

**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  
October 21-22, 2010  
Atlanta, Georgia**

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**Record of the Proceedings**

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**ATTACHMENT 1****List of Participants****BSC Members**

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 Dr. William Becker  
 Dr. Michelle Kegler  
 Dr. Marie Swanson  
 Dr. Andrea Kidd Taylor  
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 Dr. Leonardo Trasande  
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 Preston Burt  
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 Betsey Dunaway  
 Chris Ernst  
 Julie Fishman  
 Tina Forrester  
 Bruce Fowler  
 Natasha Friday  
 Paul Garbe  
 Richard Gillig  
 Timothy Hack  
 Yongping Hao  
 Olivia Harris  
 Elizabeth Herman  
 Calvin Hightower  
 Kathy Hines  
 Lisa Hines  
 James Holler  
 Lindsey Horton  
 Linda Thomas Houston  
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 Craig Kassinger  
 Greg Kearney  
 Robert Kennedy  
 Annie Latimer  
 Shirley Little  
 George Luber  
 Sandra Malcom  
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**BSC Federal Expert Members**

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 Dr. Kristina Thayer (National Toxicology  
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 Environmental Health Sciences)  
 Dr. Gerald Petersen  
 (U.S. Department of Energy)  
 Dr. Hal Zenick  
 (U.S. Environmental Protection Agency)

**Designated Federal Official**

Dr. Paula Burgess,  
 Acting Associate Director for Science,  
 NCEH/ATSDR

**Ad Hoc Peer Reviewers**

Dr. Julia Gohlke (University of Alabama,  
 School of Public Health) [via conference call]  
 Dr. Patrick Kinney (Columbia Mailman  
 School of Public Health, Department of  
 Environmental Health Science)  
 Dr. Jessica Leighton (Food and Drug  
 Administration)  
 Dr. James Mulholland (Georgia Tech)  
 Dr. Alicia Smith (U.S. Environmental  
 Protection Agency, Indoor Environments  
 Division)

**CDC/NCEH/ATSDR Representatives**

Dr. Christopher Portier

Gino Marinucci  
Susan McClure  
Michael McGeehin  
Theodore Meinhardt  
Sarah Merkle  
Deborah Millette  
Michele Monti  
Jennifer Moore  
Jeanne Moorman  
Jeffrey Morelli  
Amy Mowbray  
Moiz Mumtaz  
Edward Murray  
Whitney Neal  
Theresa Nesmith  
Shirl Ellis Odem  
Laszlo Pallos  
Radha Pennotti  
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Desiree Robinson  
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Helen Rogers  
Kenneth Rose  
Hilda Shepeard

Robin Shrestha-Kuwaha  
Dolly Sinha  
Michael Smiley  
Cassandra Smith  
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Jana Telfer  
Germaine Vazquez  
Anne Venner  
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Robert Whitcomb  
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**Members of the Public**

Gwen Baker (Human Capital Management Office)  
Daniel Kass (New York City Department of Health and Mental Hygiene)  
Wendy Kaye (McKing Consulting)  
Michael Kleinman, University of California  
Mike Lyman (University of California-Irvine)  
Jonathan Patz (University of Wisconsin at Madison) [via conference call]

## ATTACHMENT 2

### Glossary of Acronyms

ACBS	Asthma Call-Back Survey
ADHS	Arizona Department of Health Services
ALS	Amyotrophic Lateral Sclerosis
APRHB	Air Pollution and Respiratory Health Branch
AQS	Air Quality System
BLLs	Blood Lead Levels
BRFSS	Behavioral Risk Factor Surveillance System
BSC	Board of Scientific Counselors
CCP	Climate Change Program
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CWEB	Chemical Weapons Elimination Branch
DHAC	Division of Health Assessment and Consultation
DHS	Division of Health Studies
DLS	Division of Laboratory Sciences
DTEM	Division of Toxicology and Environmental Medicine
ED	Emergency Department
EEHS	Division of Emergency and Environmental Health Services
EHHE	Division of Environmental Hazards and Health Effects
EHTB	Environmental Health Tracking Branch
EMEG	Environmental Media Evaluation Guide
EPA	U.S. Environmental Protection Agency
EPH	Environmental Public Health
HB	Hierarchical Bayesian
HHS	Department of Health and Human Services
NACP	National Asthma Control Program
NBP	National Biomonitoring Program
NCEH/ATSDR	National Center for Environmental Health/ Agency for Toxic Substances and Disease Registry
NCHS	National Center for Health Statistics
NHANES	National Health and Nutrition Examination Surveys
NIOSH	National Institute for Occupational Safety and Health
NPP	National Public Portal
ODH	Ohio Department of Health
PCB	Polychlorinated Biphenyl
PEHSUs	Pediatric Environmental Health Specialty Units
PHAs	Public Health Assessments
RCRA	Resource Conservation and Recovery Act
RODS	Real-Time Outbreak Disease Surveillance
SCHIP	State Children's Health Insurance Program
SCID	Severe Combined Immunodeficiency
VA	Department of Veterans Affairs
VOC	Volatile Organic Compound

## EXECUTIVE SUMMARY

The Department of Health and Human Services and the Centers for Disease Control and Prevention 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 October 21-22, 2010 in Atlanta, Georgia. The BSC welcomed Dr. Christopher Portier in his new position as the Director of NCEH/ATSDR.

Leadership of the NCEH Division of Environmental Hazards and Health Effects (EHHE) made presentations on two branches and one program that would be peer reviewed during the meeting by Peer Review Teams of BSC Lead Peer Reviewers and ad hoc reviewers. High-level overviews were presented by the Chief of the EHHE Environmental Health Tracking Branch (EHTB); Chief of the EHHE Air Pollution and Respiratory Health Branch (APRHB); and Associate Director for Climate Change in the EHHE Climate Change Program (CCP).

The Peer Review Teams provided their expert opinions, comments and recommendations to improve and expand the current programmatic activities, ongoing research projects and future directions of EHTB, APRHB and CCP. The Peer Review Teams would formalize their verbal advice and recommendations made during the meeting by submitting written peer review reports of the EHHE programs to NCEH/ATSDR over the next three months.

Selected BSC members evaluated eight ATSDR-funded state reports that were chosen for the assessment based on three criteria: (1) Is the report short and succinct? (2) Has the report been completed by the funded state and approved by ATSDR leadership? (3) Does the report reflect diversity in terms of the types of exposures or pollutants and geographic locations?

The BSC reviewers provided solid input on the quality, science base, areas of improvement and public health need of the eight funded state reports to aid in ATSDR's decision-making process of whether to aggressively pursue, continue or discontinue additional public health activities at these sites. The full BSC membership made several broad comments and recommendations on the overall concept of ATSDR-funded state reports. ATSDR leadership would use the BSC's guidance to strengthen the effectiveness and efficiency of its funded state programs and develop long-term strategic plans.

The Director of the ATSDR Division of Health Studies presented an update on the National Amyotrophic Lateral Sclerosis (ALS) Registry. The comprehensive overview covered ATSDR's history of developing the ALS Registry, current activities and future directions in this effort. The BSC Chair confirmed that updates on the ALS Registry would be placed on future BSC agendas as an ongoing item.

The BSC provided extensive commentary and input to the NCEH/ATSDR Director on the new peer review process that was introduced during the current meeting of shifting from a "targeted" to a "strategic" approach. The BSC described the advantages and disadvantages of both the previous targeted process and the new strategic process. Based on feedback from the BSC, the NCEH/ATSDR Director confirmed that the following suggestions would be considered in improving the new peer review process:

- Distribute more structured and strategic materials of peer-reviewed programs in advance of meetings.
- Extend discussion sessions following presentations by peer-reviewed programs.

- Incorporate breakout groups into BSC meetings to allow Peer Review Teams to have one-on-one interactions with leadership and staff of peer-reviewed programs.
- Give more consideration to and develop a clearly defined process before including cross-division reviews in the new peer review process.
- Consider the possibility of holding poster sessions during lunch breaks of BSC meetings.

**The BSC agreed by consensus on the following schedule and agenda items to conduct future peer reviews.**

- Wednesday afternoon (half-day): High-level presentations by leadership of three programs and discussion sessions with the full BSC membership.
- Thursday (full day): Breakout groups with the Peer Review Teams and program staff, a working session for the Peer Review Teams to draft their preliminary reports, and updates on NCEH/ATSDR activities of non-peer reviewed programs.
- Friday morning (half-day): Presentations of the draft peer review reports by the Peer Review Teams to the full BSC membership and updates on NCEH/ATSDR Division activities.
- Post-meeting activities: Conference calls with the Peer Review Teams and peer-reviewed programs and a review of the meeting minutes to aid the Peer Review Teams in revising, finalizing and submitting their reports to NCEH/ATSDR within three months following the meeting.

The BSC agreed on two modifications to the timeline. First, the Peer Review Teams would submit their reports on EHHE within four months of the October 2010 meeting due to the holiday season and the need to become more familiar with the new process. Second, the BSC members would be polled via e-mail to indicate their preference in conducting peer reviews in two full days rather than two half-days and one full day.

NCEH/ATSDR leadership at the Office of Director and Division levels presented updates on recent activities and accomplishments by the NCEH/ATSDR divisions over the six months to one year. Public health assessments, exposure investigations, research projects and other projects were highlighted for the following divisions:

- ATSDR Division of Toxicology and Environmental Medicine.
- ATSDR Division of Health Assessment and Consultation.
- NCEH Division of Laboratory Sciences.
- ATSDR Division of Health Studies.
- NCEH Division of Emergency and Environmental Health Services.

The NCEH/ATSDR Director noted that several projects reflected cross-division collaboration and coordination across NCEH and ATSDR programs. NCEH/ATSDR is beginning to include more formal language in its cooperative agreements that will require grantees to solicit cross-division or cross-program collaboration at the state level. NCEH/ ATSDR also is undertaking a thorough review of its environmental justice programs over the next year.

The newly-appointed Director of the NCEH Division of Laboratory Sciences (DLS) presented DLS's formal response to the BSC's peer review of the DLS laboratories that was conducted during the May 2010 meeting. However, DLS distributed its more detailed and written report to the BSC prior to the meeting. DLS's formal response covered the BSC's recommendations for

the following programs: Newborn Screening, Nutrition, and Lipid Reference Laboratories; National Biomonitoring Program; Emergency Preparedness Laboratories; and Tobacco Laboratory.

DLS agreed with the BSC's peer review recommendations overall. DLS is currently taking action on many of the BSC's recommendations and would use this guidance to make efforts in other areas whenever possible. The NCEH/ATSDR Director acknowledged the outstanding performance of the Acting Director of DLS during the transition to new leadership.

The Chair called for public comment at all times noted on the agenda published for the October 21-22, 2010 BSC meeting. The dates proposed for the next BSC meeting were May 5-6, 12-13, or 19-20, 2011 or June 16-17 or 23-24, 2011. NCEH/ATSDR staff would poll the BSC members by e-mail to determine their availability and confirm the date.

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**BOARD OF SCIENTIFIC COUNSELORS  
October 21-22, 2010  
Atlanta, Georgia**

**Minutes of the Meeting**

The Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) convened a meeting of the Board of Scientific Counselors (BSC). The proceedings were held on October 21-22, 2010 in Building 106 of CDC's Chamblee Campus in Atlanta, Georgia.

