

Moving Environmental Health Sciences Forward

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National Institute of Environmental Health Sciences

National Toxicology Program



New Opportunities for NIEHS

- Health and Environment is a priority for the new Administration.
- Environment is a global concern.
- We need the best individual and team science to address complex diseases and complex environmental impacts.
- We need to improve integration across research disciplines.
- We need to improve our translation of basic science into human health protection.

Recent Actions and Priorities

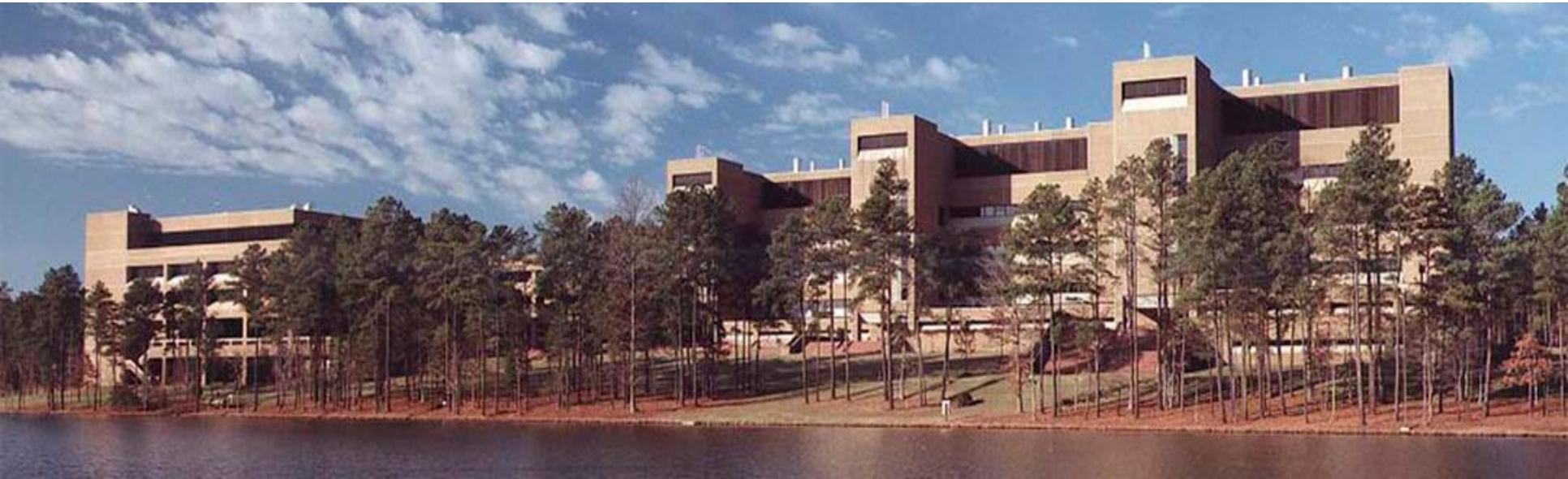
- Top leadership positions will be opened to national searches
 - Scientific Director, Director of Extramural Research and Training, Clinical Director, Deputy Director
 - Also ethics, diversity/education
- NIEHS Clinical Research Unit will be opened
 - No invasive procedures/inhalation exposures
 - outside advisory panel
- Facility Sharing initiated with EPA
- Commitment to Restoring Close Interactions with Bethesda and Extramural Communities

NIEHS Highlights and Milestones

- NIEHS, with NIDA, NIDDK, and the NIH Office of Portfolio Analysis and Strategic Initiatives, announced Sept. 29, 2008, funding for the new NIH Roadmap Epigenomics Program that will invest more than \$190 million over the next five years to accelerate this field.
- 2008 Recipients of the Outstanding New Environmental Scientists (ONES) awards presented their work at a meeting Dec. 11, 2008, in Rodbell Auditorium. The awards recognize and seek to advance the careers of outstanding junior investigators.
- NTP established new evaluation criteria for reproductive, developmental and immunotoxicology studies. These criteria are patterned after the cancer bioassay evaluation language. We predict these will be adopted universally.

