



2007 Children's Environmental Health Workshop: Discover, Treat, Prevent, Prepare

Hamilton Crowne Plaza
1001 14th Street, NW
Washington, DC

October 11–12, 2007

Agenda

Purpose:

This workshop brings together the expertise and experience of the Pediatric Environmental Health Specialty Units (PEHSU) of North America and the Children's Environmental Health Centers to explore the latest research findings and their practical application in community settings. This workshop is sponsored by the U.S. Environmental Protection Agency (EPA) (Office of Research and Development and Office of Children's Health Protection and Environmental Education), the Department of Health and Human Services (Agency for Toxic Substances and Disease Registry of the Centers for Disease Control and Prevention and the National Institute of Environmental Health Sciences), and the Association of Occupational and Environmental Clinics in recognition of 10 years of federal effort to protect children's environmental health as called for in Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks.

This anniversary provides the children's environmental health community with an opportunity to reflect on the progress that has been made and to formulate our vision for the future of children's environmental health.

Thursday, October 11, 2007

7:30 – 8:15 a.m.

Breakfast and Registration

8:15 – 9:00 a.m.

Welcome/Review of Agenda

William H. Sanders III, Dr.P.H.

Director, National Center for Environmental Research, EPA

Dona DeLeon, Acting Director, Office of Children's Health Protection and Environmental Education, EPA

Kevin Y. Teichman, Ph.D.

Acting Deputy Assistant Administrator for Science, EPA

Children's Environmental Health: Looking Backward, Looking Forward

Howard Frumkin, M.D., Dr.P.H., M.P.H.

Director, National Center for Environmental Health, Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention

Gwen Collman, Ph.D., Chief, Susceptibility and Population Health Branch, Division of Extramural Research and Training, National Institute for Environmental Health Sciences

9:00 – 10:45 a.m.

Session I: Evolution of Biomarkers for Pesticides: Examples From the Agricultural Setting

*Co-Chairs: Catherine Karr, M.D., Ph.D., Director, Northwest PEHSU
Elaine Faustman, Ph.D., Director, Center for Child Environmental Health Risks Research*

In the late 1990s, an epidemic of initially unrecognized organophosphate (OP) poisoning affecting families in eight states helped motivate the development of the PEHSU network to increase the capacity of physicians to identify and prevent adverse effects of environmental toxicants. In recent years, concern has focused on the potential child health implications from chronic, lower level exposure and are a focus of ongoing longitudinal birth cohort studies and exposure pathway studies within the EPA/NIEHS Children's Centers Program. An accumulating evidence base led to recent restrictions in residential use of these products; however, organophosphate insecticides continue to have extensive use in many agricultural settings.

In research and clinical settings, biomarkers of organophosphate exposure, toxicity, and susceptibility have contributed to improved understanding of exposure pathways and adverse health outcomes. The session will discuss: (a) use of pesticide metabolite concentrations to estimate exposure type, extent, and source attribution based on EPA/NIEHS-sponsored studies and CDC population surveillance; (b) strengths and pitfalls regarding the determination of cholinesterase enzyme activity in clinical practice, occupational surveillance, and research as a marker of OP toxicity; and (c) evolving insight into the importance of gene-environment interaction in OP toxicity using recent findings based on paraoxonase 1 studies in the Children's Centers.

The key areas for discussion will include the current stage of validation of these OP-related biomarkers and critical missing data/applications to consider in moving the translation of each biomarker forward for clinical and public health relevance. The links between research, education, and risk communication activities from PEHSU and the Children's Centers will be highlighted.

Presenters:

Elaine Faustman, Ph.D.
Catherine Karr, M.D., Ph.D.
Kim Harley, Ph.D., University of California at Berkeley, Center for Children's Environmental Health Research
John Furman, Washington State Department of Labor and Industries
Bill Griffith, Ph.D., Center for Child Environmental Health Risks Research
Frederica Perera, Dr.PH, Columbia Center for Children's Environmental Health

10:45 – 11:00 a.m.

Break

11:00 a.m. – 12:45 p.m.

Session II: Phthalates Exposure in Childhood: Is There Evidence of Harm?

Chair: Maida P. Galvez, M.D., M.P.H., Mount Sinai PEHSU, and Mount Sinai Center for Inner City Toxics and Children's Health

Phthalates are chemicals added to plastics that impart flexibility and act as a scent stabilizer for a wide range of products—from food packaging and children's toys to personal hygiene products such as shampoos, fragrances, and nail polish. Concerns exist about the potential for phthalates to act as endocrine disruptors, largely based on animal studies and a small but growing body of evidence in human studies.