**Opening Session**

Dr. Timothy Ryan, Chair of the BSC, called the meeting to order at 8:31 a.m. on October 21, 2010 and welcomed the attendees to the proceedings. He particularly recognized Dr. Christopher Portier who was appointed as the new Director of NCEH/ATSDR in the summer of 2010. The list of participants is appended to the minutes as [Attachment 1](#).

Dr. Ryan pointed out that the BSC's process of conducting program peer reviews was changed and would be explained in more detail by Dr. Portier. He also noted that a new item was placed on the agenda for the BSC to evaluate ATSDR-funded state reports.

On behalf of Dr. Thomas Frieden, Director of CDC, and Dr. Robin Ikeda, Deputy Director of the Office of Non-Communicable Diseases, Injury and Environmental Health, Dr. Portier also welcomed the attendees to the October 2010 BSC meeting. He thanked the BSC members for continuing to contribute their time and expertise to reviewing NCEH/ATSDR's environmental health portfolio.

For the benefit of the new BSC members, Dr. Portier presented CDC's organizational chart. He explained that the meeting would include presentations on two branches and one program in the NCEH Division of Environmental Hazards and Health Effects (EHHE). ATSDR leadership would provide an update on the National Registry for Amyotrophic Lateral Sclerosis and the BSC would evaluate ATSDR-funded state reports.

Dr. Portier explained that one of his first duties as the new Director of NCEH/ATSDR was to strategically and thoroughly review current activities, future directions, differences in the functions of NCEH and ATSDR, and areas where NCEH and ATSDR should function together. He described the new process for the BSC to conduct peer reviews.

BSC workgroups have been effective in reviewing NCEH/ATSDR's individual branches and substructures and providing NCEH/ATSDR with tactical advice to improve each of these units. However, this process did not allow the full BSC membership to apply its broad and diverse expertise to collectively review each branch and offer guidance on NCEH/ATSDR's future directions from a broad strategic perspective.

The new peer review process was designed for the full BSC membership to review the various components of NCEH/ATSDR at the same time. Moreover, the BSC has been augmented with ad hoc peer reviewers with expertise in the research and activities of the EHHE program and branches that would be presented during the meeting. The ad hoc peer reviewers were given program materials in advance of the meeting and would be asked to provide scientific advice to the BSC and NCEH/ATSDR on the EHHE branches and program.

After the meeting was adjourned on the following day, the BSC Chair, BSC members who were selected as lead peer reviewers, and the ad hoc peer reviewers would meet for an additional hour to present their preliminary findings of the EEHE program and branches to NCEH/ATSDR. However, the new peer review process would be modified based on feedback from the BSC members. Dr. Portier concluded his opening remarks by confirming that NCEH/ATSDR continues to look forward to the BSC's scientific assistance, discussions and recommendations.

### **Overview of the EHHE Environmental Health Tracking Branch (EHTB)**

Dr. Judith Qualters is the Chief of EHTB. She reported that EHTB was established in 2002 in response to a Congressional request for CDC to build a public health surveillance system to track health and environmental outcomes. Environmental Public Health Tracking is synonymous with public health surveillance. It involves the ongoing collection, integration, analysis, interpretation and dissemination of information on environmental hazards, human exposures, and health outcomes potentially associated with those exposures. Tracking is conducted to provide information that drives public health action and decision making. The Tracking Program has five major goals: (1) Build a sustainable National Environmental Health Tracking Network; (2) enhance the tracking workforce and infrastructure; (3) disseminate information to guide policy, practice and other actions; (4) advance environmental public health science and research; and (5) foster collaboration among health and environmental programs.

EHTB allocates the vast majority of its budget to 23 state health departments and New York City to build state environmental public health (EPH) tracking networks that are components of the National Tracking Network. New grantees are typically given 18 months to develop planning and implementation strategies, create partnerships, establish data sharing agreements, and build information technology systems.

EHTB began funding academic partners in 2002 to develop statistical methods for use by state and local health departments, create exposure metrics, and conduct projects to link health and environmental data. Academic partners are not in each funded state, but most state grantees collaborate with universities in their respective states.

EHTB regularly meets with its state and academic partners twice per year for strategic planning. EHTB also relies on professional associations to outreach to non-funded states, offers scholarships for representatives of non-funded states to attend national conferences, and funds a mentoring program through the Association of State and Territorial Health Officials in which funded states educate non-funded states on tracking techniques.

EHTB's workforce includes 32 full-time staff and seven contractors. Key activities are conducted by EHTB's three teams: the Informatics Team; the Program Services Team which includes a Communications Activity; and the Science Development Team.

The EHTB built the Tracking Network as a web-based information system to serve the public, EPH agencies, healthcare providers and researchers at national, state and local levels. The principles that guided the design of the Tracking Network were to reuse existing software infrastructures, adopt existing standards, gather meta-data, and provide a flexible framework for states to comply with their individual information technology standards. After the design principles were developed, EHTB Informatics Team gathered requirements, performed user testing, and engaged partners in an iterative process at the outset of developing the Tracking Network. EHTB continues to involve state grantees, non-funded state partners, national partners and non-governmental organizations in the development and enhancement of the Tracking Network.

The Tracking Network was the first data system developed at CDC with both public and secure portals. Portals at state and national levels allow human-to-computer interface, while the gateways allows computer-to-computer interface. EHTB launched the National Public Portal (NPP) in July 2009 with a central data repository for states and national partners to submit data to CDC. The NPP provides one-stop access to health and environmental data, allows users to query data, and provides contextual information and prevention messages.

The NPP contains modules on specific components of the Tracking Network, such as asthma and birth defects. The NPP also provides detailed information on health and environmental endpoints, such as asthma in the environment, asthma and other risk factors, and tracking outcomes of asthma in the United States. Users have the ability to access a dataset that can be queried for data at the county level and link to other resources to obtain additional information.

EHTB launched the initial version of the Tracking Network with data on asthma and carbon monoxide hospitalizations, carbon monoxide emergency department (ED) visits, cancers, housing and lead, and water and air. Since that time, EHTB has added data on reproductive health, birth defects, modeled air, carbon monoxide mortality and population characteristics. EHTB will further expand the Tracking Network in the future by adding new modules on the Asthma Call-Back Survey, climate change, the built environment, pesticides and health impacts.

EHTB is redesigning the Tracking Network with an improved query interface to provide a more intelligent and user-friendly experience. A redesigned results panel will provide users with more options to display data with maps, charts and tables. New map views will provide larger screen shots for better on-screen comparisons. Users also will have the option of using multiple charts, benchmarks and sortable table columns. EHTB expects to launch the redesigned Tracking Network in the middle of 2011.

EHTB launched Phase I of the secure portal in August 2010 with the meta-data creation tool and data validation portal. The components EHTB envisions for the secure portal include a national data repository and meta-data services; tools, methods documents/"how-to" guides, software for data analyses and other resources; and collaboration and knowledge management functions. EHTB will launch Phase II of the secure portal in early 2011 with role-based access control and drag-and-drop query and custom report building options.

The EHTB Science Development Team works with the Environmental Protection Agency to model ozone and particulate matter concentrations for EPH tracking, epidemiology, research and health impact assessments. By 2004, 15 Tracking Network states were conducting 27 linkage projects with air data. New York State developed two interpolation methods to fill spatial and temporal gaps in monitoring data, but this effort resulted in two different results. A request for assistance to the EHTB led to the Branch partnering with air modelers in the U.S. Environmental Protection Agency (EPA), and the Maine, New York State and Wisconsin tracking programs to review and determine the capability of various models for tracking. EHTB and its partners developed the Public Health Air Surveillance Evaluation Project to assess the models based on several qualitative measures, such as ease of delivery, spatial and temporal coverage, required resources, and underlying errors associated with the models. Quantitative analyses comparing modeled results to measurements from air monitors were also conducted.

One of the models evaluated in the project used Hierarchical Bayesian (HB) methods to statistically fuse air quality data with Community Multi-scale Air Quality model-predicted concentrations. EHTB and its partners agreed this model provided the best estimates at that time. CDC and EPA entered into an interagency agreement for EPA to provide HB estimates on 12-kilometer grids for 50% of the United States and on 36-kilometer grids for the entire contiguous United States. The HB estimates only cover 2001-2006 at this time, but EHTB and EPA are making efforts to improve timeliness and produce data through 2009 by the end of 2011.

EHTB geo-transforms the HB estimates to create county-level estimates. EHTB created tracking measures by comparing HB estimates at the county level and Air Quality System (AQS) data at county and metropolitan statistical area levels. This comparison showed that HB estimates are more likely to under-predicts rather than over-predict ozone and particulate matter concentrations around the standard. But, there are some regional differences.

Based on consultations with EPA and other partners, EHTB agreed to incorporate a combination of HB modeled estimates and AQS measurement into some air quality indicators on the Tracking Network. Interleaving data to generate monitoring plus modeled measures

were found to produce a spatial pattern that is generally comparable to monitoring data alone. EHTB emphasizes that the monitoring plus modeled air data is not being used for regulatory compliance purposes. EHTB reviews spatial and temporal patterns in these data to identify potential at-risk populations.

The EHTB Program Services Team tests communications channels to promote EPH tracking to its primary audience of partners and grantees and its secondary audience of public health professionals, environmental professionals, policymakers at federal and state levels, and members of the affected public. The “public” includes citizens who are engaged in or have a personal interest in environmental or public health issues covered by the Tracking Network.

EHTB has taken a multifaceted approach to strengthen and expand communications of the Tracking Network. Key messages, materials and other tools were provided to partners and grantees to create “champions.” Partners and grantees were utilized to widely disseminate information about the launch of the Tracking Network. A mass media campaign, including press releases and the Internet, and a social media campaign were launched as key communication channels for the Tracking Network.

EHTB’s communication activities resulted in total media outreach to ~20 million persons from July 7, 2009 to August 13, 2009, including 38,344 unique visits to the Tracking Network, 100,417 total views, 8,931 queries, 96 media articles and two radio interviews. The number of persons who watched the Tracking Network video in its entirety on YouTube was greater than those who typically view online videos. The video generated 271 click-throughs to the Tracking Network in its first month online at Blinkx and Grist.

CDC’s Facebook page resulted in 77 click-throughs to the NPP. Twitter resulted in >160 tweets that reached >150,000 persons as news of the launch of the Tracking Network spread. However, monthly views of the NPP have decreased from ~90,000 since its launch in July 2009 to ~20,000 in July 2010. Overall, the Tracking Network has been characterized as “the most important accomplishment of the past decade.”

Dr. William Becker was selected as the BSC Lead Reviewer for EHTB. His expert opinions on EHTB’s EPH tracking activities are outlined as follows. EHTB should establish partnerships with states that are Tracking Network grantees and also have active biomonitoring programs at this time, such as California, Iowa, Minnesota and New York.

EHTB should use the Tracking Network to immediately take advantage of tracking opportunities in clinical medicine and form public health collaborations, particularly with the CDC National Biomonitoring Program. The Tracking Network is a surveillance system, but EHTB has not created strong partnerships with surveillance systems in other areas, such as EDs that use surveillance to track influenza-like illnesses.