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
 - National Toxicology Program
 - Extramural funding programs



Appropriations: FY2009

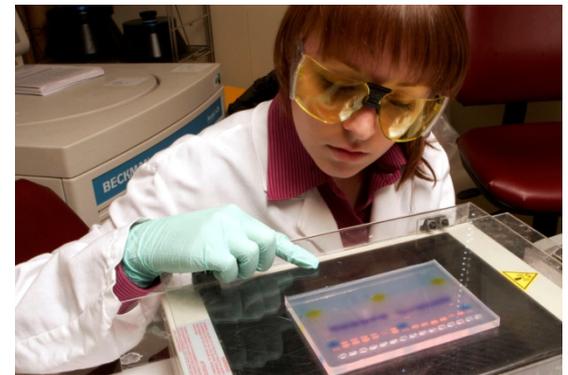
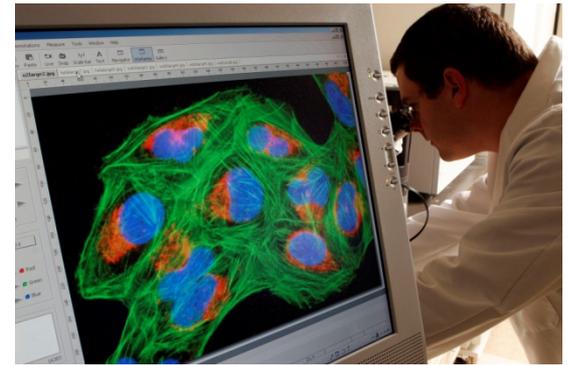
	FY 2008 Enacted (incl Supp)	FY 2009 Omnibus
<i>NIH</i>	\$ 29,379,524,000	\$30,317,024,000
<i>Common Fund</i>	\$ 498,244,000	\$ 541,133,000
NIEHS	\$ 645,669,000	\$ 662,820,000
Superfund	\$ 77,546,000	\$ 78,074,000
DOE Training	\$ 9,909,000	\$ 10,000,000
NIEHS TOTAL	\$ 733,124,000	\$ 750,894,000

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
- 14 Group Leaders, 47 Senior Investigators, 6 Senior Scientists, 13 Tenure Track Investigators
- Total intramural census: 926
- Facility size: 225,249 square feet

Division of Intramural Research

- Examples of research focus areas
 - Molecular carcinogenesis
 - Neuroscience and neurotoxicology
 - Signal transduction
 - Reproductive and developmental toxicology
 - Respiratory biology
 - Structural biology
 - Epidemiology and biostatistics
- Training Opportunities
 - Current trainees: 178 postdoctoral, 12 graduate students, 10 pre-doc
 - Consistently ranked in the top ten of the list of “Best Places to Work for Postdocs” in the U.S.
 - Go to <http://www.niehs.nih.gov/careers/research/index.cfm> and click on NIEHS Postdoctoral Opportunities



2009 NIEHS Biomedical Career Fair

- May 1, 2009 at the EPA campus in Research Triangle Park, NC
- Keynote address from Dr. Peter S. Fiske, Chief Technology Officer of PAX Mixer, Inc. and PAX Water Technologies
- Career information sessions on: tenure track research; teaching; science communications; industry (from small biotech to big pharma); technology transfer and entrepreneurship; science policy, administration, and regulatory affairs
- Networking luncheon
- Workshops on resume writing and interviewing

Registration opens March 23. Visit the Career Fair website for more information:

