

U.S. EPA Endocrine Disruptors Program 2006 STAR Progress Review Workshop

**U.S. Environmental Protection Agency
Main Campus, Building C, Auditorium
109 T.W. Alexander Drive
Research Triangle Park, North Carolina**

July 13-14, 2006

Draft Agenda (as of June 30, 2006)

As part of the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD), the National Center for Environmental Research (NCER) is sponsoring this workshop to review the progress and results of EPA-funded Science To Achieve Results (STAR) research on endocrine disrupting chemicals (EDCs). In addition, the workshop will review related research on EDCs being conducted in ORD laboratories.

Day 1 - Thursday, July 13, 2006

- 8:00 a.m. – 8:30 a.m. Registration**
- 8:30 a.m. – 8:40 a.m. Welcome and Introductions**
Susan Laessig, Project Officer/Toxicologist, EPA/NCER
- 8:40 a.m. – 9:00 a.m. Opening Remarks**
Christopher Zarba, Acting Deputy Director, EPA/NCER
- 9:00 a.m. – 9:20 a.m. Overview of EPA Endocrine Disruptor Research Program**
Elaine Francis, National Program Director, EPA/NCER

Session 1: Effects of EDCs on Reproduction

Chair: Susan Laws, ORD/NHEERL, Reproductive Toxicology Division

Description: This session focuses on human epidemiological studies examining the association between EDC exposures and reproductive outcomes. Potential associations between EDCs such as pesticides, organochlorines, and personal care products and genital abnormalities, endometriosis, and function of the reproductive and immune systems will be explored.

Discussion Questions:

1. The Hill Criteria of Causation outlines the minimal conditions needed to establish a causal relationship between a specific factor and a biological outcome/disease. What is the biological basis (e.g., plausibility) to support the hypothesis that these chemicals caused the observed effects?
2. In those epidemiological studies where an association between exposure and an adverse reproductive outcome has been demonstrated, what next steps are needed to demonstrate cause and effect?

- 9:20 a.m. – 9:50 a.m. Effects of EDCs on Reproduction: Reducing Scientific Uncertainties**
Susan Laws, EPA/NHEERL
- 9:50 a.m. – 10:25 a.m. Persistent Organic Pollutants and Endometriosis Risk**
Victoria Holt, Fred Hutchinson Cancer Research Center

- 10:25 a.m. – 10:40 a.m. Break**
- 10:40 a.m. – 11:15 a.m. Study of Phthalates in Pregnant Women and Children**
Shanna Swan, University of Missouri
- 11:15 a.m. – 11:50 a.m. Latent Effects of Gestational Exposure to Heptachlor**
Dean Baker, University of California, Irvine
- 11:50 a.m. – 12:00 p.m. Discussion**
- 12:00 p.m. – 1:00 p.m. Lunch (EPA Cafeteria)**

Session 2: Effects of EDCs on Puberty

Chair: Tammy Stoker, ORD/NHEERL, Reproductive Toxicology Division

Description: This session will focus on the epidemiology and toxicity of EDCs on pubertal development. Presentations will address associations between EDCs and male development in an exposed human population as well as the use of animal models to elucidate the mechanisms by which EDCs alter puberty in females.

Discussion Questions:

1. Are the currently used animal models adequate to evaluate alterations in puberty following early exposures to EDCs?
2. Does our understanding of the underlying biological processes regulating puberty allow us to predict what environmental chemicals would impact pubertal development in animal models and/or humans?

- 1:00 p.m. – 1:30 p.m. The Effects of EDCs on Pubertal Development: Current Research Efforts by EPA**
Tammy Stoker, EPA/NHEERL
- 1:30 p.m. – 2:05 p.m. Dioxins, Male Pubertal Development, and Testis Function**
Russ Hauser, Harvard School of Public Health
- 2:05 p.m. – 2:40 p.m. Low Dose Effects of *In Utero* Exposure to Cadmium on Puberty**
Mary Beth Martin, Georgetown University
- 2:40 p.m. – 2:50 p.m. Break**

Session 3: Biomarkers of Exposure to EDCs

Chair: Jim Lazorchak, ORD/NERL, Ecological Exposure Research Division

Description: This session will examine the development and application of biomarkers for determining the total activity of EDCs in environmental samples. A variety of molecular, biochemical, and whole animal biomarkers in both vertebrate and invertebrate systems will be discussed for use as rapid assessment tools for field monitoring.

