NCEH/ATSDR programs to date and is currently planning two reviews in early 2007.

The PPRS also evaluated the overall peer review process by interviewing NCEH/ATSDR leadership and PRT chairs of programs that had been reviewed. The PPRS used feedback from the interviews to reassess and improve the peer review process in several areas. For example, interviewees noted that the questionnaires should be less onerous and more self-oriented. The conflict of interest (COI) form should be clearly defined for peer reviewers to more easily identify potential conflicts. PRT members should represent more of the breadth and depth of the EPH field. More emphasis should be placed on issues related to disparities and fairness in EPH. A stronger focus should be directed to issues that are relevant to CDC staff and management.

In response to a specific request by Dr. Frumkin, the PPRS redesigned the peer review process to focus on functional rather than structural, organizational or programmatic issues. Beginning in 2007, peer reviews will assess NCEH/ATSDR's functional performance as one of the nation's public health agencies. The PPRS will consider several factors in the functional reviews: (1) effectiveness of management; (2) relevance and scientific quality of products; (3) usefulness of outreach to partners; (4) prudent use of resources; (5) adequate collaboration within and outside of CDC; (6) future goals for improvement; and (7) focus on diversity, outreach and communication issues within and outside of CDC.

Dr. Wartenberg welcomed input from the Town Hall Forum participants on strategies the PPRS could implement to improve the peer review process, such as specific components to refine the questionnaires or an ongoing process to assist programs in self-assessments.

Town Hall Forum Discussion. Carol Henry, of the American Chemistry Council, urged the BSC to define a role for the private sector in the EPH field. The BSC's future activities will require a significant amount of outreach to and cooperation from the private sector.

Marian Sorenson-Alachi is an environmental health instructor and research associate. She encouraged the BSC to take a leadership role in acting on interventions to ensure that precautionary principles are outlined for EPH programs, health assessments are performed in contaminated communities, and the EJ budget is not cut.

Carl Osaki, of the University of Washington, emphasized the critical need for HDS to expand its scope and membership and develop strategic partnerships with more diverse sources. For example, many of HDS's activities are conducted by groups other than state and local health departments, such as tribal entities and departments of agriculture, ecology, environmental conservation and environmental quality. Moreover, NIEHS, rather than NCEH/ATSDR, was the major source of EJ funds and activities at the federal level. HDS should be actively engaged in ongoing projects that local health departments are

jointly conducting with EJ agencies, organizations and other groups outside of health departments.

Michelle Samara Tim, of the Franklin Township/Somerset County, New Jersey Health Department, encouraged the BSC to obtain more diverse input on EPH from local and grassroots perspectives. The BSC should contact the Society for Public Health Education as a resource in reaching local health departments, health educators and environmental health practitioners.

Paul Locke, of John Hopkins Bloomberg School of Public Health, asked the BSC to review, develop and provide NCEH/ATSDR and HHS with a list of successful EPH models. For example, housing and health departments previously had strong linkages. Several jurisdictions throughout the country used these types of relationships to make substantial progress in environmental health. Success was also achieved in the past in terms of developing strong relationships with communities and local health departments. However, emphasis and investments in these solid models have decreased.

Drs. Nolan and Thomas Sinks, the NCEH/ATSDR Deputy Director and the BSC DFO, responded to Mr. Locke's specific questions about the delisting process for biomonitoring of chemicals. The delisting and nomination processes for individual or groups of chemicals will be formally proposed and published in the *Federal Register* for public comment. Several cycles are required before any chemical is delisted. NCEH/ATSDR is exploring opportunities to delist chemicals that have remained stable over time. Criteria that were developed for the decision-making process will be published and released for public comment. NCEH/ATSDR undertook this effort in response to a direct request by the Office of Management and Budget.

Jacques Samarut, of Lyon, France, emphasized the need for stronger linkages between veterinary public health in toxicology or infectious diseases and medical or ecological approaches. From an international perspective, U.S. federal agencies should make stronger efforts to coordinate and collaborate in issuing consistent EPH guidance. For example, France and other countries in Europe were extremely challenged by using dioxin data for risk assessments because ATSDR and EPA had different views in this area. Federal agencies should be mindful that other countries use U.S. data to make environmental health decisions.

Rita Messing, of the Minnesota Department of Health, encouraged the BSC to take a broader view of pollution that includes noise and odors. These issues ruin the lives of individuals, increase stress and result in physical consequences. The BSC should take a leadership role in advocating for the development of noise and odor pollution policies.

Maureen Lichtveld, of Tulane University School of Public Health and Tropical Medicine, urged the BSC to engage academia in filling existing data gaps to refine the future direction of EPH research, practice and service. For example, outdated risk assessment modeling

that was performed in the aftermath of Hurricane Katrina will need to be improved to respond to future events. Core competencies developed by schools of public health could benefit the BSC in this effort.

Debra Nagan, of the New York City Department of Health, encouraged the BSC to advise NCEH/ATSDR to develop and disseminate recommendations to EPH practitioners on applying effective interventions in the field for actual practice. For example, NCEH/ATSDR could provide guidance on applying global warming principles to reduce the use of toxic substances at the local level.

Ralph Scott, of the Alliance for Healthy Homes, urged the BSC to advise NCEH/ATSDR to promote community-based participatory research. This strategy has been shown to be extremely powerful in addressing EJ issues.

Michelle Morrone, of Ohio University, encouraged the BSC to advise NCEH/ATSDR to continue to support the cooperative agreement between CDC and the Association of Environmental Health Academic Programs. Awards under this cooperative agreement are small, but the funding has had a tremendous impact on grantees. For example, two grantees divided a \$3,000 award to recruit undergraduate students in the EPH field. The funding resulted in an increase in the number of students with EPH majors from 18 in 2002 to 63 in 2006.

Jake Pauls is an independent consultant in building use and safety. He urged the BSC to advise NCEH/ATSDR to place more emphasis on regulatory activities. For example, the *2006 Healthy Homes Reference Manual* that CDC updated and published with its federal partners contained several errors and did not reflect recent regulatory developments affecting homes and other buildings. The future development of national model codes and standards will require additional leadership and stronger linkages between federal agencies and code development organizations in the private sector.

Keith Johnson, of North Dakota, asked the BSC to assist in strengthening the capacity of local boards of health to develop administrative infrastructures and more effectively deliver environmental health services. Local capacity to more efficiently and effectively respond to environmental health needs would be greatly improved with even basic administrative structures.

Steve Fishback is an EJ attorney at Rhode Island Legal Services. He asked the BSC to make recommendations to NCEH/ATSDR in three areas. First, NCEH/ATSDR should be advised to develop best practices in public participation and include this guidance in professional development, education and outreach activities. This effort would ultimately improve decision-making and outcomes in environmental health. Second, NCEH/ATSDR should be advised to develop best practices in addressing cumulative impacts in EJ communities and include this guidance in professional development, education and outreach activities. Residents in EJ communities suffer multiple stressors, including

physical, environmental and social impacts. Third, NCEH/ ATSDR should be advised to enact the precautionary principle and serve as a leader in encouraging national adoption of the precautionary principle. The actual impacts of environmental stressors are unknown, but research has demonstrated a much greater risk of harm at very low levels of exposure.

Jane Malone, of the Alliance for Healthy Homes, urged the BSC and NCEH/ATSDR to place more emphasis on and monitor the activities of voluntary and consensus code bodies. NCEH/ATSDR should use its role as a public health leader to encourage changes that will ensure international standards in the future are completely health protective in terms of both property maintenance and construction.

Amy Kyle, of the University of California at Berkeley, urged the BSC to advise NCEH/ ATSDR to allocate more environmental health resources. These resources will be a critical need to develop and implement a more modern, integrated and visionary approach to improve research and practice.

Dave Jacobs asked the BSC to serve as a mechanism in bridging the structural gap between the public health community and code-making bodies. Code development organizations typically do not provide input on chronic health issues in housing that are of most concern. For example, lead, radon and asbestos are health concerns, but these issues are not included in local codes.

Jonathan Patz, a BSC member, informed the participants that existing activities and areas of focus in health departments could play a role in addressing global warming, such as ozone, water contamination, combined sewage overflows, water management, heat waves and carbon dioxide. Health departments should establish new partnerships at the local level with departments of natural resources and urban planners to shift the focus to sustainable public health.

Marlon Mouse, of the University of California at Berkeley, encouraged the BSC to engage city planners, architects and other stakeholders with a responsibility to create the built environment. Participation and input from these groups will be critically important as the BSC conducts activities in the future under its "built environment and healthy places" focus area.

Dr. Nolan closed the Town Hall Forum by thanking the participants for providing the BSC with valuable input to increase the effectiveness of its activities and improve its guidance to NCEH/ATSDR on important issues and priorities in the EPH field. She clarified that the BSC and its subcommittee have completed or are currently conducting activities to address many of the suggestions made by the participants. However, she acknowledged that the BSC must improve efforts to more widely disseminate information on its EPH activities.

