

Tues Morning - 10 Feb 2004

8:30AM – 12:00 Noon

SESSION I: OPENING, OVERVIEW, RECOGNITION OF FEDERAL LEADERS AND KEYNOTE ADDRESS

Chair: Dr. Joan M. Cranmer

8:30 – 9:00 Opening of the Conference, Overview and Introductions

Conference Chair:

Dr. Joan M. Cranmer
Professor, University of Arkansas for Medical Sciences and Arkansas Children's Hospital

Conference Co-Chairs:

Dr. Lynn R. Goldman
Professor, Johns Hopkins University

Dr. Donald R. Mattison
Senior Advisor to the Directors of NICHD and CRMC, National Institutes of Health

Dr. Deborah C. Rice
Senior Toxicologist, Maine Department of Environmental Protection

9:00 – 9:15 ALOHA! Welcome to Hawai'i

Dr. Edwin C. Cadman
Dean, John A. Burns School of Medicine, University of Hawaii at Manoa

9:15 – 9:45

RECOGNITION OF FEDERAL LEADERS BY THE HONORABLE LINDA LINGLE GOVERNOR OF HAWAII

Represented by

Chiyome Fukino, MD

Director, Hawai'i State Department of Health

Recognition of the leaders of Federal Agencies for their contributions to children, environmental health, and the special needs of oceanic people!

Duane Alexander, MD

Director, National Institute of Child Health and Human Development/NIH

Henry Falk, MD, MPH

Director, National Center for Environmental Health/CDC and Assist. Administrator, Agency for Toxic Substances and Disease Registry

Paul Gilman, PhD

Assistant Administrator for Research and Development, and Science Advisor to the EPA Administrator

Richard J. Jackson, MD, MPH

Senior Advisor to the Director, Centers for Disease Control and Prevention (CDC)

Kenneth Olden, PhD

Director, National Institute of Environmental Health Sciences/NIH

William A. Suk, PhD, MPH

Director, Center for Risk and Integrated Sciences; Director, Superfund Basic Research Program Senior Science Advisor Division of Extramural Research & Training National Institute of Environmental Health Sciences/NIH

9:45 – 9:50

Introduction of Keynote Speaker

Dr. Robert Amler
Regional Health Administrator, USDHHS/PHS

9:50 – 10:30

Keynote Address



“Children’s Environmental Health: An International Perspective”

HENRY FALK, MD, MPH

Director, National Center for Environmental Health/CDC and Assistant Administrator, ATSDR

10:30 – 10:45

Refreshment Break

SESSION II: CROSS-CUTTING ISSUES

Chair:

Dr. Donald R. Mattison

10:45 – 11:10

Neurodevelopmental Effects of Persistent Pollutants: Data Gaps and Policy Implications

Dr. Lynn Goldman - *Johns Hopkins University*

11:10 – 11:35

Biomonitoring: An Integral Part of Exposure Analysis

Dr. Larry L. Needham - *National Center for Environmental Health/CDC*

11:35 – 12:00

Ethical, Legal, and Social Issues - Our Children’s Future

Dr. Steven G. Gilbert - *Institute of Neurotoxicology and Neurological Disorders, Seattle*

12:00 – 1:15

Lunch on Your Own

Tues Afternoon - 10 Feb 2004

1:15 – 5:30 PM

SESSION III: HOT NEW RESULTS FROM THE NIEHS/ EPA CHILDREN’S CENTERS

Co-Chairs:

Dr. Gwen W. Collman - *NIEHS*

Dr. Christopher G. Saint - *US EPA*

This session will feature the hottest and most exciting new findings from the NIEHS/EPA-funded Children’s Centers that address the issues in this conference including: Pesticides, PCBs, Methylmercury, Mixtures, Autism, Neurodevelopment, Growth and Development, and Interventions.

1:15 – 1:20

The NIEHS/EPA Children’s Centers: Overview

Dr. Gwen W. Collman - *NIEHS*

1:20 – 1:50

Center for Child Environmental Health Risks Research

Dr. Elaine M. Faustman – *University of Washington*

1:50 – 2:20

Center for the Health Assessment of Mothers and Children of Salinas

Dr. Brenda Eskenazi - *Univ of California at Berkeley*

2:20 – 2:50

The NIEHS/EPA Children’s Environmental Health and Disease Prevention Research Center

Dr. Mary S. Wolff - *Mt Sinai School of Medicine*

2:50 – 3:20

Columbia Center for Children’s Environmental Health

Dr. Frederica Perera - *Columbia Univ Sch of Pub Hlth*

3:20 – 3:35

Refreshment Break

Tues Afternoon - 10 Feb 2004 *con't*

1:15 – 6:00 PM

- 3:35 – 3:50** Cincinnati Children's Environmental Health Center
Dr. Bruce P. Lanphear - *Cincinnati Children's Hospital Medical Center, University of Cincinnati*
- 3:50 – 4:05** Friend's Children's Environmental Health Center
Dr. Susan L. Schantz - *University of Illinois, Urbana-Champaign*

Autism-Related Centers:

- 4:05 – 5:00**
The Center for the Study of Environmental Factors in the Etiology of Autism. Dr. Isaac N. Pessah - *University of California, Davis*

- 4:05** **Environmental Factors in Autism**
Dr. Irva Hertz-Piccolto - *University of California, Davis*

- 4:15** **GABA_a Receptor Block Significantly Potentiates Excitotoxicity of Noncoplanar PCB170 in the Hippocampal Slice Preparation**
Dr. Isaac N. Pessah - *University of California, Davis*