EHTB should integrate the “Real-Time Outbreak Disease Surveillance” (RODS) System into the Tracking Network. RODS is an open-source public health surveillance software program that collects and analyzes disease surveillance data in real time, such as point-of-sale pharmacy purchases and diagnoses at the time of ED admissions. For example, EHTB could use RODS

as a sentinel indicator to track purchases of cold and influenza medications to detect certain health effects in communities.

Expert opinions by other members of the EHTB Peer Review Team on EHTB's EPH tracking activities are outlined below.

- EHTB should make efforts at this time to include data from two sources in the Tracking Network: (1) the National Health and Nutrition Examination Survey (NHANES) and (2) water quality data from the U.S. Geological Survey or utility companies.
- EHTB should develop long-term plans to help the general public to combine and better understand the linkage between health and environmental data.
- EHTB should attempt to extract data from the Tracking Network and disseminate this information at a smaller level than by county. This approach would allow communities to detect cancer clusters, water contamination or other health/environmental health impacts in their specific neighborhoods or towns within a county.
- EHTB should clearly articulate its vision of the Tracking Network in one year, five years and ten years in terms of funding additional states and conducting other EPH tracking activities. For example, EHTB should develop a strategic plan with concrete action steps to reach its goal of moving toward a nationwide Tracking Network of integrated health and environmental data.

Dr. Portier provided additional details on the new peer review format because time constraints did not permit all of the BSC members to pose questions or make comments on EHTB's tracking activities. The discussion sessions following each presentation primarily would be devoted to dialogue between NCEH and the Peer Review Team. The Peer Review Teams for the EHHE program and two branches would present their preliminary findings to the NCEH/ATSDR Director, EHHE Director and BSC Chair on the following day during a one-hour closed session after the BSC meeting was adjourned.

The Peer Review Teams would draft a formal report of their findings and circulate the document to all BSC members for review and comment prior to submission to NCEH/ATSDR. All BSC members would have an opportunity at that time to provide input. The peer review report of EHHE and other organizational units in the future would be submitted to NCEH/ATSDR as a product by the full BSC.

### **Overview of the EHHE Air Pollution and Respiratory Health Branch (APRHB)**

Dr. Paul Garbe is the Chief of APRHB. He reported that the National Asthma Control Program (NACP) is a Congressionally-directed program to reduce the burden of asthma on individuals, families and communities by focusing on surveillance, disparities, interventions, evaluation, research and communication. The vast majority of APRHB's asthma activities focus on secondary prevention because the causes of asthma are unknown.

APRHB's state and local partners in asthma control cover 34 states, the District of Columbia and Puerto Rico. However, APRHB is aware of the need to develop a more coordinated federal response on asthma to leverage additional resources, fund more state-based asthma control programs, standardize clinical outcome measurements for asthma across all federal agencies that award asthma control dollars, and analyze asthma at a population level.

APRHB grantees conduct comprehensive asthma control programs, maintain state-level asthma surveillance systems, build partnerships within states, and develop and implement science-based interventions for state-level populations. Grantees also create statewide plans and oversee asthma coalitions with local organizations.

APRHB began conducting national asthma surveillance in 1998 by using data sources from the CDC National Center for Health Statistics (NCHS) to describe the following asthma indicators: prevalence, mortality, hospitalizations, and ED, outpatient and physician office visits for asthma. Grantees utilize various data sources to determine decreases in asthma burden at the state level. APRHB is currently analyzing clinical indicators based on data submitted across all state grantees to determine reductions in the burden of asthma at the national level.

APRHB uses the Behavioral Risk Factor Surveillance System (BRFSS) to obtain state-level data on asthma because NCHS datasets only provide national and regional data. BRFSS is a joint CDC/state program that serves as the world's largest telephone survey. BRFSS is conducted in all 50 states, the District of Columbia and three territories to collect data on health-related behavioral risk factors from randomly-selected adults  $\geq 18$  years of age who are non-institutionalized civilians. The state database for the BRFSS core is 5,000 interviews on average.

The BRFSS standard core has included two questions on asthma since 2000 regarding adult lifetime asthma prevalence and adult current asthma prevalence. The BRFSS adult module was created in 2001 and asks ten other questions on asthma in addition to those included in the standard core. The BRFSS child module was created in 2005 and asks questions regarding current and lifetime asthma.

APRHB developed the Asthma Call-Back Survey (ACBS) to obtain more detailed state-level data on asthma beyond the BRFSS modules. ACBS is administered two to three weeks later to persons who answered yes to asthma questions during the initial BRFSS interview. ACBS questions are designed to collect data on asthma symptoms and episodes, quality of care, healthcare utilization, knowledge of asthma management, modifications to the environment, use of alternative medical care, medications, and work-related asthma. Successful implementation of ACBS in 2006 led to the discontinuation of the BRFSS adult asthma module in 2009.

APRHB currently funds 41 states to administer ACBS. State grantees participate in monthly conference calls with APRHB to examine ACBS data and provide guidance on problems, interpretation and calculation of various indicators. Other uses of ACBS data at the state level include manuscripts, state-specific ACBS surveillance reports for legislatures, fact sheets, newsletters, speaker kit slides, grant applications, national and local conference presentations, policy change, and long-term evaluation and goal assessment.

APRHB combines state-level ACBS data to assess its aggregate program performance required by the Government Performance Review Act and the Program Assessment Rating Tool. APRHB also uses ACBS data to make presentations at national conferences and develop manuscripts. These scientific publications have focused on work-related asthma and alternative asthma therapies.

APRHB staff is currently using ACBS data to prepare papers on the following topics: disparities, seasonality of symptoms, physical activity, quality of care, self-management, and environmental exposures in homes and actions taken to reduce these exposures. ACBS data from 2006-2008 are currently undergoing the CDC review and clearance process and will be made available in a public use dataset in the near future.

APRHB is making strong efforts to address asthma disparities. The current asthma prevalence is higher among children than adults, boys than girls, and women than men. Asthma morbidity and mortality are higher among African Americans than whites. National surveillance data show a disproportionate burden of asthma among non-Hispanic blacks, Native Americans and persons of Puerto Rican descent.

State grantees use state-based data to address asthma disparities, establish priorities, identify populations with the greatest burden, and develop programs to reduce the burden in subgroups. APRHB has allocated additional dollars to several state grantees to conduct projects specifically aimed at reducing asthma disparities. Asthma Disparities Programs in four funded states are highlighted below.

The Minnesota Asthma Program is targeting asthma education and self-management programs to 11 Native American tribes. The goals of this project are to develop culturally appropriate, comprehensive and sustainable tools to raise awareness about asthma, improve asthma management, increase the quality of asthma care, and promote self-management.

The New York Asthma Program is targeting healthcare system changes to improve asthma control among New York City African Americans and Hispanics enrolled in Medicaid or State Children's Health Insurance Program (SCHIP) managed care plans. The goals of this project are to eliminate disparities in asthma care in New York City; improve asthma control among the target population; implement evidence-based system change interventions among participating health plans and network physicians; and disseminate successful interventions.

The Oregon Asthma Program is increasing asthma self-management among low-income residents through Safety Net Clinics. The goals of this project are to reduce the rate of asthma hospitalizations and increase the proportion of persons with current asthma who report receiving self-management education.

The Washington State Asthma Program is developing a model tribal asthma home visit program based on the Port Gamble S'Klallam tribe for replication in other tribes throughout the state. The goals of this project are to develop an effective, replicable and sustainable model for a tribal

asthma home visit program and reduce ED visits, hospitalizations, symptom days, and missed school or work days.

APRHB maintains an active Asthma Disparities Workgroup with 16 state partners to discuss and assess current capacity and progress in addressing asthma disparities. The workgroup has played a critical role in developing, reviewing, submitting input and sharing information to finalize the Asthma Disparities Toolkit that will be released early in 2011. The toolkit will assist all states in using surveillance data to identify disparities, collaborating with partners and key stakeholders, developing interventions to address disparities, and assessing progress toward meeting the Culturally and Linguistically Appropriate Standards in healthcare service delivery.

The toolkit is being designed with four self-study units, tools, worksheets, resource lists, case studies and literature summaries. The self-study units will provide individual-level training on assessing program capacity, tailoring surveillance data to identify and target disparate populations at the state level, adapting interventions to meet the needs of specific communities, and fostering partnerships. The worksheets and resource lists will help grantees in developing, marketing, evaluating and sustaining asthma disparities strategic plans.

APRHB rigorously evaluates its asthma activities at national and state levels to assure impact, target program improvement, maximize the effectiveness of limited resources, advocate for state asthma programs and share successes. APRHB has taken action in several areas to build capacity for program evaluation.

An evaluation technical advisor was assigned to each grantee to coach state-based evaluators. Several resources, particularly the award-winning *Learning and Growing Through Evaluation* book, were developed to assist individual grantees and assure consistency in evaluation across states. Guidance documents are being designed at this time to assist state grantees in assessing their partners, surveillance systems and interventions for the purpose of evaluation. Opportunities will be identified in the near future for state grantees to engage local partners in conducting evaluation activities. APRHB posts all of its materials on the CDC website.

APRHB will provide guidance to state staff to use evaluation findings to measure and track the impact of their programs. State grantees will help APRHB to evaluate the national impact of NACP. State-based evaluators will be taught to assess process and practice to target specific improvements. Alignment of resources to meet priorities at the state level will be promoted. Standardized measures and tools will be developed. Promising intervention practices will be identified for broader replication.

APRHB is currently expanding its outdoor air pollution activities by collaborating with EHTB on health impact assessments. APRHB's role in this effort is assisting state public health agencies in using asthma and outdoor air pollution data for public health messaging. In terms of its indoor air pollution activities, APRHB is continuing to partner with the EPA Indoor Environments Division to analyze the relationship between asthma and home-related issues. APRHB is conducting a systematic review of home-related indoor impacts and interventions for asthma control.

Dr. Andrea Kidd Taylor, the BSC Lead Reviewer for APRHB, and other members of the Peer Review Team commended APRHB for disseminating asthma surveillance data that are essential to all federal agencies. Expert opinions by the Peer Review Team on APRHB's asthma control activities are outlined below.

