

# NIEHS: Promoting Global Environmental Health

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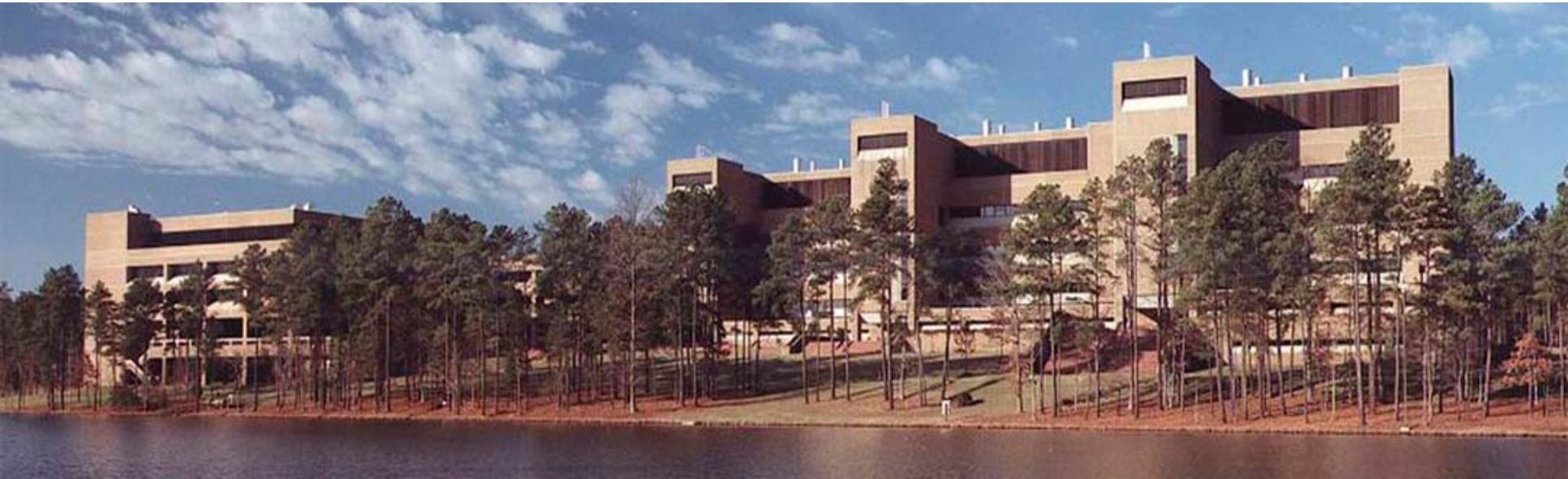
Health Component  
US-Ukraine Joint Committee Meeting  
Bethesda, Maryland

January 18, 2011



# We are the National Institute of Environmental Health Sciences

- One of the National Institutes of Health, but located in Research Triangle Park, NC
- Wide variety of programs supporting our mission of environmental health:
  - Intramural laboratories
  - Extramural funding programs
  - National Toxicology Program



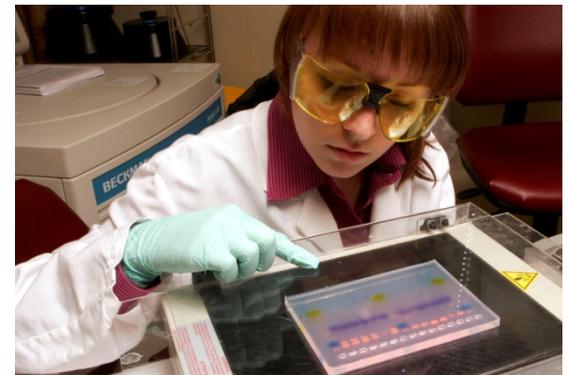
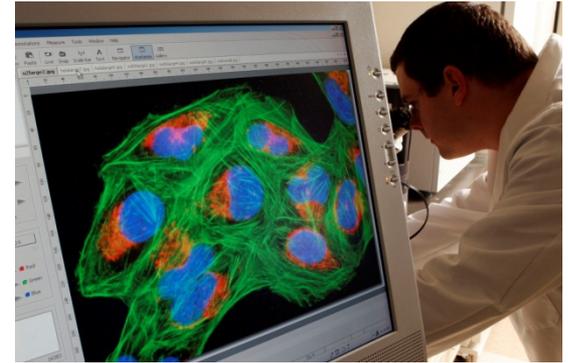
## NIEHS Mission