Several countries around the world, beginning with the European Union, have subsequently banned phthalates in children's products. Since then, widespread media reports on the potential harms of toxic toys and other children's products containing phthalates have raised parental anxiety about the impact of environmental exposures on their children.

Primary care pediatricians are subsequently faced with clinical questions that are often difficult to answer given the limited medical school training in children's environmental health, particularly in newly emerging exposures of concern such as phthalates.

This session will present clinical scenarios commonly encountered by general pediatricians and PEHSUs regarding questions about phthalates. The goal of this session is to describe: (a) exposure levels in pregnant women, toddlers, and school-aged children; (b) sources of exposure; and (c) known and potential health outcomes. Data will be shared from three cohorts: A cohort of pregnant women in New York (Dr. Robin Whyatt, Columbia University Center for Children's Environmental Health); a cohort of 6 to 24-month-old infants from California, Minnesota, and Missouri (Dr. Sheela Sathyanarayana, University of Washington, Seattle, Northwest PEHSU); and a cohort of 6 to 8-year-old New York City children (Drs. Mary Wolff and Maida Galvez, Mount Sinai Center for Children's Environmental Health and Mount Sinai PEHSU).

Key areas for discussion will include: (1) What is the current evidence for adverse health outcomes? (2) What are the research gaps? (3) What health messages on phthalates can we share with families now? (4) What policy issues remain unresolved?

Presenters: **Maida P. Galvez, M.D., M.P.H.**, Mount Sinai PEHSU, and Mount Sinai Center for Inner City Toxics and Children's Health
Robin Whyatt, Dr.P.H., Deputy Director, Columbia Center for Children's Environmental Health
Sheela Sathyanarayana, M.D., Northwest PEHSU
Mary Wolff, Ph.D., Director, Mount Sinai Center for Inner City Toxics and Children's Health

12:45 – 2:00 p.m.

Lunch (on your own)

2:00 – 3:15 p.m.

Session III: The Evolving Science and Practice of Environmental Management for Asthma Prevention and Care

Co-Chairs: **Kimberly Gray, Ph.D.**, National Institute of Environmental Health Sciences

Leyla E. McCurdy, National Environmental Education Foundation

Asthma is a chronic respiratory disease characterized by episodes of inflammation and narrowing of small airways. Childhood asthma, in particular, continues to be a major, vexing public health problem in the United States. Low-income populations, minorities, and children living in inner cities still experience disproportionately higher morbidity and mortality due to asthma. Asthma's effects on children and adolescents account for millions of lost days of school missed annually and cost more than \$3 billion per year to treat. According to the Centers for Disease Control and Prevention in 2005, prevalence rates for childhood asthma peaked at 8.9 percent; more than 6 million of the nation's children. Even so, there have been important gains recently, including a reduction in childhood deaths from asthma attacks, a leveling of hospitalizations, improved patient education, and evidence of earlier clinical recognition and treatment.

Currently, there are neither known preventions nor cures for asthma. However, avoiding environmental agents that promote or exacerbate asthma attacks is one of

the primary goals of good asthma management. Considerable research within the EPA/NIEHS Children's Centers has primarily focused on four areas: (1) household interventions and avoidance of environmental triggers, (2) exposure and effects of air pollution, (3) gene-environment interactions, and (4) mechanisms of early immune deregulation and subsequent asthma risk.

This session will: (1) review potential mechanisms (immune, epigenetic) for the effects of prenatal and early postnatal exposure on asthma outcomes, and the ongoing mechanistic work being performed by the Children's Centers; and (2) highlight currently recommended household environmental management strategies most useful for clinical settings based on the 3rd Expert Panel Report of Guidelines on Asthma issued August 2007.

The discussion will broaden to include recent research findings of Children's Centers, including the impact of chronic exposure to air pollution and the contribution of genetic vulnerabilities in an open-session format.

Presenters: **David Rowson**, Office of Air and Radiation, EPA
Rachel Miller, M.D., FAAAAI, Columbia Center for Children's Environmental Health

Discussant: **Elizabeth Matsui, M.D., M.H.S.**, Center for Childhood Asthma in the Urban Environment
James M. Seltzer, M.D., University of California, PEHSU

3:15 – 3:30 p.m.

Break

3:30 – 5:15 p.m.