Dr. Nolan explained that all comments made during the Town Hall Forum would be captured in the official minutes of the December 2006 BSC meeting. She confirmed that

the BSC would discuss and consider all of the strategies, suggestions and recommendations proposed during the Town Hall Forum.

Dr. Nolan invited the participants to attend the BSC's December 2006 meeting that would begin at 1:30 p.m. She reminded the participants that all BSC meetings are open to the public.

Opening Session of the Official BSC Meeting

Dr. Nolan called the official BSC meeting to order at 1:44 p.m. on December 6, 2006. She welcomed the attendees to the proceedings and particularly acknowledged the new BSC members. Dr. Nolan opened the floor for introductions. The list of participants is appended to the minutes as [Attachment 1](#).

Observations on the 2006 National EPH Conference

Drs. Frumkin and Sinks made several remarks to guide the BSC's discussion. The national conference is designed to achieve several goals: (1) provide a forum for networking; (2) contribute to the spirit and energy of EPH professionals, (3) build the future EPH workforce and capacity by sponsoring students; (4) make linkages among federal agencies, state and local health departments and academia; and (5) propose strategies for EPH practitioners to apply science and programmatic activities to the local level.

Dr. Frumkin was aware that the formal evaluation of the national conference has not been completed, but NCEH/ATSDR leadership and the BSC members received tremendously positive feedback anecdotally. However, he asked the BSC to provide specific guidance on the value of the conference in terms of NCEH/ATSDR's return on its investment of resources and staff time. Nearly 1,350 participants attended the conference at a cost of >\$500,000, including travel support for the BSC members and several state representatives.

Dr. Frumkin outlined the current realities in supporting the national EPH conference. The NCEH/ATSDR Office of the Director previously had substantial discretionary funds to use for conferences and other purposes, but these resources were eliminated. NCEH/ATSDR must now request funding through CDC's standard meeting support mechanism, but the maximum contribution from this source is \$25,000.

On the one hand, NCEH/ATSDR can use its internal resources to sponsor large conferences, but these events will compete with the ATSDR Partners' Conference and other meetings, epidemiological research, technical assistance and other priorities. On the

other hand, NCEH/ATSDR can use CDC's meeting support funds to make relatively small contributions to meetings conducted by other groups.

Several BSC members made suggestions for NCEH/ATSDR to consider in convening national EPH conferences in the future.

- The possibility of adopting EPA's new model for conferences should be explored. EPA will hold large science forums biennially instead of annually with a tremendous number of stakeholders. EPA will sponsor conferences in intervening years on specific topics.
- The national conference should be held every two or three years rather than annually due to the staff time and resources that are required to plan and support an event of this magnitude. An annual conference would most likely minimize the prominence of this event, but NCEH/ATSDR should convene smaller conferences or meetings on a regular basis rather than its traditional ad hoc approach. EPH practitioners expect NCEH/ATSDR to provide a forum for the EPH field on a regular basis.
- Collaborative efforts should be established with the Association of State and Territorial Health Officials, state health departments and other groups to promote consistency among federal, regional and local meetings.
- Efforts should be made to sustain the high level of interest in the EPH field generated during the national conference. Actions will not be taken on important messages delivered during the conference unless a consistent and regular forum is provided to reiterate these strategies. For example, NCEH/ATSDR could air web-based broadcasts on a monthly or quarterly basis to reinforce and highlight emerging EPH issues. Key sessions from the conference could be transcribed, developed into environmental health grand rounds, and widely disseminated throughout the country.
- Actions should be taken to formally respond to key outcomes from the conference. For example, a summary could be written and distributed on next steps to the conference to motivate the EPH workforce. Outreach and education activities could be developed and implemented on the built environment, global warming and CDC's healthy homes initiative.
- National EPH conferences in the future should continue to be held with nominal registration fees. NCEH/ATSDR should be commended on charging low registration fees because this practice promotes diversity among participants and results in more students, minorities and community residents attending the conference.
- Specific EPH strategies should be developed and distributed in response to direct questions by local representatives. Actions are more likely to be taken in communities and the field if "actual interventions" rather than "generic educational messages" are provided.
- A two-tiered approach should be taken to assess the success of the conference. First, evaluation forms that were completed and submitted by

participants during the conference should be formally analyzed. For example, several participants suggested that future conferences include more interactive activities because some of the presentations were fairly lengthy. Second, feedback should be solicited from key constituents with a simple, timely and cost-effective survey. The questionnaire should ask stakeholders about their expectations of NCEH/ATSDR as a federal public health agency in providing guidance to the EPH field. Responses from the conference evaluation forms and input from the unsolicited survey should both be used to inform decisions about future conferences.

- Collaborations should be established with non-traditional federal partners that have larger budgets than NCEH/ATSDR and have incorporated EJ, environmental health and other public health issues into their respective missions and agendas, such as the Department of Energy, Department of Transportation, U.S. Department of Agriculture (USDA), and Department of Education.
- Preliminary successes and lessons learned from the 2006 conference should be reviewed and replicated in planning national EPH conferences in the future.
 - The plenary sessions were a valuable tool in educating students and re-energizing experienced EPH practitioners. Based on anecdotal feedback, students enjoyed and benefited from the plenary sessions.
 - The requirement to attend a specific workshop was frustrating to a number of participants because several relevant, interesting and diverse sessions were held at the same time. More poster presentations should be displayed during future conferences for participants to obtain additional information in between workshops.
 - Stronger partnerships, collaborative efforts and communication among federal agencies to reach common goals were reflected in the current conference and should be continued in the future.
 - Increased participation by local representatives should be continued in the future.
 - Increased diversity of attendees will generate an enormous amount of energy in the EPH field and should be continued in the future.

Dr. Nolan responded to Dr. Frumkin's specific question by summarizing key comments from the BSC's discussion. On the one hand, NCEH/ATSDR is receiving a return on its investment. The EPH workforce will be strengthened because students who attend the conference are educated about and become interested in the EPH field. Experienced EPH practitioners will become re-energized due to the innovative strategies and new data presented during the conference.

On the other hand, NCEH/ATSDR may not maximize the return on its investment if actions are not taken to sustain the enthusiasm and energy generated during the conference over

time. NCEH/ATSDR should consider the suggestions made by BSC members and participants at the Town Hall Forum in this effort.

Federal Register notices and web-based announcements are not sufficient to inform EPH constituents and other stakeholders about BSC meetings and other activities or important environmental health documents that have been released for public comment. A webcast could be aired and newsletters could be developed and distributed on topics from key conference workshops.

A mass distribution list should be developed to mail or electronically transmit notices directly to the EPH field. Recipients on the distribution list should include national conference participants, local health officials, professional associations, agricultural commissioners, school districts, energy providers, water purveyors, and environmental health organizations. Local agencies in particular have expressed a strong interest in receiving information, direction and guidance to develop EPH policies at the local level.

Dr. Nolan also raised another issue for NCEH/ATSDR to consider in obtaining input from more diverse sources. Unlike CDC's other federal advisory committees, the BSC only has a small number of *ex-officio* members representing federal agencies and no liaison members representing private organizations. Consideration should be given to inviting organizational representatives to serve as formal liaison members on the BSC or its subcommittees or asking these persons to attend BSC or subcommittee meetings on a regular basis.

Update on NCEH/ATSDR Activities

Leadership from the NCEH/ATSDR Office of the Director provided updates on recent environmental health activities.

Dr. Frumkin reported that after the previous BSC meeting, senior staff were appointed in positions of the Associate Director for Science, Associate Director for Program Development, and Director of the Division of Emergency and Environmental Health Services (Dr. Mark Bashor, Ms. Julie Fishman and Dr. Sharunda Buchanan, respectively).

Exciting new developments are occurring in several NCEH/ATSDR programs. ATSDR's Hazardous Substances Emergency Events Surveillance (HSEES) Program is improving its entire surveillance system with new data sources, stronger partnerships with the private sector, and more in-depth analyses. HSEES will also enhance collaboration and coordination with the Chemical Safety Board to better understand the antecedents of events, prevent incidents and protect health. Dr. Frumkin acknowledged the critical role of the BSC's program peer review process in ATSDR's current efforts to improve the HSEES surveillance system.

NCEH's National EPH Tracking Program is developing new report cards to monitor national progress in health and environmental health. The comprehensive and relevant report cards will collect national data from existing sources, including data on air pollution and water contamination levels, biomonitoring data on health burden, and health outcome data on diseases that are known or have the potential to be associated with environmental exposures. The report cards will also contain data on unlinked relationships, such as air pollutants and autism.