- APRHB should develop a programmatic diagram to demonstrate the linkage among its six focus areas and illustrate the impact and evaluation outcomes of its interventions.
- APRHB should closely collaborate with BRFSS staff to include cellular phones in the national sampling design. The increase in cellular phone usage and the decrease in landline usage have led to a serious limitation in BRFSS in the 21<sup>st</sup> century in which target subgroups of the U.S. population are now under-sampled. Recent data show that cellular phone use is 25% or higher in low-income and minority populations, but these subgroups are specifically targeted in APRHB's asthma disparities programs.
- APRHB should develop a clear definition for "asthma health disparities" with specific measures, objectives and outcomes to determine progress. APRHB should not restrict its measures to existing components of the surveillance system. For example, a metric that is critical to asthma control in rural areas, but is not in the current surveillance system should be added.
- APRHB should analyze metrics that are relevant to public health assessments (PHAs) in deciding whether to use emission-based or observation-based models for outdoor air pollution. Observation-based models are better than emission-based models in determining short-term temporal variability in PHAs.
- APRHB should urge Washington State to review data to clearly demonstrate that the model tribal asthma home visit program will be transferable beyond the Port Gamble S'Klallam tribe. Living arrangements, politics and cultural traditions are radically different among tribes.
- APRHB should take a more strategic approach to encouraging its grantees to collect data that would be more effective and relevant for asthma prevention and targeted interventions. For example, New York should use SCHIP managed care plans to obtain data on prescription drugs to characterize chronic and acute asthma treatment among children. These data should be aggregated and linked to the Tracking Network to identify population-based disparities in areas with high concentrations of prescription drugs. The data also could be used to determine environmental contributions in certain communities among persons at most risk for asthma.
- APRHB should establish cooperative agreements with state health services departments rather than state health departments because these agencies maintain data that are superior to BRFSS. For example, BRFSS collects data on adults  $\geq 18$  years of age, while state health services departments maintain data on adults as well as children  $< 17$  years of age. This approach would provide a more accurate picture of asthma at the national level and address the higher prevalence of asthma among children than adults.

## Overview of the EHHE Climate Change Program (CCP)

Dr. George Luber is the Associate Director for Climate Change. He reported that three major questions were asked prior to the release of the landmark Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in 2007: (1) Is global warming occurring? (2) Are human activities responsible? (3) Can the responsible factors be quantified?

The IPCC Fourth Assessment Report changed the dialogue in the climate science community and marked a shift in the major questions that were asked: (1) What is the rate and magnitude of climate change? (2) What actions can be taken to mitigate greenhouse gas emissions and reduce future impacts on climate change? (3) What strategies can be applied for human and natural systems to adapt to these changes?

The landmark IPCC Fourth Assessment Report influenced CCP's role in developing adaptive strategies to respond to future climate changes. CCP was formally constituted as a program in March 2009 with a Congressional appropriation of \$7.5 million and a staff of ten FTEs. CCP leads efforts in the following areas: (1) identify health impacts of climate change and the populations most vulnerable to these impacts; (2) design programs to assist the public health community in anticipating future trends; (3) assure the availability of systems to detect and respond to emerging health threats; and (4) take actions to assure health risks can be managed now and in the future.

CCP plays a role in other critical areas as well. The latest findings in climate science are analyzed and translated to public health partners. These findings are applied to decision support tools (*i.e.*, vulnerability maps, surveillance tools and adaptation planning) to aid in the public health response at state and local levels. Leadership is provided within and outside CDC to ensure that public health concerns are represented in climate change adaptation and mitigation strategies and also to create linkages between efforts in public health and other sectors.

CCP identified a number of priority actions for climate change at CDC. To "translate climate science to public health partners," CCP identifies the health impacts of climate change and populations most vulnerable to these impacts; identifies regional climate trends that impact health; and models future health impacts. To support this priority action, CCP has produced and issued several reports, such as *A Human Health Perspective on Climate Change* and *Global Climate Change Impacts in the United States*.

CDC, EPA and other federal partners convened the Interagency Workgroup on Climate Change and Health to determine research priorities and gaps for climate change and health. This effort led to the development of *A Human Health Perspective on Climate Change* report that outlined 11 categories of human health consequences of climate change and summarized existing knowledge, the current state of the science and future research needs in this area.

On October 7, 2010, the White House announced that the Interagency Workgroup would receive a GreenGov Presidential Award, the "Green Dream Team Award," for its outstanding achievement in pursuit of President Obama's Executive Order on Federal Leadership in Environmental, Energy and Economic Performance.

To “develop support tools for state and local public health,” CCP provides technical guidance and support for adaptation planning, creates vulnerability maps, and enhances surveillance tools. To support this priority action, CCP is collaborating with EHTB to design and incorporate a climate change portal into the Tracking Network that will integrate weather and climate data with health and environmental health monitoring data to better analyze health trends.

To “strengthen leadership and collaboration,” CCP communicates the critical importance of public health in the climate change response and creates linkages between efforts in public health and other sectors. To support this priority action, CCP is extensively involved with research and other activities conducted by IPCC, the U.S. Global Change Research Program, and the Austin, Texas Climate Protection Program.

CCP awarded seven extramural grants in FY2009 totaling \$2.1 million per year for three years to enhance the science base to better understand the relationship between climate change and health outcomes. The seven funded extramural research projects cover a wide variety of health impacts and will fill critical gaps in the following areas:

- Mosquito-borne arbovirus transmission.
- Ciguatera ecology and the Atlantic Warm Pool.
- Gastrointestinal illness linked to environmental contamination.
- Climate change-related morbidity and mortality.
- Tick-, water- and food-borne diseases, adverse birth outcomes, and cold-related diseases.
- Heat-related morbidity and mortality.
- Cumulative climate-related health risks in the Eastern United States.

CCP’s other ongoing programmatic activities are highlighted as follows. CCP will launch the “Climate-Ready States and Cities” Initiative in December 2010 to enhance state and local capacity to address challenges associated with climate changes. CCP will award three-year cooperative agreements to state and local health departments to develop public health capacity adaptation plans to reduce human health effects of climate change. To assist grantees in creating adaptation plans, CCP will develop decision support tools (i.e., communication, educational and vulnerability mapping tools).

CCP awarded Category 1 funding to four states and one city health department that have limited experience in climate change. These grantees will assess the current capacity of state and local agencies in climate change; engage in early strategic planning and implementation to develop climate change programs; and build partnerships to link to other initiatives beyond environmental health. The Category 1 grantees (Arizona, Massachusetts, New York City, North Carolina and San Francisco) will receive awards ranging from \$80,000-\$120,000 per year for three years.

CCP awarded Category 2 funding to four states and one city health department to build on their existing capacity to implement climate change programs and adaptations. These grantees will implement climate change strategic plans; identify and predict health impacts and vulnerabilities at population and system levels; develop and tailor health programs; and conduct health impact

assessments to identify co-benefits and unintended consequences of policies, programs and projects in other sectors. The Category 2 grantees (Maine, Michigan, Minnesota, New York City and Oregon) will receive awards ranging from \$150,000-\$250,000 per year for three years.

CCP developed tools to support the public health response to climate change at state and local levels. These resources include vulnerability assessments and mapping; local EPH indicators for climate change; and improvements in state-based Heat Watch Warning Systems for decision support using National Aeronautics and Space Administration data and models. CCP also created communication and educational tools, such as the “Extreme Heat Media Toolkit” and the “Preventing and Treating Heat-Related Illness” e-learning course.

Overall, CDC’s expertise and programs in environmental health, infectious diseases and other disciplines form the foundation of public health efforts in preparedness for climate change. A strong demand exists for leadership to translate climate science into public health action. The health consequences of not taking action at this time are high.

Dr. Cynthia Warrick was selected as the BSC Lead Reviewer for CCP. Her expert opinions on CCP’s climate change activities are outlined as follows. CDC is to be commended for taking leadership at the federal level to fund and support research on the health impacts of climate change. However, CCP should take actions at this time to refine its climate change portfolio.

CCP should attempt to leverage additional resources to expand its climate change activities to other parts of CDC, particularly the Tracking Network. CCP should take a strategic approach to elevate the significance of climate change-related health impacts among health professionals. CCP should make presentations at national conferences of the American Medical Association, National Medical Association, nursing and pharmacy associations and other professional societies to ensure that healthcare providers recognize and understand the relationship between climate change and health.

Increased knowledge through presentations and the dissemination of materials would improve the likelihood that clinicians, school nurses and healthcare providers in other settings would routinely discuss prevention of climate change-related health impacts with their patients.

Expert opinions by other members of the CCP Peer Review Team on CCP’s climate change activities are outlined below.

- CCP should develop a long-range strategic plan with concrete action steps to generate needed scientific information on climate change. These data should be used to inform intramural research with CDC investigators, extramural research with grantees and other external collaborators, and external research with the National Institutes of Health and other federal partners. The strategic plan also should describe efforts that CCP will make in the future to expand the scope of its climate change activities beyond heat-related health impacts and place greater emphasis on other important health impacts, such as extreme storms and vector-borne diseases.
- CCP should allocate a portion of its budget to improve training on climate change to the public health workforce. Recent surveys have consistently shown increased interest, but

minimal knowledge and capacity in climate change among state and local health departments across the country.

- CCP should develop rigorous outcome metrics beyond grant awards to evaluate the impact and success of its climate change activities at state and local levels. Clearly defined outcome measures will be critical because CCP is a new program that has awarded funds to several different research projects and capacity building activities at state and local levels. Moreover, the level of success in conducting the funded climate change programs will widely differ across grantees.
- CCP should design an effective marketing strategy to address the future impact of the political environment on its funded climate change programs. Politicians and other uninformed sources have given the general public a wealth of inaccurate information on climate change. CCP should draw on CDC's strong scientific credibility to educate and provide the general public with accurate and evidence-based information on climate change. CCP should replicate efforts by the Recreational Water Program to directly outreach to the public. In this model, the Recreational Water Program partnered with "Healthy Beaches" and "Healthy Swimming" initiatives to disseminate information to the public on websites. CCP should redesign its website with key information on climate change-related health impacts in laymen's terms to directly educate the public.
- CCP should recruit staff with expertise in disciplines beyond geographic information systems, such as cartography and geography. Capacity to create maps to effectively convey and accurately communicate climate change endpoints will be extremely useful to CCP. For example, mapping endpoints in the built environment, particularly in urban areas, and mapping the impact of climate change on city planning are largely untapped areas. Master planners typically do not consider health implications while developing city plans. CCP should make presentations at American Planning Association meetings as an initial step in helping to build the future climate change workforce.
- CCP should develop a long-term approach to sustaining relationships with state and local health departments and academic institutions after the funding cycle of the climate change programs ends. For example, CCP should advise its grantees to build strong partnerships with permitting officials within environment, transportation and land use planning departments at state and local levels to ensure that climate change-related health impacts are considered during the decision-making process.
- CCP should partner with ATSDR-/EPA-funded Pediatric Environmental Health Specialty Units (PEHSUs). PEHSUs are a national network of environmental health experts that can facilitate linkages to three key audiences to enhance knowledge of climate change-related health impacts: (1) academic institutions to train the public health workforce, (2) healthcare providers to raise awareness in communities and regions across the country, and (3) the general public to provide education.
- CCP should reconsider its approach to developing a Surveillance and Response Toolkit in Alaska. CCP will rely on community residents in Alaska to provide anecdotal reports on unusual shifts in the behavior and health of fish and game, but this project design appears to be "unscientific."
- CCP should partner with the Tracking Network to gather and disseminate best practices in data analyses that demonstrate excessive heat stroke deaths as a result of heat waves.

- CCP should utilize CDC's strong public health role to redirect a portion of emergency preparedness dollars that are awarded to states and big cities for bioterrorism and other rare or non-existent events to broader preparedness activities. For example, funding to conduct climate adaptation exercises with municipal state agencies for near- and long-term consequences would benefit acute and rare events.