- 4:30** **Sub-Micromolar Thimerosal and Ethylmercury Induce Apoptosis in Murine Dendritic Cells in Culture**
Dr. Samuel R. Goth - *University of California, Davis*

- 4:45** **Abnormal Motor, Sensory, Cognitive and Social Behaviors in Homer 1 Transgenic Mice**
Dr. Robert F. Berman - *University of California, Davis*

- 5:00 – 5:55**
Center for Childhood Neurotoxicology and Exposure Assessment
Dr. George H. Lambert - *Univ of Medicine & Dentistry of New Jersey*

- 5:00** **Autism and the Environment: Exposure Assessment, Intervention and Clinical Expression**
Dr. George H. Lambert - *Robert Wood Johnson Medical School, UMDNJ*

- 5:10** **Developmental Neurogenesis is Highly Sensitive to Low Level Exposures to Neurotoxicants (MeHg, Pb) and Teratogens (VPA)**
Dr. E. DiCicco-Bloom - *Robert Wood Johnson Medical School/UMDNJ*

- 5:25** **Role of Adhesion and Repulsion Molecules During Toxicant-Induced Brain Dysgenesis**
Dr. Kenneth R. Reuhl - *Rutgers, The State University of New Jersey & EOHSI*

- 5:40** **A New Model of Autism: Behavioral Markers Following Prenatal and Postnatal Sodium Valproate and Methylmercury to Balb/c Mice**
Dr. MA Cheh - *Rutgers University*

6:00 – 8:00 PM

*Welcoming Reception
& Hosted Buffet Dinner
Ginger Terrace Poolside*

Wed Morning - 11 Feb 2004

8:30AM – 12:00 Noon

SESSION IV: INFANT AND CHILD LONGITUDINAL NEUROTOXICITY STUDIES – PART I
Methylmercury, PCBs, Pesticides, Lead, Combinations

- Co-Chairs:** Dr. Deborah C. Rice, *Maine Dept of Env Protection*
Dr. Sherry G. Selevan, *US EPA*

Persistent Bioaccumulative Toxicants (PBTs) are chemicals that are persistent in the environment, bioaccumulate and bioconcentrate in living organisms, and are toxic to ecosystems and human health. Epidemiological studies in the 1970s and 1980s largely studied the effects of single toxicants on the neuropsychological development of children. However, there is increasing concern regarding the fact that children are exposed simultaneously to multiple chemicals, particularly PBTs, and that studying only a single chemical may result in misleading interpretations. Several cohort studies begun in the 1990s are investigating the effects of multiple PBTs, allowing exploration of the pattern of effects of individual chemicals in the same group of children, as well as chemical-chemical interactions. This session will present new data from ongoing studies.

- 8:30 – 8:40** **Introduction of Keynote Speaker**
Dr. Lynn R. Goldman - *Johns Hopkins University*

- 8:40 – 9:20** **Keynote Address**



“Children, Obesity, Sprawl and Environmental Health”

RICHARD J. JACKSON, MD, MPH
Senior Advisor to the CDC Director

New Data from Ongoing Long-Term Children's Environmental Health Studies

- 9:25 – 9:50** **Strategies for Assessing the Effects of Environmental Toxicant Exposure in Developmental Epidemiology Studies**
Dr. Deborah C. Rice - *Maine Department of Environmental Protection*

- 9:50 – 10:15** **Contribution of PCBs, Pesticides, Methylmercury and N-3 Fatty Acids to Fetal Growth and Motor Development in Inuit Infants in Artic Quebec**
Dr. Gina Muckle - *University of Laval, Montreal*

- 10:15 – 10:30** *Refreshment Break*

- 10:30 – 10:55** **Specificity of the Neuropsychological Effects of Prenatal Exposure to PCBs, Methylmercury and Lead on Infant Cognitive Development**
Dr. Sandra W. Jacobson - *Wayne State University*

- 10:55 – 11:20** **Effects of Exposure to Chemicals from Industrial Contamination in New Bedford, Mass**
Dr. Susan A. Korrick - *Harvard University*

- 11:20 – 11:45** **Neurobehavioral and Neuroimaging Findings from the Faroese Cohort**
Dr. Roberta F. White - *Boston University*

- 11:45 – 12:00** **Discussion**

SESSION V: INFANT AND CHILD LONGITUDINAL NEUROTOXICITY STUDIES – PART II

Co-Chairs: Dr. David C. Bellinger - *Harvard Medical School*
 Dr. Susan L. Schantz – *Univ. of Illinois at Urbana*

This session is a continuation of Session IV involving presentation of additional studies of the neurodevelopmental effects from prenatal and early postnatal exposures to environmental contaminants.