Data on specific contaminants and trends in particular diseases will be accompanied by hypotheses to encourage researchers to address these issues in more depth. The report cards will be used to educate scientists and policymakers and will also be used as a mechanism to focus national attention on priority environmental health problems. NCEH expects to release the first report card around December 2007 and annually thereafter.

NCEH/ATSDR has four new initiatives underway. A tremendous amount of progress has been made on built environment activities over the past two years with funding and specific research projects. Under the built environment initiative, the Lead Poisoning Prevention Program is being expanded into the Healthy Housing Initiative to be consistent with CDC's new health protection goals and to take a more holistic approach to achieving overall healthier housing.

NCEH/ATSDR's new climate change initiative was strongly endorsed by several CDC partners. An expert panel will be convened in January 2007 to assist NCEH/ATSDR in developing a solid portfolio of climate change activities in the near future.

NCEH/ATSDR is focusing on mathematical modeling and forecasting in response to a request by the Office of the HHS Secretary for CDC to develop this activity at the program level. NCEH/ATSDR will receive funding of ~\$1 million per year from the Office of Terrorism Preparedness and Emergency Response (OTPER) to conduct modeling and forecasting projects and will collaborate with all CDC centers in this effort.

The initiative will include forecasting for disease ecology, infectious diseases, the spread of vectors, demographics, and long-term threats from environmental climates. An expert panel will be convened over the next two months to assist CDC in defining its public health role in modeling and forecasting and identify other federal agencies and private organizations that are conducting these types of activities.

NCEH/ATSDR is continuing its funding and support to improve training and capacity building. These activities include the EPH Leadership Institute and training of medical toxicologists, undergraduate students at tribal colleges and Historically Black Colleges and Universities, toxicology post-doctoral students and pediatricians. NCEH/ATSDR inventoried its current activities to identify areas where future investments in training could be consolidated and capacity building could be applied to maximize the impact on EPH. A

detailed overview of NCEH/ATSDR's new National Nutritional Report would be provided later in the meeting.

Dr. Mark Keim, the OTPER Director, reported that OTPER received ~\$32 million in FY'07 for terrorism preparedness activities. HHS and CDC asked OTPER to implement three corrective actions in response to lessons learned from Hurricane Katrina: surveillance during disasters, standardized instruments to assess disasters, and assessments of rapid needs for communities and shelters. OTPER quickly responded to and made a tremendous amount of progress in these areas in collaboration with CDC partners.

OTPER developed an innovative process to incorporate an EJ component into emergency response. Geographic information systems (GIS) were used to map vulnerable populations with a higher propensity for illness, injury and death after a disaster, such as elderly persons, populations below the federal poverty level, non-English speakers and individuals with disabilities. OTPER will collaborate with states to refine this activity in the future.

OTPER partnered with the Health Resources and Services Administration to develop a system for advance emergency registration of clinicians and public health care providers. OTPER collaborated with the Federal Emergency Management Agency to incorporate public health indicators into rapid needs assessments. OTPER collaborated with internal CDC partners on the spinach E. coli outbreak.

OTPER participated in responses to several national and international emergencies, including a hurricane in Florida, a release of hazardous materials in Africa, an oil spill in the Philippines, chemical contamination in Panama, a chemical fire in North Carolina, and a potential relationship between an unknown illness and threats against U.S. airliners. OTPER is continuing to emphasize to CDC leadership about the need to shift the focus and resources from bioterrorism to natural disasters, chemical incidents and radiological events.

Dr. Sinks reported that NCEH/ATSDR has not received its FY'07 budget, but the House and Senate mark-ups will determine funding. For NCEH's FY'07 budget, the President's mark-up was \$140 million, but \$7.5 million will be deducted from this amount due to the elimination of one program. The House mark-up was \$139 million due to the elimination of \$1.5 million from the Hanford Thyroid Disease Study. The Senate mark-up was \$137 million due to the elimination of ~\$4 million from the health tracking program.

For ATSDR's FY'07 budget, the President's mark-up was \$76 million, the House mark-up was \$76.6 million, and the Senate mark-up was ~\$75. The a cap on overhead from CDC in the House mark-up would provide ATSDR with ~\$6 million discretionary funds.

ATSDR previously presented a plan to the BSC to rewrite its dioxin soil policy guideline. State partners, the media and public have historically misinterpreted the action level as ATSDR's recommendation for clean-up of soil that contains dioxin at a certain level. To

eliminate the tremendous amount of confusion, ATSDR proposed to discontinue its action level for dioxin in soil.

The BSC reviewed and made comments on ATSDR's proposal during the November 2004 and May 2005 meetings. The BSC advised ATSDR to release the policy guideline for public comment at its discretion, but ATSDR delayed this effort to allow the National Academy of Sciences to finalize its review of EPA's dioxin report. ATSDR intends to release its revised dioxin soil policy guideline for public comment in December 2006 or January 2007. To support this effort, a notice will be published in the *Federal Register* and a web site will be available to the public with the BSC's recommendations, peer-reviewed comments and all other documents.

The BSC commended NCEH/ATSDR on its ongoing and new initiatives. Several BSC members made suggestions for NCEH/ATSDR to consider in refining these activities in the future.

- The upcoming peer review on preparedness and emergency response should contain a strong recommendation for CDC to shift its heavy emphasis and resources from terrorism and biological events to focus more on natural disasters, chemical incidents and radiological events.
- ATSDR should explore the possibility of changing the name of "public health assessments" (PHAs) and "health studies." This terminology frequently gives an inaccurate perception to affected communities and the broader public that activities will be conducted on an individual rather than a population basis. Alternatively, ATSDR should clearly explain the uncertainties and limitations of epidemiological studies to residents of Superfund sites and other affected communities. ATSDR should inform the community that data were insufficient instead of reaching a definitive conclusion of no relationship between exposures and health effects.
- The national report cards should also be designed to analyze National Health and Nutrition Examination Survey data to determine the relationship between exposures and lifestyles, such as diet, smoking and occupational hazards.

Public Comment Period

Mr. Earl Hatley is a CTS member. He was pleased that one of the BSC members asked NCEH/ATSDR to consider changing the name of "PHAs." He agreed that this term continues to cause a significant amount of confusion in communities and tribes. For example, results of a recent door-to-door survey of 562 homes at the Tar Creek Superfund site on health prevalence were dramatically different than state, regional or national statistics. Results from the survey on the relationship between potential exposures and

several diseases were consistent with ATSDR's toxicological profiles of heavy metals at Tar Creek.

Mr. Hatley pointed out that PHAs are based on the quality of data reported. As a result, he was uncertain about the process ATSDR uses to determine health effects in communities, particularly Tar Creek and other areas with multiple exposures. Most notably, a conclusion of "no apparent health effects" at a site will not allow the community to advocate for funding from local policymakers to continue site clean-up and other activities.

Mr. Hatley informed the BSC that the CTS previously made efforts to change the conclusion categories in PHAs to report more honest findings. For example, the "no apparent health effects" category could be changed to an "insufficient data" category. ATSDR could then recommend new data that would need to be collected to make a definitive conclusion. This approach would allow communities to obtain funding and assistance from EPA and state agencies to gather additional data based on ATSDR's recommendations.

Dr. Frumkin made remarks in response to the comments on PHA conclusion categories. ATSDR recently changed the PHA conclusion categories to provide communities and tribes with a clearer understanding of the outcomes of site-specific activities. Language in the "urgent public health hazard" category was amended to eliminate misinterpretations by the public.

Language in the "no apparent public health hazard" category was revised to address two problems. First, ATSDR is interested in ensuring that concerns expressed by affected communities and tribes about low-level and non-negligible exposures were not minimized. Second, states informed ATSDR that a conclusion of "no apparent public health hazard category" would not provide justification to continue activities at a site.

In its ongoing efforts to clarify the PHA conclusion categories, Dr. Nolan urged ATSDR to thoroughly review recommendations the CTS previously made on this issue.

Overview of CDC's Science and Public Health Activities

A panel of NCEH/ATSDR staff made a series of presentations on CDC's ongoing science and public health activities.

Dr. Joshua Schier reported on an outbreak investigation of diethylene glycol (DEG) associated illness in Panama. In October 2006, the Panamanian Minister of Health (MOH) made a formal request to CDC's Coordinating Office of Global Health. The MOH asked for technical assistance and direct support of an ongoing investigation and response to an outbreak of a mystery illness that resulted in 12 deaths and 21 cases.

In response to the request, CDC rapidly assembled a multi-center field team of a medical toxicologist, two epidemiologists, one laboratorian and a neuro-epidemiologist. Initial reports suggested that 90% of the cases were male and all were >60 years of age. Extensive infectious disease testing performed by local clinicians and hospitals showed negative results. Characteristics of the mystery illness included renal failure followed by neurotoxicity several days later, a toxic or chemical etiology, suspicion of DEG, and a broad differential.