Dr. Portier thanked the BSC members and ad hoc peer reviewers who served on the Peer Review Teams for providing NCEH/ATSDR with concrete advice to refine the research and other EPH activities conducted by EHTB, APRHB and CCP. He reiterated that NCEH/ATSDR looks forward to the BSC's formal peer review report of these three organizational units.

### **BSC Evaluation of ATSDR-Funded State Reports**

Dr. Portier explained that this new topic was placed on the agenda for select BSC reviewers to assess individual ATSDR-funded state reports and for the entire BSC to evaluate the overall concept of these analyses. The eight funded state reports the BSC would evaluate during the meeting were selected based on the following criteria: (1) Is the report short and succinct? (2) Has the report been completed by the funded state and approved by ATSDR leadership? (3) Does the report reflect diversity in terms of the types of exposures or pollutants and geographic locations?

Dr. Portier asked the BSC to give feedback on the quality, science base, areas of improvement and public health need of the funded state reports to aid in ATSDR's decision-making process of whether to aggressively pursue, continue or discontinue additional public health activities at these sites. ATSDR would use the BSC's guidance and recommendations to strengthen the effectiveness and efficiency of its funded state programs and develop long-term strategic plans.

Dr. Portier pointed out that the BSC members were given the eight funded state reports for review well in advance of the meeting to eliminate the need for ATSDR to make presentations prior to the discussion. However, he noted that Dr. William Cibulas, Director of the ATSDR Division of Health Assessment and Consultation, and Dr. Tina Forrester, Director of the ATSDR Division of Regional Operations, were in attendance to respond to any additional comments or questions by the BSC members.

Comments, expert opinions, observations and recommendations by the BSC members on the eight ATSDR-funded state reports are outlined below.

#### **1. Amsted Rail Company, Inc. (Griffin Wheel Facility); Keokuk, Iowa Manganese Emissions**

The report is fairly brief and was prepared by the Iowa Department of Public Health in response to a community request to evaluate human health impacts from manganese emissions. The report estimated the amount of emissions and described the potential risk of these emissions to humans. The report found no problems from manganese emissions to the community.

The BSC reviewers characterized the report as “not very good” based on several issues. The facility is located near a residential area that most likely includes children, but all exposure and risk assessments described in the report were based on adults and were not age-adjusted. Although the report emphasized a concern for school-age children, exposures to schools were not addressed and the proximity between the facility and schools was not mentioned.

The report did not consider synergistic effects from both lead and manganese; mention the occurrence of high-exposure events; confirm whether the facility is only a source of low-level constant emissions; reference data on the ability of the human body to excrete manganese; or describe chronic low-level manganese exposures and exposures over years of accumulation.

The same measurement units (*i.e.*, English or metric units) typically are used throughout a single report to document findings, but this report used different measures with no explanation or scientific basis for this approach. The conclusion of “having no concern,” but “emphasizing the need to repeat the study” was inconsistent.

## **2. Private Residence; Canal Winchester (Franklin County), Ohio Residential Indoor Air Concerns**

The report was prepared by the Ohio Department of Health (ODH) in response to concerns regarding toluene exposure in a private-party single-occupancy residence. ODH and private consultants collected data from the same location on two previous occasions. Sampling was extremely limited and only produced two volatile organic compound (VOC) samples in sample 1 and one VOC/particulate sample in sample 2.

The BSC reviewers concluded that the well-written report reflected a professional response from ODH and private consultants. All residential air concerns in terms of potential or actual causes of exposure were addressed. Toluene was detected at 1-2 orders of magnitude lower than the threshold level. The complainant was assured that toluene exposure was not detected at the residence. The report had limited applicability and interest to the general public as a whole.

## **3. Vincent Settlement Elementary School; Calcasieu Parish, Louisiana School Air Toxics Survey Data**

The report was prepared by the Louisiana Department of Health and Hospitals and submitted to the Louisiana Department of Environmental Quality regarding school air toxics survey data. In December 2008, *USA Today* ranked Vincent Settlement Elementary School in the first percentile of select schools in Louisiana that were impacted by effects of industrial pollution on air quality.

The BSC reviewers found the report to be virtually useless and of poor quality. The timeliness of using December 2008 data as the basis for a July 2010 report was questionable. The sampling analysis was extremely limited. Contaminants detected from an air monitor located in the school parking lot were screened, but these data most likely were not representative of emissions to playgrounds and other areas of the school where children spend more time.

Non-carcinogenic contaminants were found to pose no short-term non-cancerous effects or harm to the public, but these concentrations were based on one 10-second sample collected. Four contaminants were identified as contaminants of concern for carcinogenic effects, but a cancer risk determination could not be made based on the 10-second sample collected. The BSC reviewers determined that the conclusions were justified based on the analysis, but the dissemination of these results to local health departments and the affected community was unknown.

#### **4. Excelsior Parkland Dump; City of Excelsior (Hennepin County), Minnesota Polycyclic Aromatic Hydrocarbons**

The report was prepared by the Minnesota Department of Health in response to public health concerns from a municipal dumpster that had surface erosion and exposures of deposited construction debris in several locations where children played over a long period of time, including an unused corner of a park, a community garden and a former hockey rink. Based on in-depth surface samples that were collected, no exposure issues were detected.

The BSC reviewers found the report to be “top-notch” and of exceptional high quality. The evaluation of the collected samples was solid. The framework and design of the health consultation were comprehensive. The report described a strong relationship with the community in which local residents were contacted, data were gathered from the affected area, and the community was provided with numerous opportunities to become involved and provide feedback.

The report did not outline a clear process to disseminate results to primary care practitioners and pediatricians of children who might have been exposed. The report did not address the issue of mixtures from metals and other compounds. However, the BSC reviewers raised the possibility of using the report as a model in conducting health consultations at other small community waste sites.

#### **5. Dee Foundries; Houston (Harris County), Texas Metals**

The report was prepared by the Texas Department of State Health Services in response to potential public health hazards associated with metals found in soil samples. The City of Houston collected soil samples from both the facility and residential yards. The facility has been in operation since 1934 and produces non-ferrous sand casting products made of aluminum and bronze alloys. The facility is apparently in a residential area, but the report did not clearly illustrate its geographic location.

The BSC reviewers questioned the rapid timeline of the health consultation. Five onsite soil samples were collected in October 2009, the request for the health consultation was received in March 2010, and the report was developed in June 2010. The BSC reviewers expressed a number of technical concerns. The reasons to sample specific metals described in the report were unclear. For example, sampling was performed for cadmium and silver, but the facility

actually produces aluminum that uses a magnesium alloy. The protocol that would be used in the future to sample local playgrounds for possible contamination was unclear as well.

The description of the site activities and the process used to reach conclusions was fairly solid. The basic recommendations were valid and appropriate, but communication of some results was problematic. For example, "It is not known if copper has the potential to cause cancer in humans," could be better articulated. The detection of copper at higher levels than minimum risk levels was repeatedly described in the conclusions as a public health hazard, but the community potentially could misinterpret this statement.

#### **6. Donna Reservoir and Canal System; Donna (Hidalgo County), Texas Polychlorinated Biphenyl (PCB) Contamination in Fish**

The report was prepared by the Texas Department of State Health Services in response to community concerns of neural tube defects in infants as a result of PCB contamination in fish. The BSC reviewers found that the analysis was based on rigorous science and available data. The conclusions were reasonable and the presentation of data was solid.

The BSC reviewers could not determine the added value or rationale of the report. The analysis merely summarized data collected over the past ten years and repeated another report that had been developed more recently. The report attempted to assess whether community health concerns still existed, but the process used in this effort was informal and rather sporadic. Community input was limited to conversations with fishermen at the canal and a community meeting where no health concerns were expressed.

The conclusions of the presence of high levels of PCB contamination in fish and the absence of heavy metal contamination were not sound due to limited community engagement. Community education was limited to distributing brochures and meeting with a few physicians. The BSC reviewers were concerned with the conclusion that awareness of the problem was heightened among local residents based on site visits to the community and informal health education activities.

Despite the current report and the release of other data over the past ten years, the community continues to consume PCB-contaminated fish from the canal. The BSC reviewers did not find that standard and effective health education methods were applied to warn the community about the dangers of consuming fish from the canal.

#### **7. Westwind Intermediate School; Phoenix (Maricopa County), Arizona Soil Contaminants**

The report was prepared by the Arizona Department of Health Services (ADHS) in response to a request by the Pendergast School District to conduct a health consultation. The school was built in 1974 on top of a former crop dusting airport. The purpose of the health consultation was to evaluate the public health risk to school staff and students who may have come into contact with contaminants found in the soil.

The BSC reviewers found the background, methodology and rationale of the report to be well written and clearly articulated. The summary of possible cumulative effects of dieldrin and toxaphene was solid. However, the scientific terminology appeared to be overly complex and technical for the target audience of a school district. Other terms were utilized with no definition or clear explanation, such as “grab soil samples,” “spatially averaged soil concentrations,” and “harmful non-cancer effects.”

The presentation of cancer data was confusing as evidenced by the following three inconsistent statements. The tested pesticide soil concentrations exceeded their comparison values and were maintained for further evaluation. Toxaphene was found to have low-level cancer risk. Toxaphene and dieldrin are not expected to harm an individual’s health. The use of different measures throughout the report most likely contributed to inconsistencies between the results and conclusions, but this methodology was not explained in the presentation of data.

The report confirmed that ADHS would attend a public meeting, make a presentation and develop handout literature as requested by the school. The BSC reviewers were not confident that the handout materials would contain accurate information on cancer. The report definitively concluded that toxaphene and dieldrin would not be expected to harm an individual’s health, but cancer epidemiologists would find the results to be inconclusive based on the presentation of data.

The method of using both dieldrin and toxaphene comparison values and ATSDR’s Chronic Environmental Media Evaluation Guide (EMEG) values was questionable. EMEG values are not publicly available in the literature and should not be referenced in reports that will be placed in the public domain. Moreover, the EMEG values were used as the basis for the final health evaluation, but the difference between the comparison values and EMEG values were three orders of magnitude.

The conclusions were reasonable, but only one recommendation was made to develop a safety and pollution control plan. Because the site would be undergoing reconstruction, the guidance was limited in terms of taking other precautionary measures and assessing further public health risks.

## **8. Hamilton-Sundstrand Resource Conservation and Recovery Act (RCRA) Site; Denver (Adams County), Colorado; Various Wastes**

The report was prepared by the Colorado Department of Public Health and Environment in response to various wastes that were generated during operations at the plant, including PCBs, solvents, and petroleum-based oils laden with tetrachloroethene and trichloroethene. The plant manufactured and tested components for the aerospace industry from 1955-2004. The report focused on contaminants in subsurface soil to determine whether an existing environmental covenant restricting future land use could be removed to build housing on the site.

The BSC reviewers found the report to be comprehensive, well written and easy to understand. The report was fairly solid from several technical perspectives, such as analyzing the northern and southern portions of the site; presenting toxicology data; considering childhood exposures;

and clearly defining “no observed adverse effect level” and “lowest observed adverse effect level.” However, the purpose of developing the report at this time was unclear because the plant has been a RCRA site for six years and the surrounding community has not raised any public health concerns to date.