- 1:15 – 1:45** **What is an Adverse Effect?**
 Dr. David C. Bellinger - *Harvard Medical School*
- 1:45 – 2:15** **Interactions of Risk Factors and Modulation of Developmental Neurotoxicity**
 Dr. Deborah A. Cory-Slechta - *EOHSI and UMDNJ-Robert Wood Johnson Medical School*
- 2:15 – 2:40** **Prenatal PCB Exposure and Impulsive Responding: Is Impaired Response Inhibition a Common Behavioral Sequelae of PCB Exposure?**
 Dr. Paul W. Stewart - *State Univ of New York, Oswego*
- 2:40 – 3:05** **Prenatal Exposure to PCBs and Heptachlor Epoxide in Relation to Child Development in the Collaborative Perinatal Project**
 Dr. Matthew P. Longnecker - *NIEHS*
- 3:05 – 3:30** **Neurodevelopmental Outcome on the Seychelles Child Development Study**
 Dr. Phillip W. Davidson – *University of Rochester*
- 3:30 – 3:45** *Refreshment Break*
- 3:45 – 4:10** **Developmental Exposure to PCBs and MeHg: Use of Data from Animal Models to Develop Testing Strategies for Exposed Children**
 Dr. Susan L. Schantz - *University of Illinois at Urbana*
- 4:10 – 4:35** **Low-Level Environmental Lead Exposure and Intellectual Impairment in Children: An International Pooled Analysis**
 Dr. Bruce P. Lanphear - *Cincinnati Children's Environmental Health Center on behalf of Richard Hornung, Jane Khoury, Kim Yolton, Peter Baghurst, David Bellinger, Robert Bornschein, Richard Canfield, Kim Dietrich, Claire Ernhart, Joseph Graziano, Herbert Needleman, Russell Roberts, Stephen J. Rothenberg, Lourdes Schnaas and Gail Wasserman*
- 4:35 – 5:00** **Persistent Retinal Alterations in Children Following Low-Level Prenatal Lead Exposure**
 Dr. Donald A. Fox - *University of Houston*

Roundtable Discussion:

- 5:00 – 5:30** **Interpretation of Child Epidemiological Studies of Subtle Effects**
Moderators: Dr. David C. Bellinger
 Dr. Deborah C. Rice
Panelists: Speakers in Sessions IV and V

A series of questions have been developed to help focus the Discussion. These questions are meant to structure - but not constrain - scientific discussion.

SESSION VI: GENERAL POSTER SESSION

Refreshments with No Host Bar

The poster session is a highlight of this conference series. It has proven to be an effective venue for informal, in-depth discussion and collaboration building as well as an important networking opportunity for all participants. Papers on any aspect of neuroscience, toxicology or children's environmental health or public health & policy are welcome!

Note: The General Poster Session traditionally is scheduled as an evening session because it is conducive to discussion and getting acquainted in a relaxed atmosphere without time constraints. This year it has the added advantage of allowing more Hawaiians to participate without work or school conflicts.

STUDENT AWARD COMPETITION: The Student Award competition is split into two divisions: (1) pre-doctoral or pre-medical students and (2) post-doctoral fellows. There will be a total of \$3,000 cash awarded for 1st (cash plus plaque), 2nd (cash plus certificate), and 3rd (cash plus certificate) place in each of the two divisions. Judging and selection of Pre – and Post-Doctoral Student Awardees will be made during the poster session.

Pre-Doctoral Student Award Competition

Pre-Doctoral Award Committee

- Dr. Donald A. Fox, *Chair*
- Dr. Tomas Guilarte
- Dr. Linda M. Rosen
- Dr. Susan L. Schantz

Pre-Doctoral Students

- | | | |
|--------------------|----------------|---------------------------|
| Kelly Burke | <i>Mentor:</i> | Dr. Emanuel DiCicco-Bloom |
| William Caudle | <i>Mentor:</i> | Dr. Gary W. Miller |
| Sarah Chapelsky | <i>Mentor:</i> | Dr. Gregory M. Ross |
| MA Cheh | <i>Mentor:</i> | Dr. George Wagner |
| Johnathan Chevrier | <i>Mentor:</i> | Dr. Brenda Eskenazi |
| Amy Colquhoun | <i>Mentor:</i> | Dr. Gregory M. Ross |
| Zev Davidovics | <i>Mentor:</i> | Dr. Emanuel DiCicco-Bloom |
| Dana C. Dolinoy | <i>Mentor:</i> | Dr. Marie L. Miranda |
| Djebli Nour Eddine | <i>Mentor:</i> | Dr. M. Belhakem |
| Julie B. Herbstman | <i>Mentor:</i> | Dr. Lynn R. Goldman |
| MA Polunas | <i>Mentor:</i> | Dr. Kenneth R. Reuhl |
| Christine Till | <i>Mentor:</i> | Dr. Joanne F. Rovet |

Post-Doctoral Student Award Competition

Post-Doctoral Award Committee

- Dr. Toshio Narahashi, *Chair*
- Dr. Michael Aschner
- Dr. Brenda Eskenazi

Post-Doctoral Students

- | | | |
|--------------------|----------------|---------------------------------|
| Francesco Capone | <i>Mentor:</i> | Drs. Lucio Costa, Enrico Alleva |
| Adrienne Ettinger | <i>Mentor:</i> | Dr. Howard Hu |
| Samuel R. Goth | <i>Mentor:</i> | Dr. Issac N. Pessah |
| Alycia Halladay | <i>Mentor:</i> | Dr. Kenneth R. Reuhl |
| Jason R Richardson | <i>Mentor:</i> | Dr. Gary W. Miller |

THURS. MORNING -12 FEB 2004

8:30AM – 10:00 AM

SESSION VII-A:

METHYLMERCURY RISKS VS. FISH BENEFITS

Co-Chairs: Dr. Linda M. Rosen - *Hawaii State Health Dept*
Dr. Kathryn R. Mahaffey – *US EPA*

The control of mercury pollution in the environment has become one of the more complicated policy questions facing both environmental and food safety regulators, because the majority of exposure occurs indirectly, via consumption of methylmercury in fish. Because elemental mercury is semi-volatile at ambient temperatures, releases are vaporized and are carried long distances in the air as vapors or on particles. Such releases eventually condense and fall to earth but as long as the mercury is in an elemental state it will continue to move long distances. It isn't captured into the food web until it is converted, by aquatic or soil organisms, to methylmercury. Methylmercury not only has long residence time in the environment but also bioaccumulates in the food chain, eventually causing exposure to humans, mostly via consumption of fish. The implications of this process for regulation and control are manifold.