After arriving in Panama, the CDC field team received preliminary updates from the MOH, formally met with all partners, reviewed clinical and epidemiological data, examined affected patients, and identified challenges associated with the investigation. Most notably, the National Director of Epidemiology had been recently dismissed. Clinicians had controlled case identification and descriptions for both surveillance and clinical purposes. The CDC field team was expected to provide direction and serve as a direct advisor to the MOH and President of Panama.

The CDC field team identified several priority areas and initiated plans to conduct a case-control study. A surveillance strategy was developed, including the creation of a case definition and reporting and management guidelines. Collaborations were established with local clinicians to develop a framework for systematic data collection on clinical illness. Stored blood, urine and environmental specimens were inventoried and immediately transported. A unified command was created under the MOH. A joint operations center was established for the partners to meet and discuss the investigation on a daily basis.

The national surveillance system was launched for case identification. Patients were enrolled in the case-control study. Cases and controls were primarily recruited from the main healthcare facility where patients were hospitalized. Patient-associated medications were collected. An anecdotal association with cough medication was observed. Laboratories at CDC and the Food and Drug Administration (FDA) identified and confirmed DEG in a prescription cough medication that had been distributed to >30,000 Panamanians.

Based on the CDC and FDA findings, the MOH held a press conference and announced a national medication recall. The facility that produced the medication was closed and the public was advised against using any pharmaceuticals from this facility. A follow-up investigation was launched to determine the source of DEG. The raw ingredient of glycerin was highly suspected and was known to have a history of toxicity with DEG.

The CDC field team visited the production facility and partnered with FDA staff who arrived in Panama to initiate a trace-back investigation of records and medications. The CDC and FDA laboratories confirmed the presence of DEG in one batch of glycerin. The trace-back investigation showed that the glycerin originated from a manufacturer in China, was distributed to a European broker, and shipped to Panama. Certain aspects of the trace-back investigation are still under a legal and criminal investigation by Panamanian authorities.

A public health educational campaign was launched and the MOH led a recall of all of the medications. The public was advised about the dangers of these products through television, radio and print advertisements. Teams of health communicators also delivered door-to-door public health messages to residents in rural areas. The public health campaign led to the collection of >160,000 bottles of affected medications.

The investigation resulted in several key accomplishments. The etiology and route of exposure of the illness were identified. The case-control study with >180 subjects and >1,000 samples provided scientific data to confirm the cough medicine as the source of cases. The ongoing national surveillance system facilitated recognition, management and reporting of cases.

Clinical illness for a new toxidrome was characterized through systematic data collection of histopathology, laboratory specimens, and signs and symptoms of patients. A national, multimedia and educational public health prevention and information campaign was launched to alert the public to the dangers of using the product.

Despite these achievements, CDC and its partners acknowledged the need to continue research to answer questions in several areas. The future public health disease burden is unknown. To date, ~50 persons have died and >100 persons were affected, but at least 30,000 additional persons were also exposed. Outcomes should be identified in two cohorts: exposed and ill persons versus exposed and not ill persons.

The pathophysiology of toxicity should be analyzed. The new toxidrome has a presentation of acute renal failure followed by neurologic symptoms several days later. The possibility exists of intervening between the time of presentation of nuances of renal dysfunction and neurotoxicity. The reoccurrence of this type of event needs to be understood to prevent future outbreaks.

Dr. Ben Blount reported on perchlorate exposure in the U.S. population. Perchlorate raises several environmental issues and concerns due to its use as a propellant for rockets and missiles, explosives, fireworks, road flares and tanning. Perchlorate also forms naturally in the environment and can lead to human exposure through direct consumption of contaminated water or crops grown with contaminated, fertilizer or soil.

NCEH's exposure assessment of perchlorate is designed to identify an association between an environmental exposure and health effects. The exposure assessment primarily measures internal doses, but external sources in the environment are measured as well. The exposure assessment also focuses on potentially susceptible populations, such as the developing fetus, neonates, women and populations with low iodine intake.

Perchlorate's mode of action is to actively transport iodide across cell membranes using a sodium ion gradient. Tissues with a sodium-iodide symporter (NIS) expression include the

thyroid, placenta, gastric mucosa and mammary glands. The NIS expression in the mammary gland raises concerns about perchlorate exposure to the developing fetus and breast-fed infant. In addition to perchlorate, physiologically relevant levels of iodine, thiocyanate and nitrate also inhibit the NIS.

NCEH used its biomonitoring program to measure all four relevant chemicals and obtain a better perspective about perchlorate exposure. NCEH is currently modifying methods in the biomonitoring program to analyze exposures by measuring perchlorate in a variety of biological matrices, including urine, blood serum, blood spots, amniotic fluid, human milk and infant formula.

NCEH also used its biomonitoring program to answer two key questions about perchlorate. First, what is the incidence and magnitude of perchlorate exposure in the U.S. population? Second, does exposure to perchlorate impact thyroid hormone levels? NHANES data collected in 2001-2002 were incorporated into the study. NHANES is an ongoing CDC survey that is designed to collect data on the health and nutritional status of a representative U.S. population. NHANES's complex, multi-state and area probability design samples ~5,000 persons per year based on age, gender, race/ethnicity and income.

For question 1, NCEH determined the prevalence and magnitude of perchlorate exposure in the U.S. population. An analysis of 2,820 urine samples from persons ≥ 6 years of age showed measurable levels of perchlorate with a log normal distribution in 100% of the samples ranging from 0.1-160 ppb. By age, children had higher levels of urinary perchlorate. By race/ethnicity, Non-Hispanic black males had lower levels of urinary perchlorate. Spot urine measures were used to estimate a daily dose on a body weight basis. Even at the 95th percentile, the analysis showed that exposure levels were only one-third of the EPA reference dose for perchlorate of 0.7 $\mu\text{g}/\text{kg}/\text{day}$.

For question 2, NCEH focused on a potential association between relatively low levels of perchlorate in the environment and impaired thyroid function. Lower levels of thyroxine and higher levels of thyroid-stimulating hormone (TSH) would be observed if the thyroid is in a hypothyroid state. Perchlorate actively competes with iodine for uptake by the thyroid. The analysis of 2,299 samples included 1,111 women. Separate regression analyses were performed on TSH and total T4 with urinary perchlorate. The analyses were adjusted for the complex survey design and included covariates that are suspected or known to affect thyroid function. Children, persons with active thyroid disease, and individuals who were taking thyroid medications were excluded from the regression analyses.

Results of the regression analyses are as follows. No significant association of urinary perchlorate with serum TSH or T4 was observed in men. Urinary perchlorate levels were significantly associated with increased TSH and decreased T4 in women. This finding was primarily driven by women with lower levels of urinary iodine. The predicted effect of perchlorate on TSH or T4 in women with urinary iodine levels $<100 \mu\text{g}/\text{L}$ would have a small

to moderate clinical impact, but would be more significant in women with borderline hypothyroid state.

The association between urinary perchlorate exposure and TSH and T4 was not seen in two previous studies of perchlorate-exposed women, but NCEH's regression model with NHANES data had a much larger cohort of women with low levels of urinary iodine. The regression model was consistent with other known factors that contribute to thyroid variability. Perchlorate exposure was more prevalent than expected. The predicted effect on T4 and TSH was at lower levels of perchlorate than demonstrated in previous experimental human studies or observational studies.

Dr. Lynn Wilder reported on the relationship between environmental exposure to toluene diisocyanate (TDI) and respiratory effects. TDI is a highly reactive compound and is the most volatile of all diisocyanates. In 2000, >1 billion pounds of TDI were made in the United States. TDI is used to manufacture foam, spandex and polyurethane floor sealers. Health concerns from TDI include eye, skin and lung irritation, immune system sensitization and asthma.

TDI is a potential human carcinogen that causes occupational asthma in 3%-13% of workers and sensitization in 5%-20% of workers. However, less data have been collected on TDI exposure in communities. A European study conducted in the 1980s found no difference in asthma prevalence between a community near a TDI emission source and a control community. Asthma prevalence was lower in the case community and TDI antibodies were not detected in any of the residents tested. Limitations of the European study included the possible relocation of persons with respiratory problems who lived near the facility and crude tests for TDI antibodies used in the 1980s.

ATSDR and the North Carolina Department of Health conducted an investigation in the late 1990s in response to a request from a community that lived near a facility emitting TDI in Glenola, North Carolina. The investigation found TDI in the air up to 29 ppb, TDI antibodies in 10 of 113 residents tested, and "likely environmental asthma" in eight of 38 residents.

The North Carolina investigation served as the basis for ATSDR, NIOSH, the North Carolina Department of Health and the University of Cincinnati collaborating to design and conduct a more recent study. The agencies are focusing on this issue because TDI emissions might adversely impact the health of nearby residents. No comprehensive study has been conducted on this issue to date. The current study will assist in filling data gaps to determine whether communities are impacted.