Session IV: Early Life Exposures to Metals and Neurotoxic Outcomes

Co-Chairs: **Isaac Pessah, Ph.D.**, Director, University of California at Davis, Center for Children's Environmental Health
Nigel A. Fields, M.S.P.H., National Center for Environmental Research, EPA

There has been significant public health progress in reducing chronic high level exposures to metals, such as lead and mercury, which can cause neurological damage at any age. For instance, today most children in the United States maintain average blood lead levels well below the action level of 10 µg/dL. This has been accomplished largely through state and local education and advisories, multimedia public health campaigns, and federal regulation. However, there is increasing evidence that early life exposures to toxic metals, particularly during fetal development, may contribute to behavioral effects and adversely affect cognitive functioning well into adult life. There also is growing concern regarding the social context of exposure, or non-chemical stressors, which may modify the uptake and neurotoxic effect of metals such as lead, mercury, and manganese, both pre- and post-natally. Yet, currently there is limited ability to identify and translate clinically significant prenatal biomarkers of exposure, susceptibility, and effect that could better elucidate risks of metal exposures during pregnancy.

The purpose of this session is to: highlight recent findings of the long-term effects of metals and metal mixtures; discuss the utility of perinatal biomarkers of lead and mercury; and consider modifying factors that might offer additional protection or confer additional risk to children. Based on three longitudinal cohorts and one case-control study, this session will explore: (1) the plausible interactive effects of metals and psychosocial stresses on neurodevelopment; (2) the use of new mercury exposure biomarkers and epidemiological approaches in autism etiology research; (3) the long-term behavioral consequences of fetal and childhood exposures to lead, resulting in criminality and increased societal risks; (4) the impact of early exposure to lead on adult cerebral cortical anatomy and function as revealed by advanced neuro-imaging techniques; and (5) the interactive effects of exposure to multiple metals on neurodevelopment.

Panel and Audience Discussion Questions: What are the key window periods of concern for fetal exposure to metals? What factors confer added protection or increased risk from early life exposures to metals? How should the long-term effects of metal exposures inform public health actions during early childhood development?

Presenters: **Irva Hertz Piciotto, Ph.D.**, Deputy Director, University of California at Davis, Center for Children's Environmental Health
Robert Wright, M.D., New England PEHSU and Harvard Center for Metal Mixtures and Children's Health
Kim Dietrich, Ph.D., Cincinnati Children's Environmental Health Center

5:30 p.m.

Reception and 3rd Annual EPA Children's Environmental Health Excellence Award Ceremony (Open Invitation)

Dr. William H. Sanders III, Presiding

The Children's Environmental Health Excellence Awards recognize ongoing and sustainable dedication to, and notable leadership in, protecting children from environmental health risks at the local, regional, national, and international level. Excellence Awards are presented to groups or individuals that exemplify invaluable leadership in the protection of children from environmental health risks. There are 10 winners in 2007, 7 in the health care provider category, 1 for schools, 1 for corporate leadership, and 1 for research.



The Children's Environmental Health Champion is an honorary award presented to individuals to recognize their outstanding efforts and commitment to advancing environmental health issues. The 2006 Children's Environmental Health Champion award was presented to Philip J. Landrigan, M.D., M.Sc., and in 2005 our Champion Award winner was Ramona Trovato.

Who will it be for 2007? Join us and find out!

Friday, October 12, 2007

7:30 a.m.

Breakfast

8:30 – 9:30 a.m.

Session V: Transportation, the Built Environment, and Children's Health

Moderator: **Joanne Rodman**, Acting Director, Child and Aging Health Protection Division, OCHPEE

This session will explore trends in population demographics, how and where development occurs, the explosive growth in international trade, and the anticipated impacts on public health, the environment, transportation, and infrastructure planning. There will be a more detailed look at trends in school siting with relationship to roadways and other factors and discussion of the implications of those trends on efforts to develop healthy communities. The session will examine how a school's site and its context within a community can affect children's health, as well as the environment, economic development, land use, and transportation. Recent studies on proximity to traffic and adverse health effects will be discussed, as well the health and community impacts of port and "goods movement" (freight transportation) expansion in many U.S. cities. Possible points of intervention for the public health community on this issue also will be discussed.

Tim Torma, EPA, Office of Policy, Economics and Innovation
Andrea M. Hricko, M.P.H., University of Southern California, Center for Children's Environmental Health

9:30 – 10:00 a.m.

The National Children's Study: Opportunities for Adjunct Studies

Marion Balsam, M.D., Research Partnerships Program Director, National Children's Study

As the National Children's Study proceeds, scientific knowledge will evolve and the Study will serve as an appropriate platform on which to build additional scientific studies. Investigators from various sectors will propose adjunct studies. Such studies will enhance the breadth, depth, and value of the Study and will assure continued interest of a diverse group of investigators, which is critical to the overall success of the Study.