8:30 – 8:50 **Biomarkers of Mercury Exposure: Differences Between Children and Adult Women in the Distribution of Blood and Hair Mercury Concentrations among the 1999/2000 NHANES Examinees**
Dr. Kathryn R. Mahaffey – *US EPA*

8:50 – 9:05 **Mercury Levels in Major Hawaiian Commercial Fish Species**
Dr. Barbara Brooks – *Hawaii State Health Department*

9:05 – 9:20 **Hawaiian/Pacific Islander Dietary, Cultural and Social Issues in Relation to Methylmercury in Fish**
Dr. Linda M. Rosen - *Hawaii State Health Department*

9:20 – 9:40 **Methylmercury in Hawaii Fish: Risk/Benefit Issues**
Dr. Lynn R. Goldman - *Johns Hopkins University*

9:40 – 9:55 **Smart Fishing: Consumption Advice for Clinicians and Patients**
Dr. Kathleen Schuler - *Inst for Agricul & Trade Policy*

9:55 - 10:15 **Discussion**

10:15 – 10:30 *Refreshment Break*

THURS. MORNING -12 FEB 2004

8:30AM – 10:00 AM

SESSION VII-B: PESTICIDES & THE HONOLULU-ASIA AGING COHORT STUDY. A Population-Based Longitudinal Study Providing Clues as to how Lifestyle and Workplace Factors Can Contribute to Neurodegenerative Disease

Co-Chairs: Dr. Lon R. White - *Pacific Health Research Institute*
Dr. James P. O'Callaghan – *CDC-NIOSH*

The Honolulu-Asia Aging Study (HAAS) began in 1991 as a supplement to the Honolulu Heart Program, a longitudinal study of cardiovascular disease in a cohort of Japanese-American men living on Oahu at the time of the baseline examination in 1965. The original cohort consisted of 8006 men born 1900 through 1919. Some members of this cohort were occupationally exposed to persistent pesticides, including Heptachlor. Brain samples from decedents of the HAAS cohort are being analyzed for levels of pesticides and an attempt is being made to relate these data to occupational exposures, premortem diagnosis of neurological disease as well as postmortem evidence of gliosis and neuropathological hallmarks of specific neurological disease states.

8:30 – 8:50 **The Design of Perspective Population-Based Longitudinal Studies and Their Role in Establishing Etiology of Human Disease**
Dr. Wayne T. Sanderson - *University of Iowa*

8:50 – 9:15 **The Honolulu-Asia Aging Study (HAAS): Design, Description and Data Resources**
Dr. Lon R. White and Dr. James Nelson
Pacific Health Research Institute

9:15 – 9:35 **Neurodegenerative Diseases in the HAAS**
Dr. G. Web Ross - *Department of Veteran Affairs*

9:35 – 9:55 **Plantation Work in Hawaii and Risk of Parkinson's Disease**
Dr. Helen Petrovitch - *Pacific Health Research Institute*

9:55 – 10:15 **Brain Tissue Analysis in the Honolulu-Asia Aging Study – Pesticides and other Persistent Chemicals**
Dr. Diane B. Miller - *CDC-NIOSH*

10:15 – 10:30 *Refreshment Break*

THURS MORNING - 12 FEB 2004

10:30AM – 12:00 NOON

SESSION VIII-A: ROLE OF OBESITY IN CHILDREN'S ENVIRONMENTAL HEALTH

Co-Chairs: Dr. William J. Slikker, Jr. - *NCTR/FDA*
Dr. Rüdiger von Kries - *Ludwig-Maximilians University*

The prevalence of childhood obesity has nearly doubled during the last two decades and is the most common nutritional disorder, showing an increasing prevalence. Overweight children have a higher risk for being overweight in adulthood and are therefore at risk for disease states associated with obesity, including Type 2 diabetes, cancer, and cardiovascular problems. Although family genetic factors are prime risk factors for childhood obesity, non-genetic factors also show a strong association with obesity. Some of these non-genetic factors include frequent TV viewing/video games and frequent consumption of snacks while watching TV. While a large number and variety of agents are associated with abnormal human development, efforts to identify an association between perinatal exposure to a substance and subsequent childhood obesity are just beginning. Recent studies have demonstrated an increased risk for overweight and obesity in children of mothers who smoked during pregnancy. These data and other clinical observations and animal model studies support the hypothesis that obesity in children of mothers who smoked during pregnancy is the result of long lasting behavioral teratogenic effects of nicotine exposure in utero.

10:30 – 10:50 **Impact of Childhood Obesity on Children's Health**
Dr. Woodie Kessel – *Office of Disease Prevention & Health Promotion*

10:50 – 11:10 **The Fetal Programming Hypothesis: Possible Role in Childhood Obesity**
Dr. William J. Slikker, Jr. - *NCTR/FDA*

11:10 – 11:30 **Maternal Smoking During Pregnancy and Association with Childhood Obesity**
Rüdiger von Kries, *Ludwig-Maximilians University, Munich, Germany*

11:30 – 11:50 **Fetal Nicotine Exposure Impacts Weight Gain Later in Life**
Dr. Edward D. Levin - *Duke University*

11:50 – 12:10 **Obesity Exacerbates Neurotoxicity**
Dr. James P. O'Callaghan – *CDC-NIOSH*

THURS MORNING - 12 FEB 2004

10:30AM – 12:00 NOON

SESSION VIII-B: CHILDREN'S ENVIRONMENTAL HEALTH STUDIES AND ISSUES

Co-Chairs: Dr. Bob Sonawane – *US EPA*
Dr. Robin M. Whyatt – *Columbia University*