Discussion Questions:

1. At what level of EDC exposure do biomarkers and/or omic measures need to be able to detect (i.e., at levels shown in laboratory experiments to cause fecundity effects or the onset of exposure before effects are measured)?
2. In order for exposure markers to be useful to regulators, do they need to be linked to population or individual level effects or are they useful only if they detect the presence of EDCs?

- 2:50 p.m. – 3:20 p.m.** **U.S. EPA’s Research on the Ecological Exposure and Effects of Endocrine Disruption Chemicals and Pharmaceuticals**
Jim Lazorchak, EPA/NERL
- 3:20 p.m. – 3:55 p.m.** **Developing Rapid Assessment Tools to Evaluate the Biological Effects of Complex and Biologically Active Mixtures**
Heiko Schoenfuss, Saint Cloud State University
- 3:55 p.m. – 4:40 p.m.** **Systems Approach to Assessing Cumulative Exposure to EDCs**
Gerald LeBlanc, North Carolina State University
- 4:40 p.m. – 5:30 p.m.** **Panel Discussion**
Moderators: Susan Laessig and Barbara Glenn, EPA/NCER
- A Panel of Program and Regional representatives will discuss the relevance of EDC research to regulatory requirements, the use of EDC research results in environmental policy decisions, and anticipated future research needs.
- Proposed Questions for Discussion:**
1. What exposures and endpoints are appropriate and useful for regulations and risk assessment?
 2. How will the tools being developed be used and by whom?
 3. What can ORD do to improve communications with programs and regions about EDCs research?
- 5:30 p.m. – 7:00 p.m.** **Poster Session (EPA Atrium)**
Refreshments will be served.
- 7:00 p.m.** **Adjourn**
Group dinner at a local restaurant. Please sign up at the registration desk.

Day 2 – Friday, July 14, 2006

- 8:15 a.m. – 8:30 a.m.** **Registration**
- 8:30 a.m. – 9:00 a.m.** **Grant Question and Answer Session**
Susan Laessig and Barbara Glenn, EPA/NCER

Session 4: Thyroid Toxicants

Chair: Mary Gilbert, ORD/NHEERL, Neurotoxicology Division

Description: This session will focus on thyroid toxicants, including exposures and outcomes in human populations and animal models. Presentations will examine human exposure to thyroid toxicants through food sources and the effects of thyroid toxicants on thyroid-related diseases and development of the brain.

Discussion Questions: TBD

- 9:00 a.m. – 9:30 a.m.** **Chemicals That Disrupt the Thyroid Axis: An Overview of the Program in NHEERL**
Mary Gilbert, EPA/NHEERL

- 9:30 a.m. – 10:05 a.m. Endocrine Disrupting Chemicals and Thyroid Outcomes**
Henry Anderson, Wisconsin Department of Health and Family Services
- 10:05 a.m. – 10:40 a.m. Low Dose Effects of Thyroid Toxicants on Neurodevelopment**
Thomas Zoeller, University of Massachusetts, Amherst
- 10:40 a.m. – 10:55 a.m. Break**
- 10:55 a.m. – 11:30 a.m. Development of a BBPK Model for the Thyroid Axis in the Pregnant Rat and Fetus for the Dose Response Analysis of Developmental Neurotoxicity**
Jeffrey Fisher, University of Georgia
- 11:30 a.m. – 12:00 p.m. Discussion**
- 12:00 p.m. – 1:00 p.m. Lunch (EPA Cafeteria)**

Session 5: Analytical Methods for EDC Mixtures

Chair: Bryan Boulanger, ORD/NRMRL

Description: This session will present research on the development of novel analytical techniques for addressing the problem of measuring cumulative endocrine activity in environmental samples.

Discussion Questions:

1. Could the tools being developed be adapted for field deployment, particularly for real time assessment?
2. Do you have recommendations on sampling frequency or patterns to maximize the quality and utility of information gathered from field settings?

- 1:00 p.m. – 1:30 p.m. U.S. EPA's Risk Management Research on EDCs**
Bryan Boulanger, EPA/NRMRL
- 1:30 p.m. – 2:05 p.m. Integrated Microfluidic System for Bioluminescent Bioreporting, Separations, Vibrational Spectroscopy, and Microcantilever Transducer Evaluation of EDCs**
Michael Sepaniak, University of Tennessee
- 2:05 p.m. – 2:40 p.m. Development of Receptor to Population-Level Analytical Tools for Addressing EDC Exposure in Wastewater-Impacted Estuarine Systems**
Lee Ferguson, University of South Carolina
- 2:40 p.m. – 3:00 p.m. Workshop Summary**
Susan Laessig, EPA/NCER
- 3:00 p.m. Adjourn**