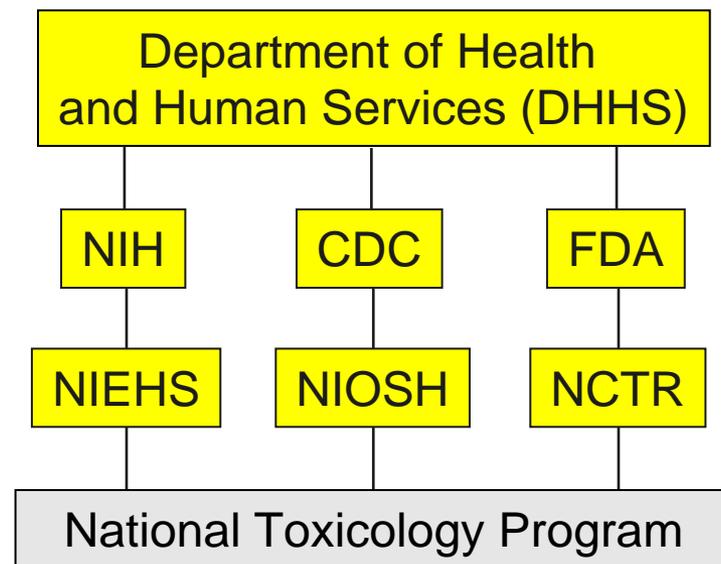
<http://www.niehs.nih.gov/news/events/highlight/careerfair/index.cfm>

Direct questions to: careerfair@niehs.nih.gov



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



NTP Goals

- Develop information about potentially hazardous substances

- Strengthen the science base in toxicology and risk assessment

- Develop and validate improved testing methods

- Communicate with stakeholders
 - Health regulatory and research agencies, scientific and medical communities, and the public

- Coordinate toxicological testing programs across DHHS and federal government





- Develop information about potentially hazardous substances

- Selected recent carcinogenicity reports

- Androstenedione
- Goldenseal root powder
- Hexavalent chromium

- Ongoing research

- Cellular phone radiation
- “Dioxin-like” chemicals
- Flame retardants
- Herbal medicines/dietary supplements
- Mold
- Nanomaterials
- Phthalates

- Assessments

- Bisphenol A (CERHR)
- Hydroxyurea (CERHR)
- Styrene (RoC)

- Genistein / Soy infant formula (CERHR)



- Strengthen the science base in toxicology and risk assessment

- Evaluate the TEF concept for predicting cancers caused by dioxin-like chemicals
- Determine influence of physicochemical properties on *in vivo* biological effects of nanomaterials
- Emphasize perinatal dosing regimens in toxicology and carcinogenesis studies
- Increase use of internal dose metrics in understanding and modeling dose response relationships
- Support targeted exposure assessments through IAG with NIOSH
- Explore the genetic basis of phenotypic responses through the use of
 - Multiple mouse strains and genetically modified models
 - Dense SNP mapping of commonly used mouse strains



- Develop and validate improved testing methods

- Apply high throughput screening (HTS) technologies to toxicology testing (e.g., Tox21)
- Apply toxicogenomics for predicting rodent liver carcinogens
- Hold workshops on current topics in toxicology
 - Species/strains, cancers of endocrine responsive tissues, HTS vendors
- Develop methods for safety evaluations of DNA-based therapeutics
- Continue to evaluate alternative methods for regulatory toxicology with respect to the 3Rs
- Carry out validation studies on selected alternative test methods
 - LUMI-CELL® ER assay
- Modify multigenerational reproductive/developmental toxicity protocol to improve power



- Communicate with stakeholders

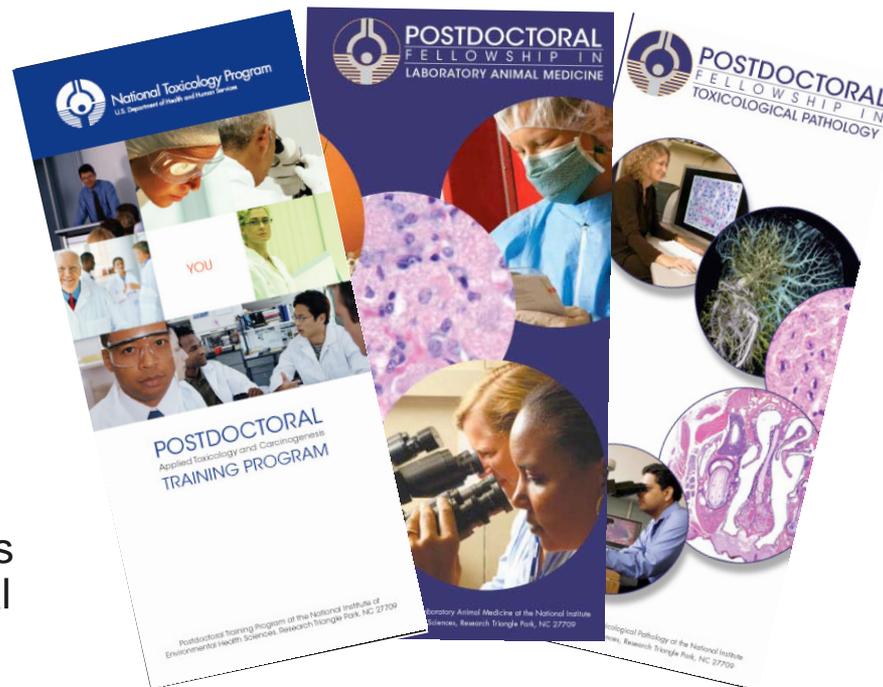
- Health regulatory and research agencies, scientific and medical communities, and the public