...to reduce the burden of human illness and disability by understanding how the environment influences the development and progression of human disease



## NIEHS Division of Intramural Research

- **Basic, applied and epidemiological research to understand biological consequences of environmental exposures**
- **Interactive and interdisciplinary**
- **High risk and long term**
- **12 laboratories and branches, plus the Clinical Research Program** Examples of research focus areas
  - **Molecular carcinogenesis**
  - **Neuroscience and neurotoxicology**
  - **Signal transduction**
  - **Reproductive and developmental toxicology**
  - **Respiratory biology**
  - **Structural biology**
  - **Epidemiology and biostatistics**
- **New Clinical Research Unit opened July 2009**



# NIEHS Division of Extramural Research and Training A Collaborative Scientific Enterprise



- Children's Environmental Health and Disease Prevention Research Centers
- Centers for Oceans and Human Health
- Obesity and the Built Environment program
- Autism: Early Autism Risk Longitudinal Investigation
- Superfund Research Program/Worker Training Program
- Partners in Environmental Public Health

# NIEHS Superfund Program: Two Unique Roles

## SRP Mandates

- Detect hazardous substances in the environment
- Evaluate the risk of hazardous substances on human health
- Develop basic biological, chemical, and physical methods to reduce the toxicity of hazardous substances

## Worker Training

- Create state-of-the-art training programs for hazardous materials handlers, chemical emergency responders, and waste cleanup workers
- Integrate training with National Response Plan

## NIEHS

Use environmental sciences to understand human biology and human disease

EPA

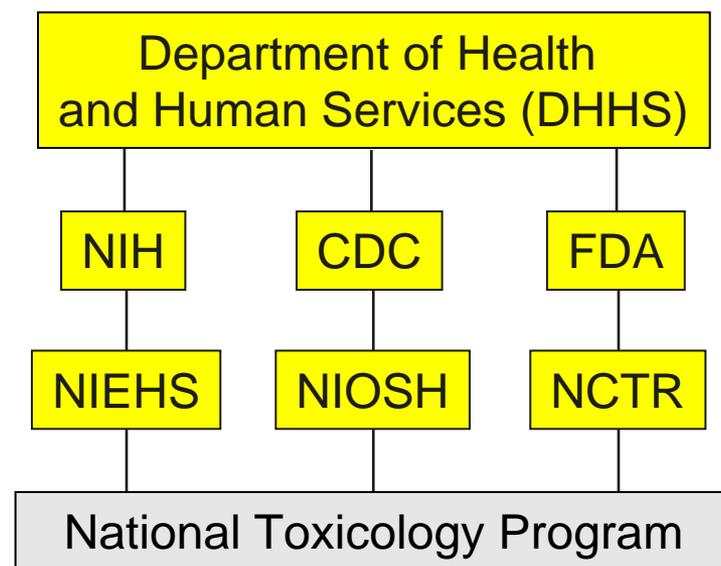
Regulate to protect human health and the environment

ATSDR

Prevent harmful exposures and diseases related to toxic substances

# National Toxicology Program

- Interagency program
  - Established in 1978 to coordinate toxicology research across the Department of Health and Human Services (DHHS)
  - Headquartered at NIEHS
- Research on submitted “nominations”
  - Thousands of agents evaluated in comprehensive toxicology studies
  - Results communicated through technical reports, scientific publications and the web
- Analysis activities
  - Report on Carcinogens (RoC)
  - Center for the Evaluation of Risks to Human Reproduction (CERHR)
  - NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM)



[ntp.niehs.nih.gov](http://ntp.niehs.nih.gov)

# NIEHS Global Environmental Health Mission

**Engage in research to understand the health effects of environmental exposures that transcend national or geographical borders, or that affect populations in multiple countries.**