10:30 – 10:45 Adverse Effect Levels for Neurodevelopmental Effects Associated with Maternal Perchlorate Exposure: What do Existing Data Indicate?
Richard Pleus - *Intertox, Inc*

10:45 – 11:00 Residential Pesticide Exposure: Fetal Growth and Neurocognitive Development among Urban Minorities
Dr. Robin M. Whyatt – *Columbia University*

11:00 – 11:15 New Jersey Autism Study: The Role of Behavior in Ingestion of Environmental Toxins
Dr. Stuart Shalat - *EOHSI, Robert Wood Johnson Medical School*

11:15 – 11:30 Thimerosal Induces DNA Breaks, Caspase-3 Activation, Membrane Damage, Mitochondrial Potential Disruption and Cell Death in Cultured Human Cells
Dr. David Baskin - *Baylor College of Medicine and Veterans Affairs Medical Center*

11:30 – 11:45 Using GIS-Based Approaches to Support Research on Neurotoxins and Other Children's Environmental Health Threats
Dr. Marie Lynn Miranda - *Duke University*

11:45 – 12:00 Children's Prenatal and Early Environmental Exposure to Tobacco Smoke: Effects on Behavioral and Cognitive Functioning
Dr. Sophie Balk - *Albert Einstein Col of Medicine*

THURS AFTERNOON - 12 FEB 2004

1:15 – 3:30 PM

SESSION IX-A: WORKSHOP: MECHANISMS OF METHYLMERCURY TOXICITY - THE LATENT PHASE

Co-Chairs: Dr. Michael Aschner – *Wake Forest University*
Dr. Kenneth Reuhl - *Rutgers University & EOHSI*
Dr. Bernard Weiss – *University of Rochester*

Participants: David Bellinger, Phillip Davidson, Steven G. Gilbert, Toshio Narahashi, Liu Ping, Deborah C. Rice, Linda M. Rosen, Tore Syversen, Bernard Weiss, Roberta F. White, Others

Outbreaks of methylmercury (MeHg) exposure in human populations and experimental studies in non-human primates suggest that poisoning symptoms may not occur for weeks or months after exposure, a period commonly referred to as silent or latent-phase. Since most, if not all, toxicological or pharmacological agents exert their maximal effect or efficacy at the time of peak blood concentration, this phenomenon has for decades puzzled the research community. In addition, the pathophysiology of MeHg, specifically in the adult brain, is confined to distinct brain regions, such as the cerebellum and visual cortex. Given the high affinity of MeHg for sulfhydryl groups and their ubiquitous nature, this specificity, has also been a puzzle.

1:15 – 1:30 Methylmercury and the Puzzle of Delayed Neurotoxicity
Dr. Bernard Weiss - *University of Rochester*

Workshop Goal: The workshop should provide new hypotheses on mechanisms of MeHg neurotoxicity issues.

Workgroup Questions for Discussion: (20 minutes each = 2 hrs)
A series of questions have been developed which should help focus the workshop. These questions are meant to help structure the workshop but not unduly constrain scientific discussion.

1. What potential mechanisms can be invoked for the silent phase of MeHg?
2. Can analogies be drawn from other compounds?
3. What mechanisms guide the distribution of MeHg in the brain?
4. In the absence of differences in regional MeHg concentrations, what mechanisms might be invoked to describe cellular and regional specificity?
5. Does demethylation play a role in the neurotoxicity of MeHg?
6. Is MeHg's effect potentially mediated via extracellular effects?

THURS AFTERNOON - 12 FEB 2004

1:15 – 3:30 PM

SESSION IX-B: EMERGING ISSUES IN CHILDREN'S HEALTH: INTERNATIONAL PERSPECTIVES

Co-Chairs: Dr. William A. Suk - *NIEHS*
Dr. Jutamaad Satayavivad- *Chulabhorn Res Inst, Bangkok*

Children are uniquely vulnerable to chemical toxicants because of their disproportionately heavy exposures and their rapid growth and development. Exposures to environmental agents at various stages of a child's life, from gestation through young adulthood, can confer differing opportunities for damage. Vulnerability has direct consequences for the risk of diseases of childhood as well as future risk of chronic diseases in childhood.

1:15 – 1:35 Global Environmental Threats to Children's Health: Perspective of the World Health Organization
Dr. Terri Damstra, *World Health Organization*

1:35 – 1:55 Critical Periods of Susceptibility During Neurodevelopmental Processes in Infants and Children
Dr. Prahalad K. Seth - *Indust Tox Res Centre, Lucknow*

1:55 – 2:15 Potential Mechanisms of Causes in Developmental and Learning Disabilities: Reflections from Developing Countries
Dr. David O. Carpenter - *University at Albany*

2:15 – 2:35 Relation Between Plasma Concentrations of Hydroxylated Phenolic Compounds and Thyroid Hormone Status in Inuit Neonates
Pierre Ayotte – *Laval University Medical Res Ctr, Quebec*
Dr. Courtney D. Sandau – *CDC*

2:35 – 2:55 Children's Environmental Health and the Intergovernmental Forum on Chemical Safety: A Regional Perspective
Dr. Irma R. Makalinao - *University of the Philippines, Philippines General Hospital, Manila*

2:55 – 3:05 Global Environmental Threats to Children's Health: Research Needs and Future Directions
Dr. William Suk – *Nat'l Inst of Environ Hlth Sciences*