- Develop evaluation criteria for consistent conclusions in reproductive, developmental and immunotoxicity studies
- Develop new report series to communicate results from reproductive, developmental and immunotoxicology studies
- Develop international collaborations to speed worldwide adoption of new test methods
- Improve search and analysis capabilities for data accessible on the NTP website
- Place all HTS data on PubChem as soon as verified



NTP Training Programs

- Provide postdoctoral trainees opportunities to build their careers
 - Toxicology and carcinogenesis trainees participate as NTP study scientists
 - Pathology trainees gain expertise in diagnostic pathology
 - Laboratory animal medicine trainees gain experience in laboratory animal veterinary care.



NIEHS Division of Extramural Research and Training Extramural Opportunities: Current NIEHS Requests for Applications

<http://www.niehs.nih.gov/funding/grants/announcements/request.cfm>

- Environmental Sensors for Personal Exposure Assessment (SBIR)
- Children's Environmental Health and Disease Prevention Research Centers
- Children's Environmental Health and Disease Prevention Research Centers: Formative Centers
- Environmental Health Sciences Core Center Grants
- Superfund Basic Research and Training Program
- Research to Action: Assessing and Addressing Community Exposures to Environmental Contaminants

Superfund Research Program

- A university-based program established in 1986 under SARA
- Supports basic research in the biomedical and non-biomedical fields through:
 - integrated multi-project programs
 - small-business innovative research
 - individual research projects
- Facilitates training, community outreach, partnering, & technology transfer

<http://www.niehs.nih.gov/research/supported/sbrp/index.cfm>



Multi-Project Program (P42)

n *Required Program Components*

- Minimum of: 2 Biomedical Research Projects+2 Non-Biomedical Research Projects+1 Research Support Core
- In addition: 1 Administrative Core+1 Research Translation Core

n *Optional Program Components*

- Community Outreach Core+Training Core

n *Research Areas*

- Mechanism-Based Ecosystems
- Susceptibility and Predisposition Mixtures
- Exposure Assessment Risk Assessment
- Remediation

Small Business Innovation Research/ Small Business Technology Transfer Research (SBIR/STTR) (R43/R41)

<http://www.niehs.nih.gov/research/supported/programs/sbir/hwaerp.cfm>

Research Areas:

- Remediation Technologies
- Monitoring Technologies
- Site Characterization Methods
- Technologies to assess bioavailability

Individual Research Project Grants (R01)

(earlier RFA)

NIEHS Superfund Worker Training Program

- Created in 1986 by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Section 126(g).
- Assistance program for training and education of workers engaged in activities related to hazardous waste generation, removal, containment or emergency response and hazardous materials transportation and emergency response.
- Has trained over 1 million workers in high risk occupations such as toxic waste cleanup and chemical emergency response.