# Historical Collaboration Between NIEHS and Ukraine

- European Longitudinal Study of Pregnancy and Childhood
- Collaborations with Ukraine Institute of Pediatrics, Obstetrics and Gynecology, University of Illinois
- Multiple publications on birth outcomes, effects of POPs, Chernobyl survivors



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Mutation Research 559 (2004) 143–151

**MR**  
Genetic Toxicology and  
Environmental Mutagenesis

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## Mini- and microsatellite mutations in children from Chernobyl accident cleanup workers

Robbert J.C. Slebos<sup>a</sup>, Ruth E. Little<sup>b</sup>, David M. Umbach<sup>c</sup>, Yuriy Antipkin<sup>d</sup>, Tamara D. Zadaorozhnaja<sup>d</sup>, Nikola A. Mendel<sup>d</sup>, Courtney A. Sommer<sup>a</sup>, Kathleen Conway<sup>e,f</sup>, Eloise Parrish<sup>f</sup>, Sara Gulino<sup>f</sup>, Jack A. Taylor<sup>a,b,\*</sup>

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<sup>d</sup> Ukrainian Institute of Pediatrics, Obstetrics & Gynecology, Kiev, Ukraine



## Persistent Organochlorine Compounds and Birth Weight

BETH C. GLADEN, PHD, ZORESLAVA A. SHKIRYAK-NYZHNYK, MD, NATALIYA CHYSLOVSKA, MD, TAMARA D. ZADOROZHNAJA, MD, AND RUTH E. LITTLE, ScD

**PURPOSE:** To determine whether weight at birth is related to prenatal exposure to persistent organochlorine compounds.

**METHODS:** Birth weight was obtained for 197 singleton infants drawn from the general population born in two cities in Ukraine in 1993 to 1994. Concentrations of seven organochlorine pesticides (p,p'-DDT, p,p'-DDE, β-hexachlorocyclohexane, hexachlorobenzene, trans-nonachlor, oxychlorodane, heptachlor epoxide) and 11 polychlorinated biphenyl congeners measured in maternal milk taken at four or five days after birth were used as an index of prenatal exposure.

**RESULTS:** The greatest differences were seen for β-hexachlorocyclohexane, with a pattern not suggestive of dose-response; infants in the lowest tertile were small, those in the central tertile were large, and those in the upper tertile were average. Adjustment for gestational age and other potential confounders had little effect on these patterns. Infants in the two upper tertiles for p,p'-DDE were larger than those in the lower tertile, with the effect being more striking after adjustment for gestational age. Adjustment for potential confounders made the pattern disappear. Other chemicals showed no convincing evidence of effects.

**CONCLUSIONS:** Prenatal exposure to the chemicals studied, at concentrations currently seen in this population, does not impact weight at birth.

*Ann Epidemiol* 2003;13:151–157. Published by Elsevier Science Inc.

# NIEHS GEH Portfolio Analysis (2005-2007)

**Goal: Identify Extramural GEH Grants by the following criteria:**

The grant, or any part of the grant:

**Occurs in a foreign country**

**and**

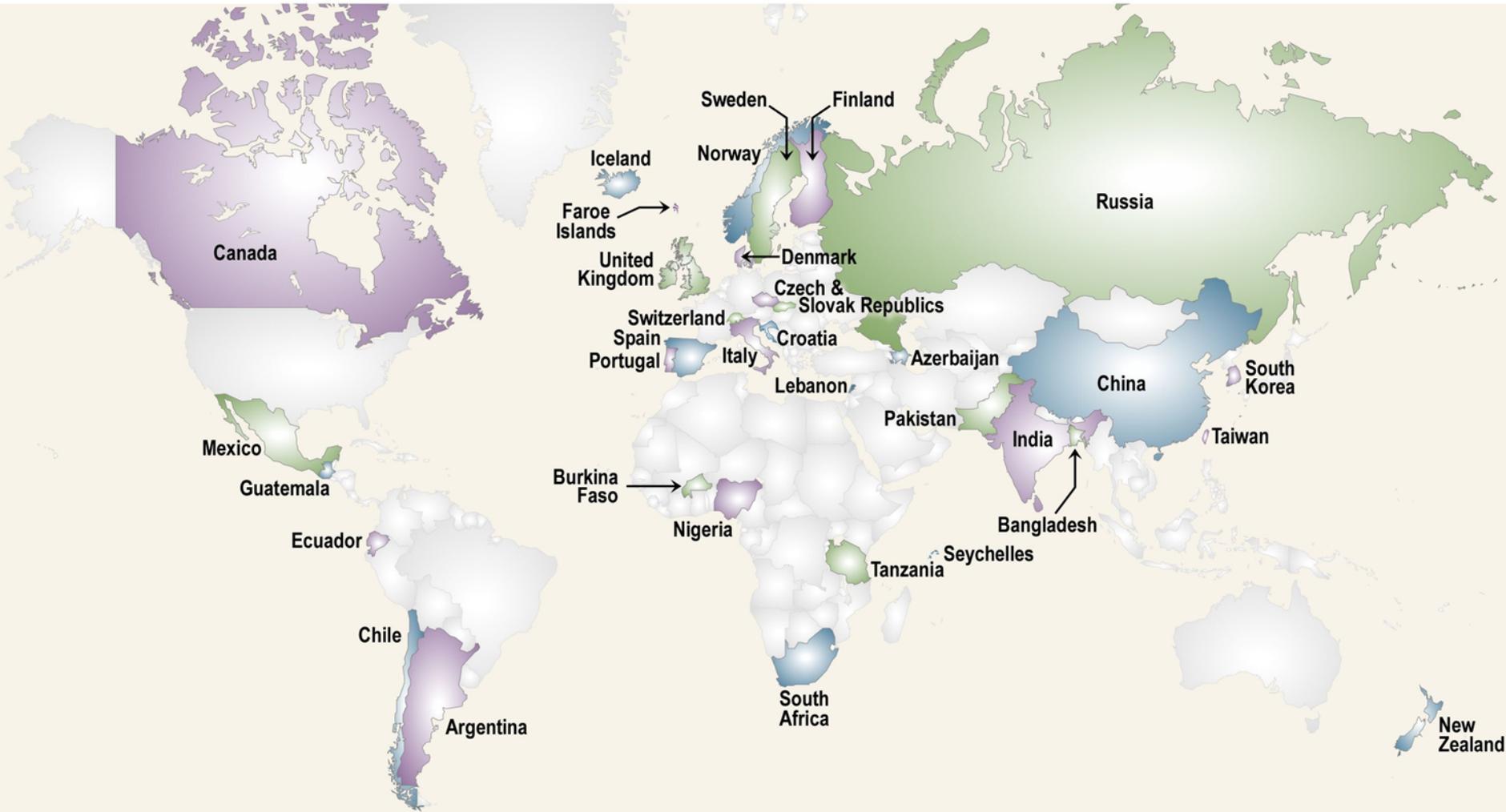
- **studies a foreign population** (including tissue samples)