The BSC reviewers agreed that the data presented in the report supported the recommendation to continue to enforce the environmental covenant and prohibit future residential development on the site. However, the report did not outline clear plans to disseminate results of the PHA, provide health education to stakeholders in the surrounding community, or remediate subsurface soil to an acceptable cancer risk level.

To fulfill the second part of its charge, the BSC made a number of overarching comments and recommendations on the concept of ATSDR-funded state reports.

- The reports are useful overall in communicating outcomes of PHAs to the public, but the format should be modified to be more relevant and consistent. ATSDR should provide its funded states with a standardized template to develop reports and clear instructions to conduct PHAs from the initial stage of data collection through the final phase of community engagement. This approach would promote consistency across all aspects of the PHA. For example, each PHA report should include an executive summary in plain language that outlines the major conclusions, next steps and links for communities to obtain additional information.
- The quality of the PHA reports widely varied and the conclusions were inconsistent with the presentation of data in some instances. ATSDR should require its funded states to “peer review” rather than merely “certify” their reports. For reports of low quality, ATSDR should not sign the certification page to concur with the findings of a weak PHA or adopt and disseminate the report as an “ATSDR-approved” product. Instead, ATSDR’s signature on low-quality reports should only acknowledge that the funded state prepared and submitted the document in accordance with the terms and conditions of the cooperative agreement. ATSDR’s traditional approach of supporting all PHA reports in writing, including those of poor quality, has been problematic in gaining community trust and also has contributed to ATSDR’s negative reputation in communities across the country. In an effort to overcome this barrier, ATSDR should inform its funded states about specific issues to address in the report at the outset of conducting the PHA.
- The vast majority of ATSDR PHAs are conducted in response to community requests, but their concerns, input, complaints or perceptions of adverse health effects typically are not included in funded state reports. Moreover, PHAs often exclude vulnerable populations and household sampling of attic dust, carpet dust or other specific areas to determine actual, cumulative or historical exposure.
- ATSDR-funded states typically use existing EPA data instead of collecting new data to respond to community concerns, (*i.e.*, the Excelsior Parkland Dump in Minnesota). Most of the reports concluded that chemicals or pollutants detected at the sites did not pose a public health concern, but these findings appeared to be those of EPA rather than the funded state health department.
- ATSDR would receive a better return on its investment in PHAs by training the existing public health workforce and contracting trusted academic institutions with expertise in

public health and toxicology. This approach would place ATSDR in a more solid position to obtain community input, gain trust and endorsement by impacted stakeholders, and develop more relevant and meaningful research questions.

- ATSDR should reconsider its allocation of resources to investigating concerns of a single private-party residence, particularly in light of deaths from carbon monoxide poisoning and other serious environmental health concerns. For example, one individual who lived ~1 mile from a facility in Ohio complained about indoor air quality from possible toluene exposure on two separate occasions, but the broader community did not express concerns about ambient pollution from this chemical. Alternatively, ATSDR should adopt a standard operating procedure of communicating results of a report to the entire community if a PHA was conducted in response to concerns raised by a single individual or family.
- ATSDR should devote more of its own federal resources to conducting environmental sampling at Superfund sites instead of primarily relying on EPA and state agencies.
- ATSDR should consider the possibility of establishing a state-based “Central Response Team” that would be responsible for collecting environmental samples at all Superfund sites and assuring the quality and consistency of PHA reports.
- ATSDR should review the National Institute for Occupational Safety and Health (NIOSH) model in an effort to address constraints in its budget and state staff and systemically categorize and triage PHA petitions. NIOSH receives thousands of requests for investigations each year, but informative letters rather than actual field visits are used to respond to many of these requests. NIOSH has found that solid recommendations, conclusions and next steps from investigations in the past can be applied to other sites. ATSDR should explore the possibility of designing a database with recommendations, conclusions and next steps that would be applicable across multiple sites to eliminate the need to conduct a PHA in response to each petition.

Drs. Portier, Cibulas and Forrester agreed with the BSC’s overarching comments and concerns regarding the PHA reports. Most notably, ATSDR will take action on the BSC’s concern regarding the critical need for PHA reports to clarify and clearly distinguish between various federal/state comparison values and EMEG values. However, ATSDR will be legally restricted from taking action on other recommendations because PHAs must be conducted in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The BSC advised ATSDR to require its funded states to peer review their PHA reports. ATSDR can more strongly “encourage” or “promote” this effort, but PHA reports are exempt from mandatory peer review. This restrictive language was incorporated into CERCLA to ensure that PHAs are completed in a timely manner and the results are disseminated to communities as quickly as possible.

However, ATSDR will take the BSC’s recommendation under advisement to “acknowledge” receipt of low-quality PHAs in writing, but not “approve” these documents. CERCLA does not require ATSDR to sign each PHA report. Moreover, ATSDR has created a temporary internal independent review process of PHA reports across divisions and organizational structures.

The BSC advised ATSDR to reconsider its allocation of resources to investigating concerns of a single private-party residence. CERCLA grants authority to any individual citizen, physician or member of Congress to petition ATSDR to conduct a PHA in response to potential exposure to a hazardous substance as a result of a release from a facility.

However, ATSDR will take the BSC's recommendation under advisement to routinely disseminate results of a report to the entire community if a PHA was conducted in response to concerns by a single individual or family. ATSDR also will continue to use its discretion in allocating resources to investigating private-party petitions.

ATSDR leadership responded to the BSC's questions regarding the overall funded state portfolio. The total annual budget of the Cooperative Agreement Program is \$10 million with awards ranging from \$200,000-\$700,000 across 29 states and one tribe. The total workforce is ~85 staff at the state level with a range of 3-7 personnel in each state. Over the past 12 months, ATSDR and its funded states collectively issued 44 PHAs (32 by states), 140 public health consultations and exposure investigations (124 by states), and 350 technical assistance reports (301 by states).

### **Update on the National Amyotrophic Lateral Sclerosis (ALS) Registry**

Dr. David Williamson is the Director of the ATSDR Division of Health Studies. He reported that the national prevalence of ALS is estimated at ~30,000 persons at this time, but ATSDR established the registry because the true prevalence of ALS is unknown. The registry also serves as a mechanism for ATSDR to collect more solid data and better characterize persons with ALS.

ATSDR began considering the development of the registry in the late 1990s in response to numerous requests from individuals and communities across the country to conduct ALS studies due to clusters that were detected. ATSDR's initial step in this effort was to fund four pilot projects in Georgia, Minnesota, South Carolina and a health maintenance organization consortium from 2006-2009 to better characterize ALS with more accurate estimates of the prevalence and incidence of disease in well-defined areas.

The purpose of the pilot projects was to determine the feasibility of conducting a national ALS Registry using large national databases. The pilot projects resulted in the development of algorithms that sufficiently identified ALS patients from large national databases with a positive predictive value of 85%. ATSDR then overcame several legal hurdles to use Lou Gehrig's likeness to brand the registry and gain instant credibility.

During the time that ATSDR was conducting its four pilot projects, Congress passed the ALS Registry Act as Public Law 110-373 in October 2008. The legislation granted authority to CDC to develop the ALS Registry with three major goals: characterize the incidence and prevalence of ALS; describe the demographics and other characteristics of ALS patients; and examine risk factors for ALS.

ATSDR designed the ALS Registry with a two-pronged approach with both educational and service components to effectively capture cases. National databases represent ~90 million Americans and are the first tier of the ALS Registry. ATSDR is using four databases of the U.S. Department of Veterans Affairs (VA) and the Centers for Medicare and Medicaid Services to create algorithms for the ALS Registry. The algorithms will be designed to avoid duplication of the same ALS patient.

ATSDR will use the national databases to provide continuing education credits, fact sheets, technical reports, scientific articles and other resources to physicians to improve healthcare delivery and access to ALS patients. ATSDR hopes the national databases will result in better data collection and enhanced knowledge of the etiology of ALS to ultimately develop a cure for the disease.

The web portal is the second tier of the ALS Registry. ATSDR recently launched this resource on October 19, 2010 to capture patients who are not in national databases; maintain data gathered from risk factor and physical activity modules; provide patients with contact information and other details of ongoing ALS clinical trials; and allow patients to self-register in the ALS Registry.

The risk factor modules are short surveys that ask questions about the patient's personal health history, family health history, occupation and other risk factors (*i.e.*, tobacco use, alcohol consumption and military service). In only two days since ATSDR launched the web portal, >500 patients have self-registered in the ALS Registry.

ATSDR developed a flowchart to clearly define the organizational structure of the two methods being used to populate the ALS Registry. The four national databases will be used to apply algorithms from the four pilot studies; characterize persons as "non-ALS," "potential ALS" or "true ALS" patients; and conduct follow-up to gather more accurate data. The web portal will be used to register individuals, validate responses to questions, and determine eligibility for the ALS Registry.

ATSDR used diverse mechanisms to widely publicize the rollout of the ALS Registry, including press releases and postings on the CDC/ATSDR websites; social media (Facebook and Twitter); advocacy groups (Amyotrophic Lateral Sclerosis Association and Muscular Dystrophy Association); presentations at national conferences (American Public Health Association and American Academy of Neurology); and journal advertisements. ATSDR's communication efforts resulted in broad dissemination of several ALS Registry products, such as fact sheets, trifolds, e-buttons and e-cards, videos for physician education, webinars and promotional giveaways.

ATSDR hosts a national ALS meeting each year with ALS physicians, patients, partners, U.S. and international experts, and other stakeholders to obtain external input on next steps to improve the ALS Registry. These meetings have played a critical role in ATSDR formulating and prioritizing future plans for the ALS Registry. ATSDR currently funds three state health departments in Florida, New Jersey and Texas to conduct ALS surveillance projects. This funding will be expanded to include 4-6 local health departments by the end of 2010.

ATSDR-funded ALS surveillance projects at state and local levels will enhance knowledge of existing data; increase coverage of ALS patients at the national level; identify other algorithms (*i.e.*, hospital discharge and death certificate data) that potentially could be applied to and integrated into the ALS Registry; and engage specific subgroups outside of the national databases. ATSDR will complete data collection from the state and local surveillance projects in 2011 and release this information in 2012.

ATSDR will enhance its existing partnership with VA in the future to place more emphasis on developing a comprehensive biomonitoring program. ATSDR will explore the feasibility of linking banked DNA and brain samples. ATSDR will develop a formal communication mechanism to share ALS Registry data with outside researchers while ensuring the privacy, security, protection and confidentiality of ALS patients.

ATSDR will establish independent scientific advisory committees to review and evaluate research project applications submitted by external investigators with an interest in using ALS Registry data. ATSDR has already consulted with NCHS to replicate its excellent model of evaluating applications for external research projects.

The BSC applauded ATSDR leadership and staff for their outstanding efforts in developing and launching the ALS Registry. Dr. Ryan confirmed that updates on the ALS Registry would be placed on future BSC agendas as an ongoing item.

### **BSC Discussion on the New Peer Review Process: Session 1**

Dr. Portier provided the Peer Review Teams with additional guidance on the development of their reports of the EHHE program and branches as well as other aspects of the new peer review process. The Peer Review Teams would compile their notes from the EHHE overviews and discussion sessions and obtain additional feedback from other BSC members as needed to prepare their preliminary reports.