Not Forgetting Katrina



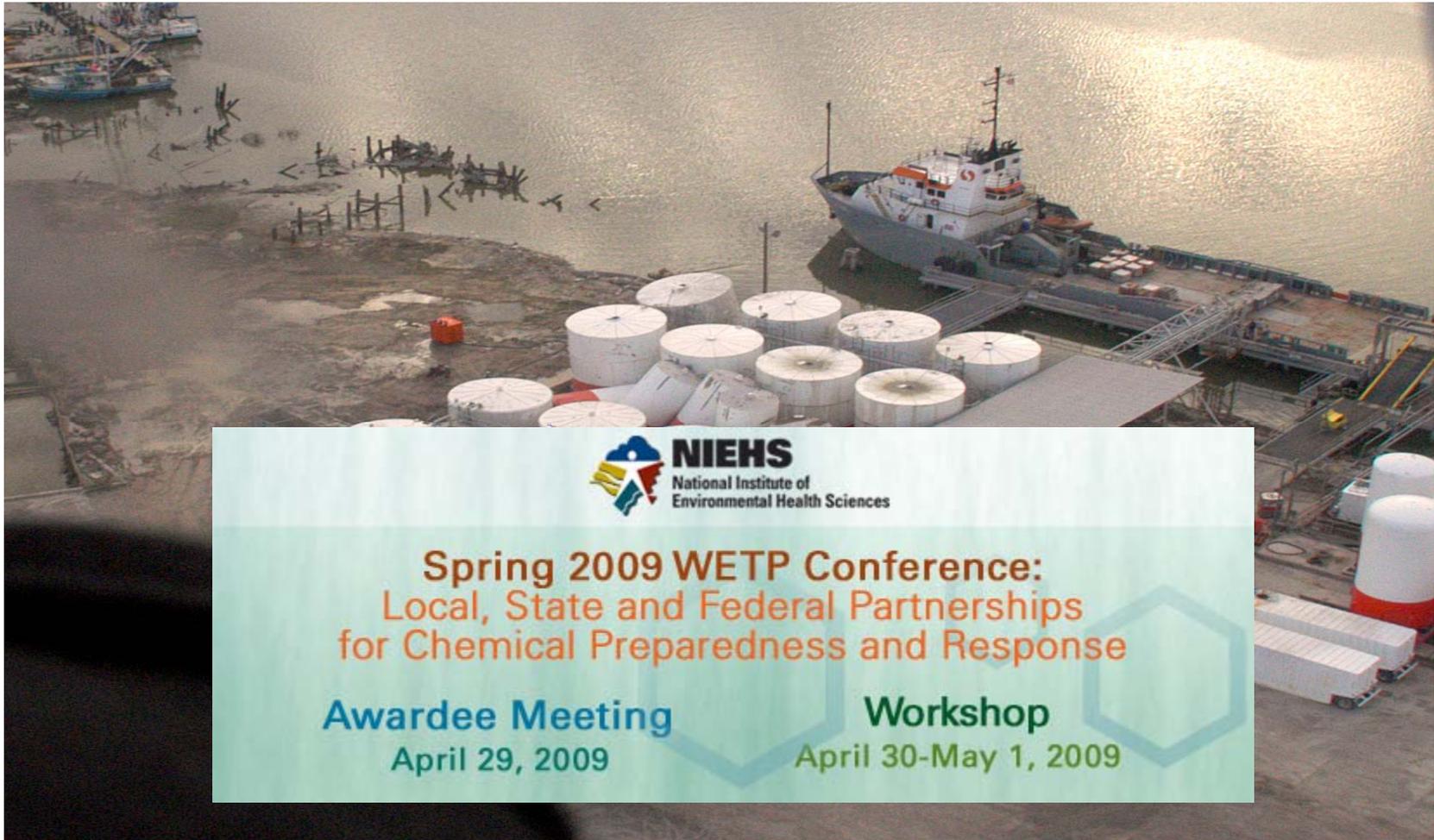
In a unique "bootstrap" program by two NIEHS grantees, entitled Safe Way Home, Dillard University and the United Steelworkers Union trained local residents to undertake such tasks in rebuilding their homes - their safety and health training supported with NIEHS WETP funds.

NIEHS WETP Commitment to New Orleans is ongoing. Shortly before Hurricane Katrina, NIEHS WETP made a five year Minority Worker Training Program award to the Dillard University Deep South Center for Environmental Justice, located in New Orleans and part of the Historically Black Colleges and Universities Consortium (HBCU).