The agencies will attempt to enroll 250 participants in four to six target communities and 250 participants in four to six comparison communities. For purposes of the study, "target communities" are defined as plants with the highest TDI emissions reported to the EPA Toxic Release Inventory database from 1998-2003. Target communities will have no other TDI source and will include at least 25 homes within a quarter mile of the plant.

“Comparison communities” will be located in the same county as the target communities, will have similar demographics, and will have no TDI source.

Data will be collected on outdoor TDI air samples, respiratory health via a questionnaire, and TDI antibodies via blood tests. The three data sources will be used to compare the target and comparison communities. At this time, the protocol has been completed to collect TDI air samples, administer the respiratory health questionnaire, and perform antibody testing. A detailed communication plan is nearly complete for education and outreach to study participants, the community, media and physicians. The agencies will initiate data collection in late January 2007.

Dr. Christine Pfeiffer reported on CDC’s “First National Nutrition Report on Human Levels of Selected Dietary and Nutritional Indicators in the U.S. Population.” The National Exposure Report served as a model for CDC’s new nutrition report. CDC undertook this effort due to great interest in the association between nutritional status and chronic diseases. NHANES collects unique nutritional reference data that represent the U.S. population, but these data are difficult to analyze and compare across sources. Moreover, NHANES data are only used to address specific scientific issues. No single source is currently available for biochemical data. The nutrition report will provide ready access to nutritional reference data.

CDC is collaborating with the National Association of Chronic Disease Directors to identify strategies for public health agencies and state laboratories to use the nutrition report. A Nutrition Report Advisory Group was recently formed to assist the partners and consultants in this effort. In the first nutrition report, 21 indicators will be published based on four years of NHANES data from 1999-2002. The indicators will include water- and fat-soluble vitamins, trace elements, iron status indicators and phytoestrogens.

CDC has already identified several public health uses for the nutrition report. Population-based reference ranges will be established. At-risk populations will be identified. The effectiveness of public health prevention efforts will be evaluated, such as dietary recommendations and changes to food supply. Dietary and nutritional trends over time will be detected. Biochemical estimates will be used for cross-validation of other intake measures, such as diet surveys, food portion measurements and supplementation. Priorities will be established for research on human health effects. Hypotheses will be generated for further data analyses and future nutrition and health studies.

The nutrition report will contain data tables on ~3 times the number of persons sampled for NHANES. The data sets will also be combined based on age, gender and race/ethnicity. Data will be presented on means and the 5th and 95th percentiles. For example, the data table on serum folate showed that children and elderly persons had the highest levels compared to other age groups. Women of child-bearing age had the lowest serum folate levels compared to all other age groups.

Of the total population, <5% had lower serum folate levels than the borderline deficiency value of <3 ng/mL. A combined breakdown by age, sex and race/ethnicity showed that non-Hispanic blacks had lower serum folate levels than non-Hispanic whites. FDA's mandate of folic acid fortification of cereal-grain products in 1998 has caused serum folate levels to nearly triple in the U.S. population and neural tube defect rates to decrease by ~20%.

CDC will address a number of challenges to interpreting data in the nutrition report. Clinically abnormal levels typically are unable to be interpreted. Definitions and the impact of sub-optimal levels on chronic diseases are still debated. CDC recognized that the best use of the nutrition report will be to develop hypotheses on nutritional inadequacies and determine strategies to improve the diet and nutritional status of individuals in conjunction with other dietary information. The HHS/USDA Dietary Guidelines for Americans and USDA's "What We Eat In America" report can serve as models in this effort.

In the future, CDC plans to provide regular updates on the nutrition report and original indicators. New nutritional indicators will be added to future reports, such as plasma omega 3 and 6 fatty acids, plasma trans fatty acids, and caffeine and metabolites. CDC will engage state health departments in using the report for nutritional monitoring.

Dr. Mary Jean Brown reported on CDC's framework for action on healthy housing. CDC is proposing the following definition of "healthy homes" because no definition has been established or accepted to date. "Healthy housing is sited, designed, built, maintained and renovated in ways that support the health of its occupants."

CDC is designing the framework to improve safety in the home. Each year, 18,000 unintentional injuries or deaths occur in the home and ~400,000 residential fires result in ~\$7 billion in property damage, 3,000 deaths and 14,000 injuries. In terms of preparedness, only 43% of households on the Atlantic Ocean or Gulf Coast believe they are vulnerable to and have prepared for hurricanes.

Housing characteristics that affect health include inadequate ventilation, dampness and pest control. Radon found in indoor air causes ~21,000 cases of lung cancer each year. More than 13 million children are exposed to tobacco smoke at home. Mold and moisture aggravate asthma and other pre-existing respiratory conditions. Rodents transmit disease directly to persons and can also be the source of allergens that exacerbate asthma.

Chemical and biological contaminants are significant environmental sources of health effects. The United States still has 1.2 million housing units with lead-based paint that house low-income families with children <6 years of age. Each year, >500 persons die from accidental carbon monoxide poisoning. Of all households with children <5 years of age in 2005, 47% had a pesticide stored in an unlocked cabinet within reach of a child.

In 1999 and 2000, 43% of all drinking water disease outbreaks were associated with small and unregulated community water systems and private wells. One of the *Healthy People 2010* goals is to reduce physical hazards in homes from ~6 million to 3.2 million. However, this goal will not be achieved because ~6 million units in the United States still have moderate or severe physical problems and ~2 million families live in severely inadequate housing.

Key features of CDC's framework for action on healthy housing are described as follows. A Surgeon General "Call to Action on Healthy Housing" will be released to convene the nation on this public health problem. CDC will partner with EPA, NIEHS, the U.S. Department of Housing and Urban Development, and the Consumer Product Safety Commission in developing the call to action. Public comment will be solicited on the call to action. The role of low-income property developers, architects, builders, mortgage lenders and other groups in healthy housing will be defined. Specific activities will be conducted in four major areas.

To identify research gaps, a healthy homes surveillance system will be developed and existing data systems will be reviewed. Current data collection efforts will be enhanced or new systems will be created. Risk factors will be identified for sub-populations, such as elderly persons, children, individuals with disabilities and low-income families. The relative costs and benefits of housing interventions that improve the health of residents will be determined. Housing factors that assist in creating neighborhoods with social ties and a strong focus on the safety and well-being of residents will be identified. Statistical methods that reflect both individual and social level determinants of health will be developed and disseminated.

To establish healthy homes policy and planning initiatives, both voluntary efforts and the development of environmental policies will be encouraged. Rental property owners, renters and single family homeowners will be provided with information on behaviors that could reduce health hazards within housing, such as routine maintenance, use of safety devices and integrated pest management. Information will be tailored to meet the needs of specific populations and geographic areas.

The critical need for zoning laws that separate large manufacturing plants from residential areas and also promote multi-use areas will be emphasized. Code enforcement will be highlighted as a powerful tool for ensuring that maintenance and safety problems are corrected. The possibility of using tax policies to provide economic incentives will be explored.

To create a healthy housing workforce, core competencies will be developed to increase the effectiveness of public health professionals beyond the health field. Leadership skills that are necessary to identify and implement systemic changes will be acquired. Expertise will be built in the policy environment. A minimum skill set will be mastered in the areas of assessment, hazard control, behavior change measures, analytic and communication skills, and an understanding of ethical and legal considerations that might affect housing. A

diverse workforce will be established that reflects a variety of fields and emphasizes cross-training.

To create healthy homes that are safe and affordable, the relationship between health and affordable housing will be demonstrated. Of all families in the United States, 5.4 million spend >50% of their income on housing and might be unable to purchase health care, medications or adequate food. Living in neighborhoods with concentrated poverty levels increases emotional stress and exposure to unintentional injury. Low-income families living in more affluent neighborhoods have improved education and decreased rates of asthma and depression. Homeowners are more likely to rate their health as “good” or “excellent” compared to residents of rental properties.

The BSC commended CDC and its partners on the outstanding scientific studies, public health investigations and other activities. Several members made suggestions for CDC to consider while further refining these initiatives.

- The built environment should be considered as a related issue in the TDI study.
- The nutrition report should include breakdowns on other important covariates, such as body mass index and socioeconomic status.
- Efforts to create healthy, safe and affordable homes under the healthy housing framework should include all components of the built environment, such as zoning issues, interstates, noise, pollution and areas with higher exposures.
- The radon data should be clarified to show that radon and smoking in indoor air cause ~21,000 cases of lung cancer each year.

With no further discussion or business brought before the BSC, Dr. Nolan recessed the meeting at 5:15 p.m. on December 6, 2007.

Subcommittee Reports

Dr. Nolan reconvened the BSC meeting at 9:07 a.m. on December 7, 2006 and yielded the floor to the first presenter.