The minutes of the October 2010 BSC meeting would be available to the Peer Review Teams as an additional resource to aid in the development of the preliminary reports. The Peer Review Teams would be given three months to submit their final reports to NCEH/ATSDR. Staff in the NCEH/ATSDR Office of the Director would provide the Peer Review Teams with administrative support to convene conference calls during the development of the reports.

Dr. Portier clarified that the one-hour session in which the Peer Review Teams would present their preliminary findings of the EHHE program and branches to NCEH/ATSDR leadership on the following day after the meeting was adjourned would be more of an informal conversation. The Peer Review Teams would not be expected to present written reports or PowerPoint slides during the one-hour session.

The Peer Review Teams would be asked to discuss their initial observations and impressions of the EHHE program and branches in terms of areas of improvement. The one-hour session would provide NCEH/ATSDR with guidance on next steps in the interim of the Peer Review Teams submitting their final written reports.

Dr. Ryan opened the floor for the BSC to provide feedback on the new peer review process.

- The BSC commended Dr. Portier for his leadership and vision in shifting from a targeted to a strategic approach for the peer review process. However, several members noted that NCEH/ATSDR should have provided the BSC with clear guidance on the format, structure and expectations of the new peer review process in advance of the meeting.
- The BSC was encouraged by the positive energy and extensive engagement during the discussion sessions following each EHHE overview. However, several BSC members emphasized the need to build in additional time for discussion following presentations by peer-reviewed programs into future agendas. The extended discussion periods would allow the BSC to ask clarifying questions and provide more useful advice to NCEH/ATSDR.
- The BSC pointed out that the previous targeted process allowed the members to extensively meet with leadership and staff of peer-reviewed programs during breakout groups, ask clarifying questions, conduct an honest and thorough assessment of the program's strengths and weaknesses, and submit a meaningful product to NCEH/ATSDR. The new strategic process appears to be "superficial" because branch chiefs and a program director presented the EHHE overviews during the current meeting. The BSC was not given an opportunity to meet with staff in private to discuss problems or issues within the program. Several BSC members expressed concern about the quality of the peer review reports that would be produced with the new process and emphasized the need to strike an appropriate balance between the previous targeted process and the new strategic process. For example, the new process should be modified to allow Peer Review Teams to have one-on-one interactions with their peer-reviewed programs while maintaining a format for the full BSC membership to collectively discuss these programs.
- Some BSC members expressed uncertainty about the ability to conduct a strategic peer review of EHHE because the pre-meeting materials and the overviews presented during the meeting did not support this approach. The materials were not objective, did not describe metrics, and appeared to be compiled by leadership and staff with a personal vested interest in their respective programs. During the last peer review of the Division of Laboratory Sciences (DLS), however, the programs provided the BSC with more critical data rather than a general overview. For example, the DLS materials described the programs' previous successes and current challenges, annual and five-year goals, activities that would be conducted to achieve these goals, and gaps in existing resources. The DLS materials for the last review appeared to be more supportive of a strategic peer review than the EHHE materials for the current review. The DLS materials also allowed the BSC to provide more constructive criticism to NCEH. The BSC members cautioned that the Peer Review Teams would be extremely challenged in using the EHHE materials and presentations to develop reports for a strategic peer review.

Dr. Portier thanked the BSC for providing honest and insightful feedback. He reiterated that the new process is designed as a more strategic and broader peer review of NCEH/ATSDR as an organization rather than an evaluation of program activities at the staff level. With the new peer review process, the BSC's role will be to provide advice and recommendations on major flaws, concerns, errors and areas that can be strengthened in NCEH/ATSDR as a whole.

Dr. Portier was aware that some BSC members were in favor of the peer review process utilized during the May 2010 meeting. However, he was concerned that in this process of a more targeted peer review, staff had tremendous influence on issues the BSC covered in its report. His position was that the extensive details outlined in the peer review report might not necessarily have been opinions of the BSC.

Dr. Portier turned to the BSC's comments regarding pre-meeting peer review materials. To ensure consistency in the structure and format of materials across programs, he proposed dividing the binders with the following section headings: mission, goals, resources, barriers, accomplishments and future directions. However, he confirmed that the BSC members would be polled via e-mail to indicate their preference in receiving hard-copy binders of the materials or web links to the documents. He encouraged the BSC members to contact him via e-mail or by telephone with additional suggestions to improve pre-meeting peer review materials.

Dr. Portier confirmed that NCEH/ATSDR's input would be used to modify the new peer review process. Similar to a national meeting, for example, posters could be displayed and booths could be established during BSC meetings. In contrast to breakout groups, a poster session format would provide the full BSC membership with an opportunity to visit the booths and ask NCEH/ATSDR questions about the posters and other materials for all of the peer-reviewed programs.

Dr. Portier proposed another option to modify the new peer review process. NCEH/ATSDR programs from different divisions that should be related in one content area could be reviewed at the same time.

Several BSC members supported this approach because cross-division peer reviews of content areas could focus on efficiently leveraging resources and identifying common opportunities across programs, organizational structures and silos. However, the BSC emphasized the critical need for NCEH/ATSDR to establish a strong foundation for this type of approach. For example, the Office of the Director would need to present a comprehensive overview of its vision and strategic direction for NCEH/ATSDR as a whole.

Dr. Portier closed the discussion by summarizing the BSC's key points that NCEH/ATSDR would particularly consider to improve the new peer review process. More structured and strategic materials of peer-reviewed programs should be distributed in advance of meetings. Discussion sessions following presentations by peer-reviewed programs should be extended.

Breakout groups should be incorporated into BSC meetings to allow Peer Review Teams to have one-on-one interactions with leadership and staff of peer-reviewed programs. More

consideration should be given to and a clearly defined process should be developed before cross-division reviews are included in the new peer review process. The possibility of holding poster sessions during lunch breaks of BSC meetings should be considered.

### **Public Comment Session**

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

With no further discussion or business brought before the BSC, Dr. Ryan recessed the meeting at 4:19 p.m. on October 21, 2010.

### **BSC Discussion on the New Peer Review Process: Session 2**

Dr. Ryan reconvened the BSC meeting at 8:33 a.m. on October 13, 2010 and yielded the floor to Dr. Portier to resume the BSC's discussion on the new peer review process.

Dr. Portier confirmed that the same Peer Review Teams of BSC Lead Peer Reviewers and ad hoc peer reviewers would meet with the EHHE program and branches for one-half day during the next BSC meeting. Based on the discussion on the previous day, he was aware that the BSC members were concerned about the lack of time to extensively review EHHE and expressed a desire for one-on-one interaction with leadership and staff of the peer-reviewed programs.

Dr. Portier asked the Peer Review Teams to prepare their reports with clear guidance to NCEH/ATSDR on existing gaps, areas that need improvement, and other strategic aspects of the peer-reviewed programs. Because the BSC would have an opportunity to meet with EHHE during the next meeting, he announced that the one-hour session with the Peer Review Teams and NCEH/ATSDR leadership would not be held after the current meeting was adjourned.

Dr. Portier requested the BSC's input on the format and structure to peer review the next three branches. For example, the branches could present their overviews during one meeting and the Peer Review Teams could meet with leadership and staff of the same branch six months later during the next meeting.

The BSC made several remarks in response to Dr. Portier's proposed approach for the next peer review. NCEH/ATSDR should provide the Peer Review Teams with staff support to convene conference calls with peer-reviewed programs in between meetings. This approach would allow the Peer Review Teams to discuss any outstanding issues with the programs, review the meeting minutes, and draft and submit their reports to NCEH/ATSDR in a timelier fashion. Conference calls in between meetings also would eliminate the six-month lag in the option that Dr. Portier proposed for the BSC to complete a peer review.

Based on this feedback, Dr. Ryan proposed the following schedule and agenda items for the BSC to conduct future peer reviews.

- Wednesday afternoon (half-day): High-level presentations by leadership of three programs and discussion sessions with the full BSC membership.
- Thursday (full day): Breakout groups with the Peer Review Teams and program staff, a working session for the Peer Review Teams to draft their preliminary reports, and updates on NCEH/ATSDR activities of non-peer reviewed programs.
- Friday morning (half-day): Presentations of the draft peer review reports by the Peer Review Teams to the full BSC membership and updates on NCEH/ATSDR Division activities.
- Post-meeting activities: Conference calls with the Peer Review Teams and peer-reviewed programs and a review of the meeting minutes to aid the Peer Review Teams in revising, finalizing and submitting their reports to NCEH/ATSDR within three months following the meeting.

**The BSC agreed by consensus on the schedule and agenda items Dr. Ryan proposed to conduct future peer reviews.** However, the BSC agreed on two modifications to the timeline. First, the Peer Review Teams would submit their reports on EHHE within four months of the October 2010 meeting due to the holiday season and the need to become more familiar with the new process. Second, the BSC members would be polled via e-mail to indicate their preference in conducting peer reviews in two full days rather than two half-days and one full day.

### Update on NCEH/ATSDR Division Activities

Dr. Portier and a panel of NCEH/ATSDR leadership at the Division level presented updates on recent activities and accomplishments by the NCEH/ATSDR divisions over the six months to one year.

***ATSDR Division of Toxicology and Environmental Medicine (DTEM).*** Dr. Edward Murray is the Director of DTEM. He reported that DTEM built a cadmium exposure model for the general U.S. population using NHANES data. DTEM and DLS closely collaborated in this effort to better apply NHANES data to DTEM's computational toxicology research. DTEM selected cadmium as a preliminary study tool and published a paper to document its partnership with DLS in this effort.

***Multiple NCEH/ATSDR Divisions.*** Dr. Portier and NCEH/ATSDR leadership at the Division level reported that DTEM and the NCEH Division of Emergency and Environmental Health Services deployed two teams to Nigeria earlier in 2010 to investigate numerous childhood deaths as a result of lead poisoning. The NCEH/ATSDR teams also partnered with local villages to identify other potentially lead-poisoned children and apply effective interventions to reduce mortality. The NCEH/ATSDR teams determined that mining was the cause of the lead poisoning deaths in Nigeria.

The NCEH Division of Laboratory Sciences (DLS) contributed its laboratory expertise to the tragic situation of childhood lead poisoning deaths in Nigeria. Of all children surveyed in local villages, 26% died from lead exposures. Blood lead levels (BLLs) were extraordinarily high at >300 µg/dL. The increased price of gold forced residents of local villages to perform hand-based mining in new and dangerous areas with poor mining practices in a “black market” operation.

DLS was required to measure BLLs in some villages that had no electricity, but its development of a portable blood lead analyzer was extremely helpful in overcoming this barrier. DLS's prompt identification of children with highly-elevated BLLs facilitated immediate treatment of these children with chelation. Oral chelation had to be given because intravenous chelation cannot be administered in the field. Preliminary data show that many children with highly-elevated BLLs who were near death fully recovered with oral chelation in a short period of time.

**ATSDR Division of Health Assessment and Consultation (DHAC).** Dr. William Cibulas is the Director of DHAC. He reported that the PHA of EC Electroplating in Garfield, New Jersey was a collaborative effort among DHAC, the ATSDR Division of Regional Operations, EPA, and the New Jersey Department of Health and Senior Services. In cooperation with EPA, DHAC issued a public health advisory for the site as a result of identifying an immediate and significant threat to human health.