**or**

- **collects environmental samples**

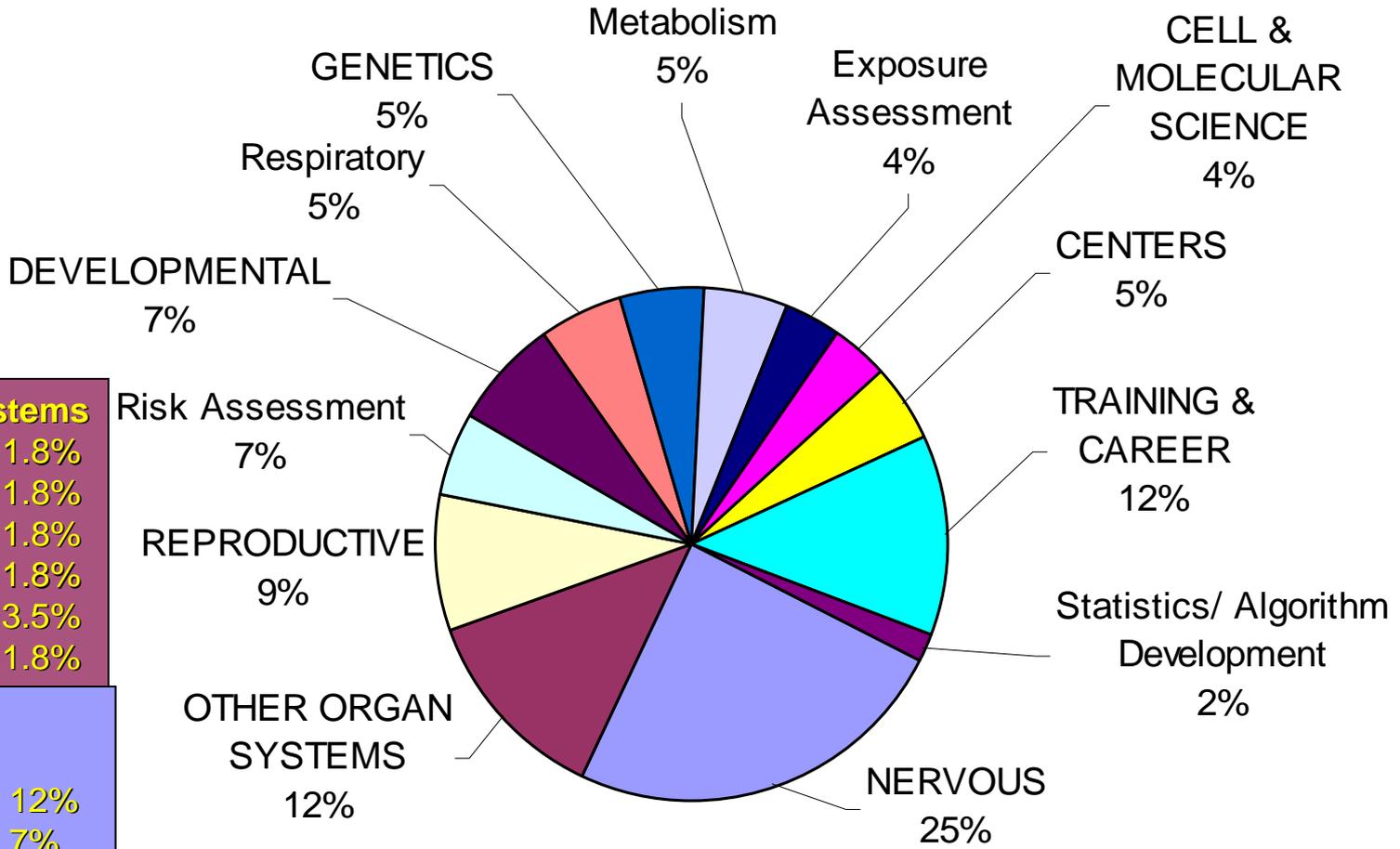
**Final Project Count = 57**

# NIEHS GEH Portfolio: 57 projects in 35 countries



# NIEHS GEH Portfolio: Science Codes

## Project Count (N=57) — 2005-2007

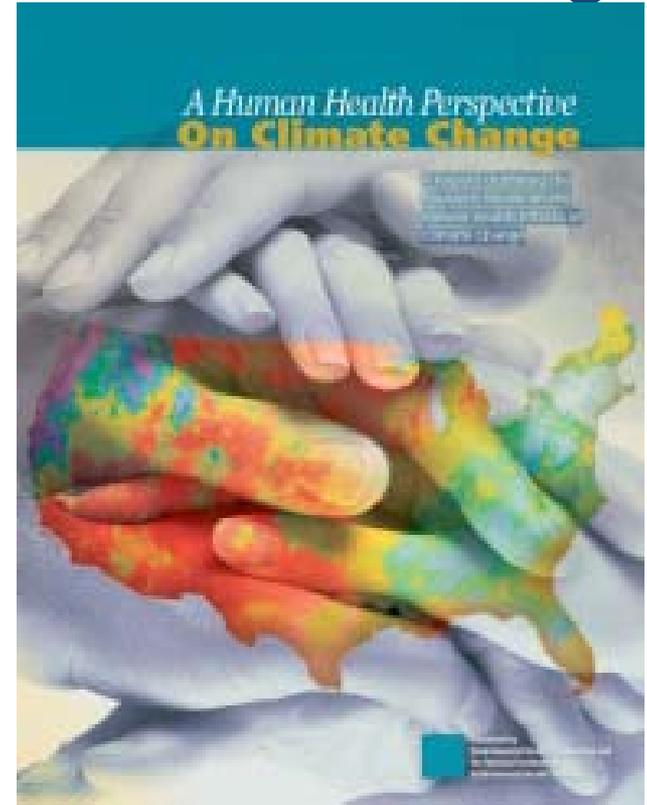


Other Organ Systems	
Cardiovascular	1.8%
Endocrine	1.8%
Immune	1.8%
Kidney/Bladder	1.8%
Liver	3.5%
Skin	1.8%

Neuro-	
Developmental	12%
Behavioral	7%
Degenerative	5%

# A Human Health Perspective on Climate Change

- Identifies research needed to better understand the health effects of climate change, and choose the healthiest mitigation and adaptation strategies:
  - 11 Health Consequences Categories
  - Crosscutting issues
- Use by individual agencies to inform their research agendas and to develop a coordinated federal research agenda on climate change and health

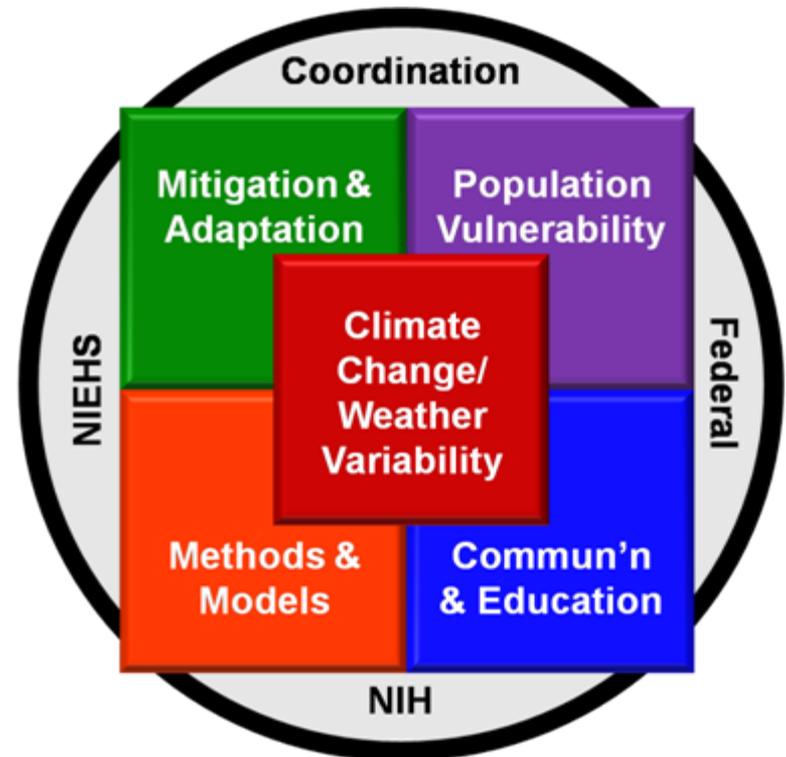


[www.niehs.nih.gov/climateport](http://www.niehs.nih.gov/climateport)



## Goals of the Human Health Impacts of Climate Change (HHICC) Program

- 1. Support a variety of NIEHS sponsored research and mission-related activities***
- 2. Coordinate research initiatives across the NIH and with other federal agencies***



# NIH ARRA Funding of Climate Change Research



Heat morbidity and mortality



Respiratory effects of wildfires



Modeling asthma, skin cancer and salmonellosis



Cholera-Climate Prediction



Population Displacement Disease

## A Wealth of International Collaborations

- WHO- longstanding cooperative agreement
  - Initial focus on 207 Environmental Health Criteria documents
  - Subsequent focus on collaboration and international workshops
- IARC- NTP scientists participate in IARC reviews and manuscript development
- Fogarty International Center- support for International Training grants such as ITREOH
- NICEATM/ICCVAM- extensive collaborations with European and Asian counterparts

**Thank you!**