3:05 – 3:15 Discussion

3:15 – 3:30 Refreshment Break

THURSDAY AFTERNOON - 12 FEB 2004

3:30 – 5:30 PM

SESSION X-A: GENETIC POLYMORPHISMS AND MECHANISMS OF NEUROTOXICITY

Co-Chairs: Dr. Evelyn Tiffany-Castiglioni - *Texas A & M*
Dr. Clem Furlong - *University of Washington*

The completion of the human genome project and its ongoing annotation of gene elements offer an opportunity for revolutionary insights into the dynamic interface between the genome and the environment. Genetic polymorphisms are population-specific alleles that may lead to variation between individuals in protein structure and function. Polymorphisms in metabolic, DNA replication, and repair enzymes are associated with altered susceptibility to carcinogens and teratogens. This session will provide a critical overview of selected polymorphisms in genes related to the neurotoxicity of lead (Pb), organophosphorus compounds (OPs), and environmental toxicants associated with neurodegenerative disease etiology, such as pesticides, metals, and industrial solvents.

3:30 - 3:40 Genetic Polymorphisms and Mechanisms of Neurotoxicity: Overview
Dr. Evelyn Tiffany-Castiglioni - *Texas A&M University*

3:40 – 4:05 Polymorphisms as a Mechanistic Link Between the Organism and its Responses to the Environment: Introduction to Concepts
Dr. Vijayanagaram S. Venkatraj - *Texas A&M Univ*

4:05 – 4:30 Genetic and Temporal Determinants of Pesticide Sensitivity in Children: Role of Paraoxonase (PON1)
Dr. Clem E. Furlong - *University of Washington*

4:30 – 4:55 Population Distribution and Implications of Paraoxonase (PON1) Polymorphism for Risk Assessment
Dr. Bob Sonawane - *US EPA*
Dr. Gary Ginsberg - *Connecticut Dept of Health*

4:55 – 5:20 Neonatal Exposure to Lead and Regulation of the APP Gene in the Aging Brain
Dr. Nasser Zawia - *University of Rhode Island*

5:20 – 5:30 Discussion

THURSDAY AFTERNOON - 12 FEB 2004

3:30 – 5:30 PM

SESSION X-B: DIOXINS, PESTICIDES, HORMONE DISRUPTORS AND RISK ASSESSMENT

Co-Chairs: Dr. John Peterson Myers – *Env'l Health Sciences*
Dr. Peter Preuss - *NCEA/US EPA*

3:30 – 3:45 Emerging Chemicals of Concern and Their Potential for Adverse Neurological Effects
Dr. Heraline E. Hicks - *ATSDR*

3:45 – 4:00 Visual Attention in Infants Exposed to Insufficient Thyroid Hormone Levels in Utero: Implications for Studying Thyroid Hormone Disruptor Effects in Children
Dr. Joanne F. Rovet - *The Hospital for Sick Children, Canada*

4:00 – 4:15 Effects on Thyroid Hormone Homeostasis and Implications for Brain Development from Hydroxylated Organochlorine Metabolites in Sows and their Offspring
Dr. Courtney D. Sandau – *CDC*

4:15 – 4:30 Maternal Exposure to Dioxin Causes Central Precocious Puberty in Female Rats
Dr. M. Kakeyama - *National Institute for Environmental Studies, Tsukuba, Japan*

4:30 – 4:45 Farmed Salmon Contains High Levels of Organochlorine Carcinogens: Implications for Public Health
Dr. David O. Carpenter - *University at Albany*

4:45 – 5:00 A Community Comparison of Insulin Resistance Associated With Blood Lipid Levels of 2,3,7,8-tetrachlorodibenzo(p)-dioxin (TCDD) and TCDD Equivalents
Dr. Morris F. Cranmer – *Univ of Arkansas for Med Sci*

5:00 – 5:15 Farm Children's Exposure to Herbicides: Comparison of Exposure Estimates Derived from Biomonitoring and Questionnaire Data
Dr. Tye Arbuckle - *Health Canada, Ottawa*

5:15 – 5:30 Developmental Neurotoxicity in the Regulatory Context: EPA's Data Call-In and the Adequacy of Tiered Toxicity Testing For Assuring Safety
Dr. David Wallinga - *Inst for Agricul. & Trade Policy*

THURSDAY EVENING - 12 FEB 2004

7:30 – 9:30 PM

SESSION XI: CONCURRENT SESSIONS (A, B, C)

XI-A: COMMUNITY BASED PUBLIC HEALTH

Co-Chairs: Susan Marmagas - *Physicians for Social Responsibility*
Joy E. Carlson – *J. Carlson Consulting*

The Community Outreach Session is OPEN TO THE PUBLIC.
This session is scheduled for the evening to facilitate participation by Hawaiians without work or school conflicts.

7:30 – 7:45 Mobilizing Health Professionals to Protect Children
Susan West Marmagas – *Phys. for Social Responsibility*

7:45 – 8:00 Transforming the Public Debate on Neurotoxicants: The Learning and Developmental Disabilities Initiative
Elise Miller - *Inst for Children's Environmental Health*

8:00 – 8:15 Diagnosing Mercury Intoxication
Dr. Sherlita Amler - *CDC*

8:15 – 8:30 The Inappropriate Use of Chelating Agents in the Diagnosis and Treatment of Putative Mercury Intoxication
Dr. John F. Risher - *ATSDR*

8:30 – 8:45 Design of a Court-Ordered Medical Monitoring Program for an Arsenic-Exposed Community
Dr. Sandra N. Mohr - *Environomix*

8:45 – 9:00 Fish Contamination in the Ala Wai Canal, Hawaii
Dr. Bruce Anderson – *University of Hawaii at Manoa*

9:00 – 9:15 Discussion or Assessment of the Cardiovascular Autonomic Nervous Function in Aluminum Electrolytic Workers
Dr. Qiao Niu - *Shanxi Med Univ, Taiyuan, PR China*

9:15 – 9:30 Discussion

XI-B: WORKSHOP: HOW DO NEUROTOXICANTS EXPLOIT GENETIC SUSCEPTIBILITY?