PPRS. Dr. Wartenberg reported on key activities the PPRS conducted following the previous BSC meeting in May 2006. From June to October 2006, the PPRS evaluated the overall peer review process by reviewing PRT reports and interviewing PRT chairs and leadership of programs that had been reviewed. In response to feedback from NCEH/ATSDR senior management and the interviewees, the PPRS revised the questionnaires, refined the COI form, and modified the overall peer review process.

The revised COI form asks reviewers to list any potential conflicts. NCEH/ATSDR will review the completed form and make a final decision on whether the reviewer would have a conflict. In general, any individual who is currently receiving funds from the NCEH/ATSDR program under review could not be involved in the peer review.

The PPRS shifted the scope of the peer review process from NCEH/ATSDR's specific programs to its functions as one of the nation's EPH agencies. The PPRS emphasized the critical need for its members to serve on external PRTs. The PPRS identified topical areas for PRT members, partners and collaborations. The PPRS revised the existing method of engaging NCEH/ATSDR's partners/customers in peer reviews to obtain more diverse input from a greater number of sources.

The PPRS proposed a schedule for the remaining peer reviews: site-specific activities (SSA) in January 2007; preparedness and emergency response (PER) in February 2007; biomonitoring in June 2007; the International Emergency and Refugee Health Branch in October 2007; the Division of Health Studies in February 2008; state interactions in June 2008; other laboratory-based activities in October 2008; the EPH Tracking Program in February 2009; and an unassigned review in October 2009.

The PPRS acknowledged that the PER review would be particularly challenging because this activity covers seven divisions, numerous partners, 11 funded projects, and a variety of focus areas, including natural, chemical, radiological and potentially all-hazards events. The PPRS also discussed the possibility of conducting peer reviews on four cross-cutting topics that are integral to all NCEH/ATSDR functions and programs: (1) education and communication, (2) evaluation, (3) training, capacity building and workforce issues, and (4) EJ and health disparities. The PPRS intends to present the final reports from the SSA and PER reviews during the May 2007 BSC meeting for discussion, comments and formal approval.

Dr. Wartenberg welcomed input from the BSC on strategies to improve the overall peer review process in general and approaches to refine the PER review in particular. He specifically asked for feedback on categories of expertise that should be represented on the PRT for the PER review. He asked the BSC members to e-mail names of potential PRT members for the PER review to him or Dr. Mark Bashor, the PPRS DFO. Dr. Wartenberg also encouraged the BSC members to volunteer to serve on future PRTs.

Several BSC members made suggestions for the PPRS to consider in response to Dr. Wartenberg's request for input.

- The PPRS should compare its proposed peer review schedule to NCEH/ATSDR's entire portfolio of functions and programs to determine whether all key activities would be peer reviewed by October 2009.
- The PPRS should explore the possibility of including "recovery" in the PER review. For example, epidemiologists, risk assessors and psychologists

- could provide expertise on recovery issues, such as reentry, habitability, surveillance and post-traumatic stress.
- The PPRS should design the PER review to focus on all public health aspects of emergency response regardless of whether CDC is mandated to conduct these activities. Key areas that should be covered in preventing and preparing for events should be identified. For example, CDC is not responsible for wetlands, but this issue is an important component in public health prevention. The report of the PER review should identify responsible agencies for this issue and make recommendations from a broad public health perspective.
 - The PPRS should coordinate with responders and experts from other agencies, in conducting the PER review, such as EPA, the Department of Defense, Department of Energy, Department of Justice, Department of Homeland Security and law enforcement agencies. Input should be provided on the contributions of these agencies in terms of human health response at the scene. This approach would help to identify system and organizational management gaps and determine overlapping areas in PER competencies across agencies.
 - The PPRS should reconsider conducting the PER review as one function due to the broad range and enormous complexity of this activity. The PPRS should explore the possibility of separating the PER review into three functions: preparedness, response and recovery. For example, the disciplines involved in a single small response at the local level are broad. Coordination of this expertise at the national level would be overwhelming. The laboratory component of PER could be a separate peer review.
 - Representatives from two Centers of Excellence in Colorado and Delaware should be considered as PRT members for the PER review to provide expertise on all aspects of natural disasters, including post-traumatic stress.
 - The PPRS should recruit persons to serve on the PRT for the PER review with expertise in EJ, health disparities, diverse communities and vulnerable populations related to emergency response.
 - The PPRS should engage representatives from state and local health departments as partners/customers in the PER review. Most notably, NCEH/ATSDR allocates funds to health departments to conduct PER activities at state and local levels.
 - The PPRS should consider persons with expertise in emergency management and coordination as potential PRT members for the PER review.
 - The PPRS should simplify the complex PER review by answering two basic questions. First, what activities are NCEH/ATSDR mandated and funded to conduct in natural disasters, chemical incidents and radiological events in collaboration with state partners? Second, what is NCEH/ATSDR's performance in these areas?

- The PPRS should focus on two additional areas in the SSA peer review: (1) the possibility of renaming “PHAs” and “health studies” and (2) ATSDR’s clear or unclear use of language in conducting activities in communities and tribes.
- The PPRS should conduct the peer review of the EPH Tracking Program earlier than February 2009 and broaden the review to include GIS activities across both NCEH and ATSDR.
- The PPRS should include the integration and coordination of NCEH and ATSDR as an additional cross-cutting topic for a future peer review. The evaluation could focus on whether the consolidation has successfully or poorly served the mission of NCEH/ATSDR as one of the nation’s EPH agencies.

NCEH/ATSDR leadership made several remarks in response to the BSC’s comments and suggestions on the PPRS report. Dr. Sinks informed the BSC that in May 2007, NCEH/ATSDR would provide CCEHIP with recommendations on funding its FY’08 activities. He emphasized that the final report on the PER review would be extremely valuable in informing this process and justifying NCEH/ATSDR’s request for FY’08 funding.

Dr. Frumkin urged the PPRS to establish clear boundaries for the PER review due to the broad range and complexity of this activity. For example, the PER review should only focus on actions NCEH/ATSDR can take to improve its programs individually or in partnership with other groups.

Dr. Frumkin asked the PPRS to expand the PER review to include a strategic planning component for preparedness. This part of the peer review would focus on long-term issues, such as demographic trends, locations where populations will settle in the next few decades, and peak production of petroleum followed by a decline in the availability of petroleum. Dr. Frumkin suggested that a futurist could provide expertise in this area.

Drs. Frumkin and Nolan both responded to the suggestion to conduct a peer review on the NCEH/ATSDR consolidation. The BSC provides input on NCEH/ATSDR’s organizational structure and internal collaborations on an ongoing basis through peer reviews and formal advice given during meetings. As a result, a specific peer review on the integration of NCEH and ATSDR would not be needed.

Drs. Frumkin and Nolan informed the new members that during the previous meeting, the BSC separated into three subgroups and provided NCEH/ATSDR with extensive recommendations on its future goals, directions and new priorities. The May 6, 2006 minutes contain a detailed summary of the BSC’s feedback to NCEH/ATSDR in response to Dr. Frumkin’s specific questions on these issues.

Drs. Frumkin and Sinks provided their perspectives on the proposed peer review schedule. The PPRS should conduct a peer review on training and capacity building in 2007. NCEH/ATSDR recently inventoried all of its activities in this area and is now reconsidering a new

format for training and capacity building. Input from the BSC in 2007 would be extremely valuable in this effort.

The suggestion to conduct the peer review of the EPH Tracking Program earlier than February 2009 should be reconsidered. This program was recently modified and more time will be required to determine outcomes or improvements. The peer review of the International Emergency and Refugee Health Branch could be conducted later than October 2007 because NCEH/ATSDR has no pressing need for input from the BSC on this program at this time. The peer review of the Division of Health Studies in February 2008 should be completely removed from the proposed peer review schedule because this program recently lost \$7.5 million and will need to reorganize its infrastructure and personnel.

Dr. Frumkin concluded the discussion by thanking the PPRS members for their diligent efforts, commitments and contributions of time. He was aware that the modification of the peer review process from a programmatic to a functional scope has been an extremely difficult task. He also recognized that the PPRS was particularly challenged because no previous models, experiences or lessons learned were available to review and replicate. NCEH/ATSDR was the first CDC center to use an external advisory body to conduct systematic reviews of its activities.

Dr. Frumkin acknowledged that NCEH/ATSDR must provide the PPRS with better and clearer guidance in conducting peer reviews. As a result, he confirmed that beginning with the PER review, NCEH/ATSDR would give the PPRS a brief document with a summary of the program's activities and specific questions to answer during the peer review. Dr. Frumkin assured the BSC that the functional peer reviews would be extremely valuable to NCEH/ATSDR in expanding its focus across administrative boundaries. He was proud that other CDC centers would use PPRS's process as a model for peer reviews.