The site was the source of a release in 1982 of several thousand gallons of hexavalent chromium from a chrome plating facility in Edison, New Jersey. EPA has had a presence at the site since early 2000 in an effort to assess hexavalent chromium plumes in the surrounding community of 900 homes. In close collaboration with EPA, DHAC analyzed recent data and found the site to be an urgent public health threat.

DHAC determined that the migration of hexavalent chromium from groundwater to basements and crawlspaces of 12 of 900 homes exceeded non-cancer acute screening values and cancer risks. DHAC's release of the public health advisory allowed EPA to allocate resources to shift from removal to long-term remediation of hexavalent chromium from the site. DHAC, the mayor of Garfield, New Jersey and other officials recently attended a public meeting with >200 residents to address community concerns regarding property values of their homes. The site has since been placed on the National Priorities List.

DHAC recently completed an exposure investigation at Refinery Row in Corpus Christi, Texas in response to community concerns regarding potential health impacts from the site. Texas A&M University took measurements from community residents to determine the presence of benzene and other VOCs in blood. The investigation confirmed that blood levels of these contaminants were excessive and were 100-1,000 times higher than levels in an NHANES sample.

DHAC and DLS expanded Texas A&M University's initial investigation by taking additional blood, urine and personal air sample measurements from 90 residents in the community. The interim report of DHAC's exposure investigation is currently undergoing external peer review and will be released in the near future.

DHAC launched a large-scale effort at the Corpus Christi Refinery Row site. A full-scale PHA is underway to analyze air exposures. A multidisciplinary communication team was formed to extensively engage the community in all aspects of the PHA. Strong collaborations were established with the Texas Commission on Environmental Quality to analyze groundwater.

**NCEH Division of Laboratory Sciences (DLS).** Dr. James Pirkle has served in the position of the DLS Deputy Director for Science for the past ten years. The BSC applauded his recent appointment as the new Director of DLS. Drs. Pirkle and Portier reported on DLS's recent laboratory activities. DLS has conducted laboratory research and experiments over the past three years to develop a method with capacity to measure trans-fatty acids and exposure to trans-fatty acids in individuals for the first time in history. DLS piloted the method in a cohort of New York City residents.

The longest column utilized in any laboratory method is 40 meters, but DLS was required to use a 200-meter column in gas chromatography for this effort. DLS was only able to run 500 samples in six months because the new method only runs one sample in 1 hour and 40 minutes. However, the Director of CDC has asked DLS to run 5,000 samples in the next six months. DLS will provide updates on the trans-fatty measurement during future BSC meetings as this method is more widely implemented in the field.

DLS developed an extremely selective and comprehensive tool to measure cholinesterase inhibitors in organophosphate pesticides and nerve agents and also to distinguish between these compounds. DLS's laboratory tool is critical for national security issues.

DLS developed a method to identify tobacco-specific nitrosamines and definitively correlate very low cotinine levels in urine with exposure to tobacco rather than another product. The ability of this method to demonstrate the degree to which the production of tobacco-specific nitrosamines can be manipulated in certain cigarettes has implications for regulatory control of passive smoking by the Food and Drug Administration.

DLS is funding pilot projects in Massachusetts and Wisconsin to incorporate severe combined immunodeficiency (SCID) testing into newborn screening programs. DLS is supporting this effort as part of the HHS Secretary's initiative to improve newborn screening. Based on the success of the pilot projects and quality assurance component, DLS will include SCID testing in newborn screening programs at the national level.

DLS has an extensive role in the National Children's Study and will analyze ~96 different analytes in the first 500 specimens from this initiative. DLS will take specimens from pregnant women in their first and third trimesters and also will take the first blood and urine measurements from newborns. DLS will need additional time to implement this method at the national level and form linkages to other newborn blood spot methods, but the method will be a solid supplement to NHANES for infants.

**ATSDR Division of Health Studies (DHS).** Dr. Portier reported that 13% of the general U.S. population relies on private wells, but these water sources are unregulated. DHS is funding one-year pilot projects in seven states to assess the availability and quality of these unregulated

water sources; formulate appropriate actions to take in the future; help states in their decision-making process of determining whether private wells should be monitored; and determine the public health impact of private wells in water-borne diseases. Dr. Portier confirmed that DHS would take the BSC's suggestion under advisement to use this initiative in an effort to change behaviors of residents who rely on private wells.

***NCEH Division of Emergency and Environmental Health Services (EEHS).*** Dr. Portier reported that EEHS has been investigating a number of cases regarding overuse of pesticides resulting from bedbugs.

Dr. Portier reported that as of June 2010, 75% of the nation's stockpile of chemical warfare materials has been destroyed. With the exception of one facility, the nerve agent stockpile has been completely eliminated. The EEHS Chemical Weapons Elimination Branch (CWEB) occasionally conducts emergency response for old munitions. CWEB and DLS recently investigated the discovery of mustard gas off the coast of Massachusetts.

Dr. Portier made a number of overarching comments on the NCEH/ATSDR Division activities. Several projects reflect cross-division collaboration and coordination across NCEH and ATSDR programs. For example, ATSDR/DTEM's toxicology expertise and NCEH/DLS's laboratory expertise collectively were brought to bear in the global response to childhood lead poisoning deaths in Nigeria.

NCEH/ATSDR is beginning to include more formal language in its cooperative agreements that will require grantees to solicit cross-division or cross-program collaboration at the state level. For example, an ATSDR grantee that is investigating air pollution at a site would be required to engage an NCEH Air Pollution and Respiratory Health Branch grantee in the assessment if necessary. NCEH/ATSDR also is undertaking a thorough review of its environmental justice programs over the next year. A staff member already has been assigned to lead this effort.

### **Division of Laboratory Sciences (DLS) Response to the BSC Peer Review**

Dr. James Pirkle is the newly-appointed Director of DLS. He presented DLS's formal response to the BSC's peer review of the DLS laboratories that was conducted during the May 2010 meeting. However, he pointed out that DLS's more detailed and written report was distributed to the BSC prior to the meeting.

The BSC made six key recommendations for the Newborn Screening, Nutrition, and Lipid Reference Laboratories. Biomarkers should be developed for cardiovascular disease and vitamin K. The area of microfluidics should be examined in more detail. Funding for the Nutrition and Lipid Reference Laboratories is inadequate at this time.

Short- and long-term planning processes should be established within and among branches. Methods for dietary supplements should be developed. Succession planning should be initiated

to maintain a future pipeline of laboratory expertise in these areas. External laboratories should be utilized when possible.

The BSC made six key recommendations for the National Biomonitoring Program (NBP). Additional laboratory space and equipment are needed, particularly for the Tobacco Laboratory and development of measurements to address Toxic Substances Control Act reform. Nanoparticles and climate change should be anticipated. Pesticides, nanoparticles and alternative fuels should be considered.

Opportunities should be leveraged to intervene in public health emergencies. Tobacco smoke exposure should be overlaid with leukemia rates. The BSC determined that NBP does not currently partner with ATSDR, but DLS disagreed with this comment. Most notably, DLS prioritizes requests for laboratory expertise from ATSDR or other NCEH divisions over any other project with the exception of emergencies.

The BSC made 12 key recommendations for the Emergency Preparedness Laboratories. Food-borne and radiologic techniques should be integrated as much as possible. Succession planning should be initiated to maintain a pipeline of laboratory expertise in emergency preparedness. The Epidemic Intelligence Service should be expanded to include laboratorians. The possibility of a fee-for service approach should be explored for radiologic laboratory requests. Method development for radionuclides should be accelerated.

Solid funding should be assured. Generic methods should be emphasized whenever possible. Resources should be expanded to support reference materials. A reliable and consistent funding source should be established for states. The laboratory response to radiologic terrorism should be strengthened and expanded. Methods should be developed for the Laboratory Response Network-Radiologic. A generic "all-hazards" definition should be developed, but DLS clarified that only HHS and the Department of Homeland Security have authority to develop or modify an "all-hazards" definition.

The BSC made five key recommendations for the Tobacco Laboratory. Dissemination of findings should be expanded. Actions of the tobacco industry should be deterred or highlighted. Efforts to develop biomarkers of short- and long-term health effects should be continued. More funding should be leveraged and an additional process should be established to allocate discretionary funds. Combinations of chemical exposures and nicotine receptors should be developed.

In response to the BSC's recommendations to leverage additional funding for the Tobacco Laboratory, DLS announced that the Tobacco Laboratory recently was awarded \$5.5 million to conduct tobacco research over the next year and \$13.6 million to conduct pandemic influenza research over the next three years.

Dr. Pirkle confirmed that DLS agreed with the peer review recommendations overall. DLS is currently taking action on many of the BSC's recommendations and would use this guidance to make efforts in other areas whenever possible. He thanked the BSC for participating in the laboratory tours and conducting an informative and extensive peer review. He emphasized that

the BSC's advice and recommendations were extremely helpful to DLS and would be taken into account during future strategic planning processes.

The BSC thanked DLS leadership and staff for their comprehensive response to the peer review recommendations. Although DLS has no plans to respond to the recommendation to "develop methods for dietary supplements" in the near future, Dr. Ryan advised DLS to reconsider this decision. He pointed out that an article was recently published in *Consumer Reports* regarding the toxicity of dietary supplements. Dietary supplements might become more important as the general population becomes more aware, concerned with and interested in this issue.

In response to the BSC's recommendation to "consider pesticides, nanoparticles and alternative fuels," Dr. Tina Bahadori confirmed that she would provide Dr. Pirkle with contact information for DLS to explore external opportunities in this area.

Dr. Portier acknowledged the outstanding performance of Dr. Theodore Meinhardt who served as the Acting Director of DLS for six months during the recruitment and search process. In the transition to new leadership, Dr. Meinhardt ensured that DLS's daily operations, laboratory research and other activities were maintained at a high quality. He also made improvements to some of DLS's existing programmatic and scientific activities. Dr. Meinhardt's long tenure with CDC, strong sense of professionalism, and extensive laboratory expertise were tremendous assets during the transition to the new leadership of DLS.

### Closing Session

Drs. Ryan and Portier thanked the BSC members for their valuable input over the course of the meeting as well as their time and effort in reviewing a wealth of materials to prepare for the EHHE peer review. The BSC applauded the Office of Science staff (Ms. Dolly Sinha, Activity Lead; Ms. Sandra Malcom, Executive Coordinator for the BSC; and Ms. Shirley Little) for continuing to provide outstanding administrative support before, during and after BSC meetings.

The dates proposed for the next BSC meeting were May 5-6, 12-13, or 19-20, 2011 or June 16-17 or 23-24, 2011. NCEH/ATSDR staff would poll the BSC members by e-mail to determine their availability and confirm the date.

With no further discussion or business brought before the BSC, Dr. Ryan adjourned the meeting at 10:55 a.m. on October 22, 2010.

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

\_\_\_\_\_  
Date

\_\_\_\_\_  
Timothy J. Ryan, PhD  
Chair, Board of Scientific Counselors