Co-Chairs: Dr. Vijayanagaram S. Venkatraj - *Texas A&M*
Dr. Nasser Zawia - *University of Rhode Island*

Interfaces between the genome and the environment can occur through multiple facets, two of which will be addressed in this workshop. One facet is the influence of population-specific alleles (polymorphisms) on susceptibility to xenobiotic agents. In general, these genetic polymorphisms encode proteins with variable activities that metabolize or interact with environmental toxicants. The other facet is the unexplored concept of the susceptibility of genome architecture to alteration by the environment. Studies of genome architecture have revealed that there are "hot spots" in which the probability for rearrangement or mutation to occur is much higher than for the rest of the genome. Do environmental toxicants influence the stability of hot spots? The implications of these two distinct mechanisms on childhood susceptibility to neurotoxicity will be compared with specific examples taken from the emerging literature.

Invited Discussants:

Evelyn Tiffany-Castiglioni, *Texas A&M University*
V. S. Venkatraj, *Texas A&M University*
Clem Furlong, *University of Washington*
Gary Ginsberg, *Connecticut Dept of Health*
Nasser Zawia, *University of Rhode Island*
Xiao-Ming Shen, *Shanghai Second Medical Univ*
Bob Sonawane, *US Environmental Protection Agency*

XI-C: MECHANISMS AND IMPLICATIONS FOR RESEARCH DESIGN

Co-Chairs: Dr. William H. Hanneman – *Colorado State University*
Dr. Prasada Kodavanti - *US EPA*

7:30 – 7:50 The Utility of Large-Scale Insertional Mutagenesis Screens to Identify and Disrupt Novel PCB-Induced Genes in Mouse Embryonic Stem (ES) Cells
Dr. William H. Hanneman - *Colorado State University*

7:50 – 8:10 Changes in Nuclear Transcription Factors in Rat Hippocampus and Cerebellum Following Developmental Exposure to a Commercial PCB Mixture
Dr. Prasada Kodavanti - *NHEERL/ORD, US EPA*

8:10 – 8:30 Sexually Dimorphic Behaviors Provide Essential Criteria of Developmental Neurotoxicity
Bernard Weiss - *University of Rochester*

8:30 – 8:45 Study Design Considerations for Conducting Juvenile Toxicology Studies
MJ Kallman - *Eli Lilly and Co, Greenfield Labs*

8:45 – 9:00 Invoking the Critical Period to Explain Pediatric Lead Toxicity: Problems and Possibilities
Todd A. Jusko – *University of Washington*

9:00 – 9:15 Constructing Exposure Indices from Blood Lead Measures: Implications for Research Design
Jessica Conser – *University of North Carolina*

9:15 - 9:30 Neurotoxic Effects of Sodium Azide Lead to Alterations in Amyloid Precursor Protein Metabolism and Protein Phosphatase 1 Expression
Edgar F. da Cruz e Silva - *Universidade de Aveiro, Portugal*

SESSION XII-A: HEPTACHLOR IN HAWAII: TWENTY YEARS LATER

Co-Chairs: Dr. Donald R. Mattison - *NIEHS/NIH*
Dr. Lynn R. Goldman - *Johns Hopkins*
Sherry P. Broder, JP - *Attorney-at-Law*

During 1980 to 1982, the commercial cows milk supply on the island of Oahu, Hawaii, was contaminated for approximately 15 months with heptachlor epoxide (HE). The source of exposure was treated pineapple plants which were used as cattle feed. The entire cows milk-consuming population of Oahu was potentially exposed. An EPA "reasonable worst case estimate" suggested that between April 1981 and April 1982, commercial milk may have contained as much as 1.2 ppm of heptachlor epoxide.

8:30 – 8:50 Introduction to the Session, Tribute to David Rall and Overview of the Process
Dr. Donald R. Mattison - *Outgoing chair of the Hawaii Heptachlor Science Advisory Board*

8:50 – 9:20 How the Hawaii Heptachlor Foundation Came to Be: History of Contamination, Lawsuit and Settlement
Sherry P. Broder, *Attorney-at-Law & Architect of the Hawaii Heptachlor Foundation*

9:20 – 10:00 Heptachlor Epoxide in Hawaii: Exposure Estimation & Neurobehavioral Study
Dr. Dean Baker - *University of California at Irvine*

10:00 – 10:15 Refreshment Break

10:15 – 10:40 Prenatal Exposure to Heptachlor Epoxide and Early Child Development
Dr. Irva Hertz-Picciotto - *Univ of California, Davis*

10:40 – 11:05 Long-term Neurotoxicological and Immunotoxicological Consequences of Developmental Heptachlor Exposure in Rats
Dr. Virginia C. Moser - *US EPA*

11:05 – 11:30 Opposite Gender-Specific Increases in Peripheral Benzodiazepine Receptor (PBR) Density in Rat Brain After Single Heptachlor and Heptachlor Epoxide Administration During Development in the Rat
Dr. Dorothy E. Woolley - *Univ California at Davis*

11:30 - 12:00 Panel and Open Discussion: Characterization and Communication of the Risks and Implications for the Future

Co-Chairs: Dr. Donald Mattison
Dr. Lynn Goldman
Sherry Broder

Invited Discussants:

Session XII-A Speakers plus:
Bruce Anderson - *University of Hawaii School of Medicine at Manoa*
Willis Butler - *Hawaii Heptachlor Research & Education Foundation*
Gail Hirota - *Hawaii Heptachlor Research & Education Foundation*
Peter Preuss – *NCEA, US EPA*

SESSION XII-B:

PARKINSON'S DISEASE, ENVIRONMENT AND GENES

Cellular Mechanisms Involved in Environmental Neurotoxin-Induced Selective Neuronal Damage and Its Relevance to Parkinson's Disease

Co-Chairs: Dr. Syed F. Ali – *FDA/NCTR*
Dr. Anumantha Kanthasamy – *Iowa State University*

Environmental neurotoxic chemical exposures are increasingly recognized as dominant risk factors in the etiology of Parkinson's disease. Exposure to pesticides, PCBs and metals promote selective neuronal damage that is often superimposed with the pathological hallmarks of Parkinson's disease. However, cellular mechanisms underlying selective neuronal degenerations remain to be established. In recent years, cell death signaling has been investigated extensively. Despite this growing amount of information regarding the cell death process, little effort has been made to integrate this body of knowledge with the field of selective neuronal injury and establish its relevance to neurodegenerative diseases. This symposium is designed to fill this gap by addressing key cell death signaling molecules and other cellular targets that may impact the disease process of PD.

8:30 – 8:50 **Selective Alterations in Gene Expression using Real-Time PCR in MPTP-Induced Neurotoxicity in Mice**
Dr. Syed F. Ali – *National Center for Toxicological Research/FDA*

8:50 – 9:10 **Role of Oxidative Stress-Sensitive Kinase in Dieldrin-induced Dopaminergic Cell Death: Relevance to Parkinson's Disease**
Dr. Anumantha Kanthasamy – *Iowa State University*

9:10 – 9:30 **Dopamine Transporters as Mediators of Environmentally-Induced Dopamine Damage**
Dr. Gary W. Miller – *Emory University*

9:30 – 9:50 **Biological Bases for PCB Induced Alterations in Dopamine-Mediated Neurological Function**
Dr. Richard F. Seegal – *New York State Dept of Health*

9:50 – 10:00 **Discussion**

10:00 – 10:15 *Refreshment Break*

SESSION XIII: MECHANISMS OF BRAIN INJURY

Co-Chairs: Dr. David Dorman – *CIIT Centers for Health Research*
Dr. Gary W. Miller – *Emory University*

10:15 – 10:35 **Maternal-Fetal Distribution of Manganese in the Rat Following *in Utero* Inhalation Exposure to Manganese Sulfate**
Dr. David Dorman – *CIIT Centers for Health Research*

10:35 – 10:55 **Screening of Pesticides that Inhibit Complex I: Relevance to Parkinson's Disease**
Dr. Jason Richardson – *Emory University*

10:55 – 11:15 **Old Age and Gender Influence the Pharmacokinetics of Inhaled Manganese Sulfate and Manganese Phosphate in Rats**
Melanie Struve – *CIIT Centers for Health Research*

11:15 – 11:35 **Role of Proinflammatory Cytokines in Chemically-Induced Dopaminergic Neurodegeneration**
Dr. Krishnan Sriram – *CDC-NIOSH*

11:35 – 11:50 **Neuromorphometrical Study on the Radio-protective Role of Beta-Carotene on Postnatally Developing Mice Cerebellum**
Dr. A. L. Bhatia – *Univ of Rajasthan, Jaipur, India*

11:50 – 12:00 **Discussion**

SESSION XIV: THE NATIONAL CHILDREN'S STUDY

Co-Chairs: Dr. Kenneth Olden – *NIEHS*
Dr. Richard J. Jackson – *CDC*
Dr. Lynn R. Goldman – *John's Hopkins University*

1:15 – 1:20 **Introduction of Keynote Speaker**
Dr. Donald Mattison – *NICHD*

1:20 – 1:50 **Keynote Address**



"The National Children's Study: A Legacy for the Future"

DUANE ALEXANDER, MD
Director, National Institute of Child Health and Human Development

1:50 – 2:05 **Need for the National Children's Study (NCS)**
Dr. Sherry G. Selevan – *US EPA*

2:05 – 2:25 **Characterizing Children's Exposure: Beyond NHANES**
Dr. Larry L. Needham – *Co-chair of the Chemical Exposure Workgroup for the NCS*

2:25 – 2:45 **Planning and Implementing the National Children's Study**
Dr. Peter C. Scheidt – *NICHD*

2:45 – 3:15 **Research Needs & Open Discussion, Q&A**

SESSION XV: PRESENTATION OF STUDENT AWARDS AND CLOSING OF THE FORMAL CONFERENCE

Chair: Dr. Joan M. Cranmer

3:15 – 3:30 **Announce Pre-Doctoral Award Winners**
Dr. Donald A. Fox, *Committee Chair*

3:30 – 3:45 **Announce Post-Doctoral Award Winners**
Dr. Toshio Narahashi, *Committee Chair*

3:45 PM **CLOSING OF THE FORMAL CONFERENCE**
Conference Chair:

Dr. Joan Cranmer – *UAMS*

Conference Co-Chairs:

Dr. Lynn Goldman – *Johns Hopkins University*

Dr. Donald Mattison – *NICHD*

Dr. Deborah Rice – *Maine Dept of Env Protection*

6:00 – 7:30 PM

Poolside Reception

Whole Roast Pig & Tropical Drinks (No-Host Bar)

7:30 PM - Midnight

Hosted Hawaiian Luau

with Hula Contest, Entertainment & Dancing

Aloha!