HDS. Dr. Kim reported on key outcomes from three conference calls HDS held after the last BSC meeting in May 2006. The HDS agreed to convene monthly conference calls and develop a formal process to report and make more progress on its activities. The HDS agreed on a strategy to follow-up on previous recommendations. NCEH/ATSDR would make regular updates during conference calls and HDS would discuss and make suggestions on the appropriateness of actions that were taken.

The HDS discussed the Association of State and Territorial Health Officials (ASTHO) survey on the EPH workforce and services at the state level. The survey is designed to serve as one source for EPH programs and activities at the state level; facilitate communication among state environmental health professionals; and promote marketing and recruitment efforts.

The HDS questioned whether its current membership represents an appropriate balance in terms of state and local health professionals, local and small states, geographic distribution, and expertise across both NCEH and ATSDR programs. The HDS agreed that its current

expertise in epidemiology and public health laboratory activities is appropriate to fulfill its charge. The HDS discussed its coordination with other groups and the absence of liaisons to the CTS and other key constituencies.

The HDS selected a new area of focus by considering two issues Dr. Sinks proposed: (1) the value to state and local health departments of using ATSDR resources for non-Superfund activities and (2) opportunities or limitations of packaging programs to states with a more holistic approach. The HDS agreed that its new area of focus would be “bridging NCEH and ATSDR programs with a more holistic approach.”

NCEH/ATSDR provided information in two areas to facilitate HDS’s preliminary data collection efforts on the new priority issue: (1) the goals and objectives of NCEH/ATSDR programs and (2) funding to states from the asthma program, EPH Tracking Program, and the ATSDR cooperative agreement. The HDS intends to discuss its new area of focus in more detail during the May 2007 BSC meeting and make recommendations at that time. However, the HDS acknowledged that additional expertise would be needed to make progress on the new priority issue.

Mr. Scott Holmes, a BSC and HDS member, announced that NCEH/ATSDR also described its ongoing activities in response to HDS’s previous recommendations on EPH workforce development. Most notably, NCEH/ATSDR is allocating funds to academic centers and other sites to develop training and core competencies in toxicology, statistical analysis, epidemiology and other key components. Mr. Holmes confirmed that the HDS was extremely encouraged by the new funding and other activities targeted to EPH workforce development.

Dr. Kim summarized the conclusions HDS reached as a result of its conference calls. Potential new HDS members should have backgrounds, expertise and knowledge in epidemiology and NCEH activities. The current HDS members will submit names of potential candidates to NCEH/ATSDR for consideration. New liaisons should be recruited to serve on the HDS, such as representatives from the CTS, ASTHO and EPA. Dr. Kim specifically asked the BSC to provide input on the depth of its future activities and potential overlap with PPRS’s priorities.

Dr. Sinks provided guidance to the HDS on its future direction. The focus on workforce development should be expanded beyond local environmental health practitioners because NCEH/ATSDR has a much broader workforce, including laboratorians, behavioral and social scientists, environmental epidemiologists and toxicologists. Opportunities and limitations of extramural funds in meeting the needs of states should be compiled in a report and provided to the PPRS. The HDS should review the proposed peer review schedule and collect data in advance to inform the process.

Dr. Nolan reviewed key points from the HDS report. NCEH/ATSDR will need to submit names of nominees for new BSC members over the next few months because the terms of

several members will expire in June 2007. As a result, the remaining BSC members should volunteer to serve on the HDS or suggest names of potential candidates with appropriate expertise.

Dr. Nolan was pleased about two particular aspects of the HDS report. The development of a formal reporting process will allow systematic tracking of HDS's activities. The new priority issue of bridging NCEH and ATSDR programs with a more holistic approach is extremely timely. Several stakeholders and other constituents have emphasized the critical need to identify potential implications of integrating NCEH/ATSDR programs at federal, state and local levels. Dr. Nolan urged the HDS to develop a strategy in response to Dr. Sinks' suggestion to expand the focus on workforce development and training beyond local environmental health practitioners.

CTS. Dr. Gasana reported on key outcomes from the CTS meeting on December 6, 2006. NCEH/ATSDR presented the revised draft of the CCEHIP EJ policy. The CTS made substantive comments on the initial draft during the May 2006 meeting. Since that time, the EJ policy has undergone several revisions and a high-level review within CDC by the Office of Minority of Health and the CCEHIP and NCEH/ATSDR Directors. The CTS was pleased that the revised draft was more succinct and made a few suggestions for CCEHIP to consider in finalizing the EJ policy.

NCEH/ATSDR provided an update on its ongoing and closed health disparities and EJ activities. A new EJ web site is being developed in response to a direct request by Dr. Frumkin. All EJ projects will be grouped in nine specific topic areas on the web site: (1) asthma prevention and control; (2) lead exposure prevention; (3) special population exposures; (4) environmental health surveillance and tracking; (5) environmental health biomonitoring; (6) EPH capacity building; (7) epidemiological studies; (8) community-specific assessment; and (9) toxicological information

NCEH/ATSDR described its partnership with the National Hispanic Environmental Council (NHEC) to promote environmental health and increase the number of Hispanics in the field. NCEH/ATSDR is attempting to sponsor NHEC's annual conference and career fair for college students in February 2007. NCEH/ATSDR partnered with other federal agencies to fund and sponsor NHEC's annual institute for high school students 16-18 years of age who plan to pursue a career in environmental health.

The CTS emphasized the need for more accountability, evaluation and follow-up of NCEH/ATSDR's funded health disparities and EJ projects. For example, all products from one of the closed projects were not delivered. The CTS pointed out that as the funding agency, NCEH/ATSDR must ensure grantees adhere to the terms, conditions and specific deliverables of a grant or cooperative agreement. The CTS advised NCEH/ATSDR to provide capacity building or conduct periodic site visits to community and tribal grantees.

NCEH/ATSDR provided several updates on tribal activities. CDC would launch a wide search throughout Indian Country and other parts of the nation to permanently fill the position of the ATSDR Office of Tribal Affairs (OTA) Coordinator. One of the CTS members was extremely concerned that CDC would focus the search on the “best qualified applicant” rather than a specific “Native American” to fill this position. Several CTS members asked the BSC to review the tribal recommendations that were previously approved for implementation by NCEH/ATSDR.

CDC provided an overview of its joint CDC/ATSDR tribal consultation policy that was officially enacted in October 2005 to provide guidance to staff on effectively collaborating with tribal communities and organizations. The Tribal Consultation Advisory Committee (TCAC) was established as a forum for CDC and ATSDR to engage elected tribal leaders in ongoing dialogue and consultation about the budget and other important public health issues in Indian Country. CDC informed the CTS that TCAC is the largest advisory committee focusing on EPH issues in Indian Country. However, TCAC would not replace individual government-to-government consultations or the CTS.

The CTS made several recommendations for the BSC to consider. NCEH/ATSDR should provide an update on the status of recommendations that were previously made by the CTS Federal Facilities Workgroup. The CTS should continue its relationship with the PPRS to ensure that peer reviews address issues related to equity, EJ and health disparities. CDC and ATSDR should leverage funds to support more tribal projects.

NCEH/ATSDR should provide more capacity building to community and tribal grantees. The CTS's tribal recommendations that were previously approved by the BSC, but were not implemented by NCEH/ATSDR should be presented again to the BSC: (1) the Tribal Nations Clinician Training in Environmental Exposure Project; (2) the analysis of health trends in Indian Country; and (3) the Pediatric Environmental Health Specialty Unit Project. NCEH/ATSDR should start identifying potential staff members to serve as the new CTS DFO because Ms. Leslie Campbell, the current DFO, will retire in June 2007.

Several BSC members made comments and suggestions in response to the CTS report.

- Future CTS meetings should represent the entire universe of communities, stakeholders and customers that utilize ATSDR's services. For example, the primary focus on tribal issues during the December 6, 2006 meeting minimized problems in African American, Hispanic and other affected communities.
- The CTS should explore opportunities to meet with and undertake collaborative efforts with EPA's Tribal Science Council. Dr. Hal Zenick, the BSC *ex-officio* representative to EPA, should be contacted to facilitate this effort.
- The CTS should consider engaging a cultural anthropologist and sociologist with expertise and knowledge of affected communities.

- The CTS should make a recommendation to the BSC to advise ATSDR to train community members in conducting site assessments. This model would build the capacity of communities to sustain infrastructures over time.
- The CTS should review the final report from the upcoming SSA peer review and provide input on whether ATSDR formally addresses EJ and other community issues during activities at sites.
- The CTS should broaden its scope beyond health disparities and EJ issues. For example, community and tribal perspectives should be provided on more NCEH activities, such as the asthma, lead and EPH Tracking Programs. Guidance should be given on communication, education and training strategies that could be implemented to better prepare communities for natural disasters and other events.
- The CTS should not expand its scope beyond health disparities and EJ due to the prominence and importance of these issues to communities and tribes.
- The CTS should make a recommendation to the BSC to advise NCEH/ATSDR to include data on socioeconomic status in reports, requests for proposals and other materials and provide this information to the public. For example, socioeconomic data could be included in the new national nutrition report.
- The CTS should engage representatives from local health departments because ATSDR allocates funds to local agencies to conduct site activities. This approach could be used to train local health department staff in EJ and health disparities.