An adjunct study involves a portion of the National Children's Study cohort, utilizing individually or in combination, any of the following: The Study participants, their bio-specimens, or their environmental samples. Adjunct studies can take place at one or more Study Centers, on all or a portion of their Center participants. Adjunct studies generally will be initiated and planned outside of the Study protocol planning process and funded with non-Study funding; that is, by such mechanisms as government grants (for example, R01) applied for by the initiator, by intramural federal resources, through public private partnerships, or from other sources. To preserve the quality and integrity of the National Children's Study, all proposals for adjunct studies will receive rigorous review. This presentation will include a brief overview of adjunct studies and of the review and approval process.

10:00 – 10:15 a.m.

Break

10:15 – 11:15 a.m.

Session VI: Children's Protection in the Aftermath of a Natural Disaster: Tools for Recovery and Communicating Risks

Chair: Debra Cherry, M.D., M.S., University of Texas Health Center at Tyler, Southwest PEHSU

Hurricane Katrina, which struck the Gulf Coast on August 29, 2005, has been called the most devastating natural environmental calamity in U.S. history. More than 354,000 homes along the Gulf Coast were destroyed or damaged beyond repair. Katrina damaged more than 200 sewage treatment plants and 140 oil and gas platforms and leached hazardous chemicals and fuels from hundreds of small businesses as the floodwaters passed over them. Rampant mold growth, mountains of debris, and widespread cleanup, demolition, and construction projects followed. Some residents were housed "temporarily" in FEMA trailers with hastily assembled indoor materials that off gassed high levels of formaldehyde. Many New Orleans residents left the area permanently.

This session will describe some of the efforts of a Gulf Coast pediatrician, NIEHS scientists, and PEHSU clinicians to respond to this calamity. Dr. Scott Needle (pediatrician, relocated from Bay St. Louis, Mississippi to Florida) will describe via Web conference his experience on the front lines of the disaster, the disaster preparedness document he prepared on behalf of AAP, and his federal testimony on the health effects of formaldehyde in FEMA trailers. Dr. Marie Lynn Miranda (scientist and GIS expert, Duke University) will describe the NIEHS Hurricane Response Portal, a research and planning tool for the Gulf Coast, which overlays multiple geographic and demographic features, such as location of hazardous waste sites, racial composition, and extent of flooding. Dr. Debra Cherry (occupational medicine physician from the Southwest PEHSU) will briefly present fact sheets on sludge, formaldehyde, and mold, as well as the PEHSU/AAP guidelines for returning children to previously flooded areas.

Key areas for discussion will include: (1) How should federal agencies communicate with local clinicians in the aftermath of a natural disaster? (2) What types of tools are most useful? (3) What environmental health risks were overblown, and which were understated in the aftermath of Hurricanes Katrina and Rita?

Presenters: **Debra Cherry, M.D., M.S.**, University of Texas Health Center at Tyler, Southwest PEHSU
 Marie Lynn Miranda, Ph.D., Director, Duke University Southern Center for Environmentally-Driven Disparities in Birth Outcomes
 Scott Needle, M.D., Pediatrician, formerly of Bay St. Louis, MS

11:15 a.m. – 12:15 p.m. **The National Forum on Children and Nature**

Key Note Address: **Lawrence A. Selzer**, President and Chief Executive Officer, Conservation Fund

Introduction and Discussant: **Howard Frumkin, M.D., Dr.P.H., M.P.H.**

Launched in June 2007, the National Forum on Children and Nature will involve governors, mayors, corporate CEOs, heads of environmental organizations, and leaders from health and education institutions, and will invest several million dollars in projects with on-the-ground tangible results that address the issue of children's isolation from nature. The Forum will identify 20 nationally significant demonstration projects in four key areas of health, education, the built environment, and media/culture that, individually and collectively, will provide substantial steps toward improved children's health and environmental stewardship.

12:15 – 12:30 p.m. **Closing Remarks: Dr. William H. Sanders III, EPA**

Acknowledgments

Many thanks to the honorary workshop co-chairs: William Sanders and Howard Frumkin

Also special thanks to the workshop planning committee: Nora Conlon, Elaine Faustman, Maida Galvez, Kimberly Gray, Michael Hatcher, Catherine Karr, Leyla McCurdy, Ketna Mistry, Jerome Paulson, Isaac Pessah, and Maryann Suero

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