NIEHS Chemical Preparedness Meeting, Cincinnati, OH

Chemical Response Hazards



Spring 2009 WETP Conference:
Local, State and Federal Partnerships
for Chemical Preparedness and Response

Awardee Meeting
April 29, 2009

Workshop
April 30-May 1, 2009





Partnerships for Environmental Public Health: A Program for the Future

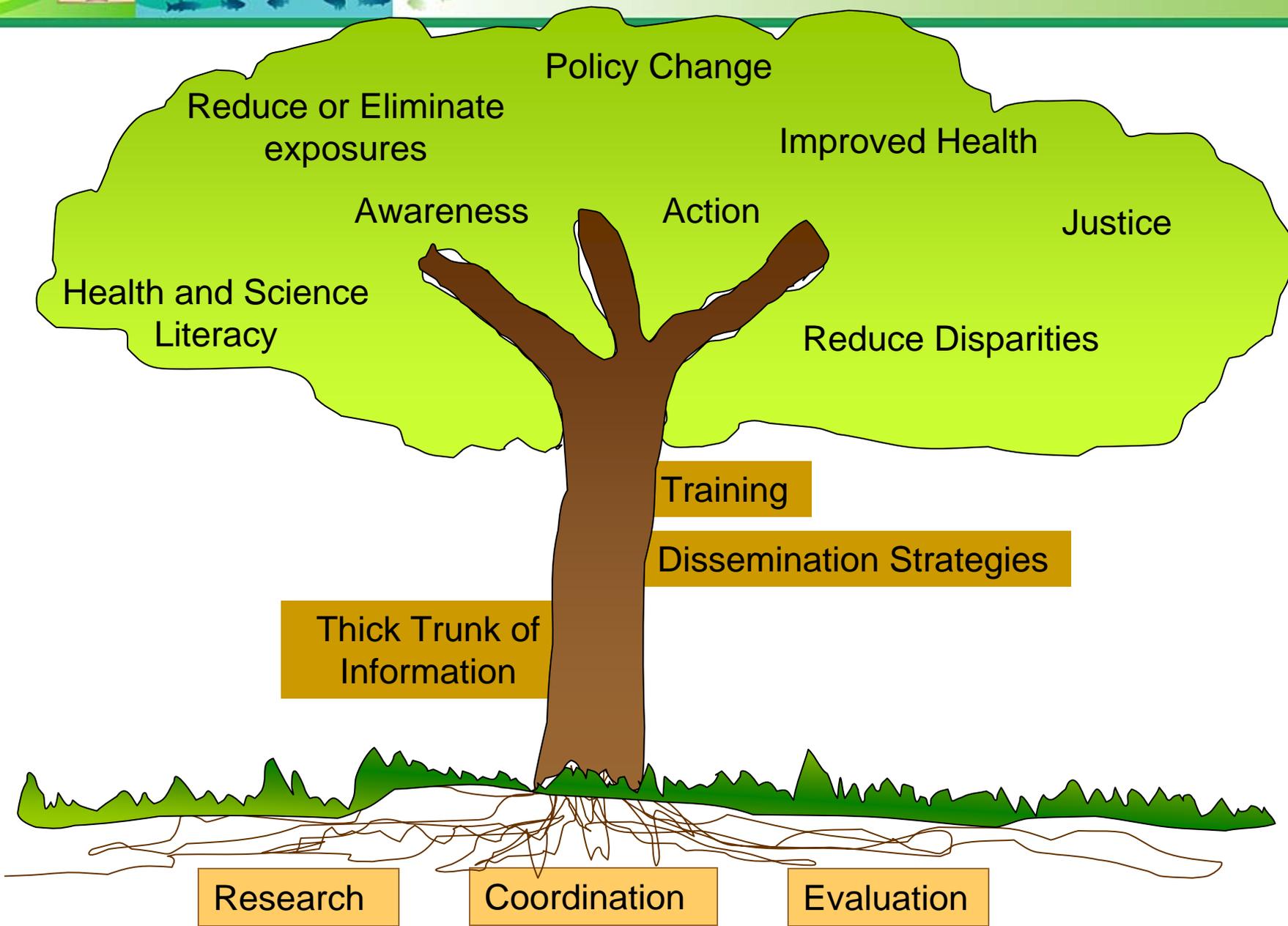


Goals of the PEPH program

- Strategically coordinate and integrate the various new and existing initiatives that involve communities and scientists working together on contemporary issues in Environmental Public Health research.
- Develop and evaluate strategies to communicate environmental public health messages to a diversity of audiences.
- Create and provide materials to increase awareness and literacy about environmental health risks.
- Evaluate program contributions to the advancement of environmental public health.