Dr. Nolan reviewed key points from the CTS report. NCEH/ATSDR should provide both the CTS and BSC with regular updates on progress in searching for a permanent OTA Coordinator and strategies for the CTS to be engaged with TCAC in a formal manner. The CTS should maintain its scope on EJ and health disparities, but the focus should be broadened to include all CCEHIP programs rather than ATSDR alone. Both the CTS and BSC have expressed strong concerns about institutionalizing and monitoring health disparities and EJ issues at the coordinating center level. For example, the NCEH laboratory and several other CCEHIP programs are not conducting activities in these areas.

Dr. Nolan confirmed that health disparities and EJ would also remain on the BSC's agenda. The BSC would have a more in-depth discussion of the role of these cross-cutting issues in the HDS and PPRS. She conveyed that the BSC would provide concrete guidance to assist the CTS in making progress on its ongoing activities and addressing outstanding concerns.

Dr. Frumkin informed the BSC that his previous budget request for an EJ staff member was denied. He announced that NCEH/ATSDR would be unable to hire or assign a dedicated EJ staff member due to lack of funding. However, he has asked Ms. Campbell to serve in this capacity in addition to her other duties. He would also challenge each NCEH/ATSDR program to fully institutionalize EJ in all activities. Dr. Frumkin believed that this approach would be more effective over the long term than one specific staff member assigned to EJ.

Public Comment Period

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

Update on the CDC Goals Process

Dr. Henry Falk, the CCEHIP Director, announced that the goals process is an integral component of CDC's entire reorganization. The goals process is being designed to ensure that CDC achieves health impact in all of its programs and activities. The goals will be linked to CDC's budget, future initiatives and accountability in a consensus-based approach. However, the goals process will not impact CDC's traditional hierarchical structure. Goals teams were established to monitor each goal across CDC and facilitate cross-cutting collaborative efforts.

CDC's health protection goals are grouped into four broad categories: healthy people, healthy places, preparedness and global health. CDC established specific criteria to develop each goal area: (1) the scope of the problem, burden of disease or degree of threat; (2) appropriateness for CDC to conduct the activity; (3) available capacity to conduct the activity; and (4) health disparities.

For the fourth issue, strong efforts are underway to ensure that each goal area addresses health disparities. The Advisory Committee to the CDC Director formed a health disparities subcommittee to ensure that measures, strategies and action plans are developed and incorporated into each goal area.

The goals have multiple purposes, such as informing CDC's budget; developing and using scientifically sound approaches to solving problems; promoting external partnerships; and facilitating measurement and accountability. The goals will be developed with the best available evidence and will also undergo rigorous external peer review to ensure that the scientific basis is appropriate.

Innovative, timely and high-quality goal action plans are being developed to support the goals process. The goal action plans will be designed to be accepted both internally and externally. On the one hand, some strategies, actions and measures will specifically relate to CDC's activities. On the other hand, CDC will attempt to adopt *Healthy People 2010* measures whenever possible. CDC has sponsored a series of consultations with partners and the public to build acceptance and awareness of the goals.

Each goal is being developed with a series of objectives, actions and measures. The goals will be used to identify changes that occur within CDC and measure improvement in health

outcomes over time. Actions will be taken to measure, implement and monitor the goals. Beginning in 2007, plans will be developed and annually reviewed. Goal team leaders will review goal action plans for each goal area every November. The annual assessments will allow objectives, strategies, actions and measures to be updated and modified as necessary. The November date was selected to coincide with the budget cycle for the upcoming fiscal year.

Environmental health is embedded in the healthy places goal due to its overarching objective to protect and promote the health and safety of places where persons live, work, learn and play, particularly individuals at greater risk of health disparities. The healthy places goal focuses on healthy homes, communities, institutional settings, workplaces and schools.

Objectives under the healthy homes goal are to increase the number of homes that are free from health and safety hazards; increase the number of persons with adequate knowledge; and increase the availability of healthy, safe and accessible housing. The Healthy Homes Goal Team selected three areas of focus for its initial activities: monitoring progress and developing surveillance approaches to ensure healthy homes; remediating the top three hazards in homes; and developing a healthy homes workforce. Each of the focus areas will be cross-referenced to the healthy homes objectives, strategies and measures.

Objectives under the healthy communities goal are to increase the number of communities with high-quality air, water, food and waste disposals; increase the number of communities that are safe from toxic, infectious and other hazards; understand and reduce negative health consequences of climate change; and support the design and development of built environments to promote mental and physical health. The Healthy Communities Goal Team selected two areas of focus for its initial activities: improving the public health capacity of communities and developing a comprehensive approach to water issues and global climate change.

The Healthy Travel and Recreation Goal Team selected three areas of focus for its initial activities: the built environment; linkages between communities and transportation/travel issues; and healthy and safe behaviors during travel, transportation and recreation.

Dr. Falk concluded his update by informing the BSC about CCEHIP's strong commitment to the goals process. The initiative will help to catalyze and promote synergy in CDC's activities, build coalitions with partners, and facilitate opportunities to establish new relationships. The goals process will also allow CDC to leverage funding and resources with federal partners, professional organizations and other groups.

The BSC was extremely pleased with the tremendous amount of progress that has been made on the goals process. In terms of environmental health, some members commended NCEH/ATSDR on its shift in focus from a single agent to a more integrated place-based approach that includes socioeconomic, genetic, ecological and physical factors.

Several BSC members made suggestions for CCEHIP to consider in its ongoing involvement with the CDC goals process.

- Collaborative efforts should be undertaken with non-traditional partners in the healthy homes goal. For example, the Departments of Transportation and Education could provide expertise to CCEHIP on healthy schools and highways.
- The healthy homes and communities goals should include specific objectives to track and monitor socioeconomic status and health disparities.
- New areas of expertise that will be needed to implement the goals as well as strategies to build internal capacity within CDC should be considered early in the goals process. For example, CCEHIP will need staff with knowledge and skills in the built environment.
- The global warming and climate change activities should be designed to address historical environmental impacts. Partnerships should be established with zoners, planners and local governmental agencies in this effort.
- The healthy homes and communities goals should include a broad perspective of EJ beyond toxic sites, such as sidewalks, greenspace and recreational facilities in communities.

BSC Business

Dr. Nolan led the BSC in a review of action and agenda items that were raised over the course of the meeting.

Action Item

- *NCEH/ATSDR should develop a better process to inform the BSC about relevant Federal Register notices. For example, e-mail messages could be sent to each BSC member when documents are released for public comment in the Federal Register.*

Agenda Items

- *Overview of NCEH/ATSDR's biomonitoring activities.*
- *Joint CDC/EPA presentation on the integration of CDC's healthy places goal and EPA's indicators.*
- *Recommendations from the SSA peer review on the possibility of renaming "PHAs" and "health studies."*
- *Discussion on strategies to regularly measure and monitor the BSC's guidance on NCEH/ATSDR's future goals, directions and new priorities.*

- *Discussion on feedback given to the BSC during the Town Hall Forum. For example, several speakers emphasized the need to fill knowledge gaps in risk assessments at the local level. The BSC was informed that risk assessments ideally should be used to make rapid decisions on the ground, but public health needs are not being addressed.*

Closing Session

Dr. Frumkin confirmed that NCEH/ATSDR would make stronger efforts to distribute information to the BSC in between meetings. He thanked the members for providing NCEH/ATSDR with valuable expertise and input, particularly during the difficult transition period of CDC's agency-wide reorganization, the NCEH/ATSDR consolidation, CDC's new goals process, and a flat federal budget. He urged the BSC to continue to provide NCEH/ATSDR with strategic advice on developing innovative approaches, establishing partnerships, and leveraging resources in the current climate of a level budget.

Both Drs. Frumkin and Sinks also thanked the BSC members for taking time from their busy schedules to attend the national conference, subcommittee meetings and the BSC meeting. They were pleased that the BSC is collaborating with NCEH/ATSDR in its efforts to make safer and healthier environments for the American public.

The BSC members commended NCEH/ATSDR staff for their outstanding and diligent efforts in arranging separate meetings for the BSC and its three subcommittees in conjunction with the national conference.

The next two BSC meetings are tentatively scheduled for May 17-18, 2007 and November 15-16, 2007; May 24-25, 2007 was suggested as an alternate date for the first 2007 meeting. NCEH/ATSDR would poll the members by e-mail to confirm the next two meeting dates.

With no further discussion or business brought before the BSC, Dr. Nolan adjourned the meeting at 2:15 p.m. on December 7, 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