Partnerships For Environmental Public Health





PEPH: Next 10 Years

- Provide and promote multiple ways for researchers and communities to obtain support for innovative and creative activities that will place them under the PEPH umbrella
 - On-going Program Announcements
 - Funding announcements with set-sides
 - **Unsolicited applications**
- PEPH Website
 - Program descriptions
 - Funding opportunities
 - Products and highlights

<http://www.niehs.nih.gov/research/supported/programs/peph/index.cfm>



Current Funding Opportunity

RFA: Research to Action: Assessing and Community Exposures to Environmental Contaminants (R21)

- Application Due Date: *April 1, 2009*
- Anticipated Start Date: *September 30, 2009*
- Web: <http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-09-001.html>
- Program Administrator: Caroline Dilworth,
caroline.dilworth@nih.gov

Trans-NIH Program Announcements:

- Web: <http://www.niehs.nih.gov/research/supported/programs/peph/foa.cfm>

Career Development Opportunities thru NIEHS

<http://www.niehs.nih.gov/funding/grants/announcements/announcements.cfm>

- Career Enhancement Award for Stem Cell Research (K18)
- Mentored Patient-Oriented Research Career Development Award (K23)
- Mentored Clinical Scientist Research Career Development Award (K08)
- Mentored Research Scientist Development Award (K01)
- Mentored Quantitative Research Development Award (K25)
- Independent Scientist Award (K02)
- Midcareer Investigator Award in Patient-Oriented Research (K24)
- NIH Pathway to Independence Award (K99/R00)



Additional Opportunities

Program Announcements

- Research Supplements to Promote Diversity in Health-Related Research
- Research Supplements to Promote Re-Entry into Biomedical and Behavioral Research Careers
- NIH Support for Conferences and Scientific Meetings
- Listed at <http://www.niehs.nih.gov/funding/grants/announcements/announcements.cfm>



The American Recovery and Reinvestment Act of 2009

\$10.4B for NIH, over 2 years

- \$1B for extramural facility construction and renovation
- \$300M for shared instrumentation
- \$8.2B for research, of which \$7.4B goes to the ICs and \$800M stays in the OD
- \$500M for B and F, including new construction
- \$400M for Comparative Effectiveness Research (CER)
 - Compares effectiveness of one treatment/intervention to another treatment/intervention for the same disease

NIH Economic Recovery Funds

- Expeditious, Merit-based Process for maximum economic, health, and science benefits
 - 2 years of funding
 - Maximize flexibility within the stimulus guidelines
- Approaches for NIH funding
 - Proportional to each NIH Institute: \$7.4B
 - 2 year R01 Funding –
 - Scientifically appropriate
 - Already reviewed, highly meritorious
 - New R01s
 - Supplements to Current Grants
- Challenge Grants – Centrally Funded ~\$200M
 - Address defined health and science problems

NIH Challenge Grants – NIEHS Research Areas

<http://www.niehs.nih.gov/recovery/challengegrants.cfm>

Selected Priority Challenge Topics:

- Methods for studying interactions among behaviors, environments, and genetic/epigenetic processes
- Measuring the body burden of emerging contaminants: Biosensors and lab-on-chip technology for measuring *in vivo* environmental agents
- 3-D or virtual models to reduce the use of animals in research: Creation of miniature multi-cellular organs for high throughput screening for tox testing
- Methods to evaluate the health and safety of nanomaterials
- Effects of environmental exposures on phenotypic outcomes using non-human models.
- Building trust between researchers and communities through capacity building in Environmental Public Health



We Can't Do It Without YOU!

Questions and Discussion

