



National Institute of Environmental Health Sciences
Your Environment. Your Health.

Worker Training Program Awardee Meeting Fall 2015

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Welcome and Congratulations Grantees !!!

- How does the Worker Training Program address the NIEHS Strategic Plan?
 - Review of FY15 accomplishments

- Knowledge Management and Data Science: What does it mean for the Worker Training Program?
 - Unique needs and opportunity



NIEHS Strategic Plan:



NIEHS Strategic Goals (2012-2017)

- 1: Identify fundamental mechanisms/pathways of disease
- 2: Understand individual susceptibility across the life span
- 3: Transform exposure science
- 4: Understand effects of combined exposures
- 5: Identify and respond to emerging health threats
- 6: Establish an environmental health disparities research agenda
- 7: Use knowledge management techniques
- 8: Enhance teaching of EHS at all levels of education and training
- 9: Train a diverse and capable set of new research scientists
- 10: Evaluate economic impact of health policies, practices, and behaviors that reduce environmental exposures
- 11: Promote bidirectional communication and collaboration between researchers and stakeholders

Strategic Plan Goal 5 and WTP

Identifying and responding to emerging health threats



Raising Awareness, Building Collaborations, and Advancing Research

- Disaster Research Response (DR2) Project participation
- WTP awardees hosted 2014 and 2015 DR2 Table Top Exercise
- Participation with Intra-NIH Disaster Interest Group (I-DIG)
- Participation with HHS/ASPR Science Preparedness Research Interagency Team (SPiRIT)

Moving the Science Forward: Programs and Initiatives

- Mechanism for Time-Sensitive Research Opportunities in EHS (R21)
- WTP Ebola Training Initiative

Building the Knowledge Base: Publications and Other Products

- Ebola Awareness & Operations Training
- Hurricane Sandy Response

Strategic Plan Goal 6 and WTP

Establishing an environmental health disparities research agenda



Raising Awareness, Building Collaborations, and Advancing Research

- HHS Climate Justice Conference (June 2015)

Moving the Science Forward: Programs and Initiatives

- NIEHS WTP Environmental Careers WTP Grantees

Building the Knowledge Base: Publications, Products, and Activities

- NIEHS Advancing Environmental Justice Report (July 2015)
- Environmental Careers WTP Guidance on How to Achieve Success and Best Practices Report (March 2014)
- Climate Vulnerability Workshop and Assessment (Fall 2014)

Strategic Plan Goal 7 and WTP

Using knowledge management techniques



Raising Awareness, Building Collaborations, and Advancing Research

- Needs assessment for Ebola Training Program
- Strong partnerships with ASPR/DHHS, NIOSH, OSHA, FEMA, CDC

Moving the Science Forward: Programs and Initiatives

Building the Knowledge Base: Products and Activities

- Worker Training Program Clearinghouse
- Curricula Catalogue
- Emergency Preparedness Resources
- WTP reports

Strategic Plan Goal 8 and WTP

Enhancing EHS teaching at all levels of education and training



- **Raising Awareness, Building Collaborations, and Advancing Research**
 - Working with OSED on NIEHS-wide Science Education committee and activities
- **Moving the Science Forward: Programs and Initiatives**
 - Supplemental appropriation to CDC for Ebola awareness training
 - Supplemental awards to WTP for pilot Ebola training
 - FOA ES 15-018 Worker Training Program (WTP) Ebola Biosafety and Infectious Disease Response Training

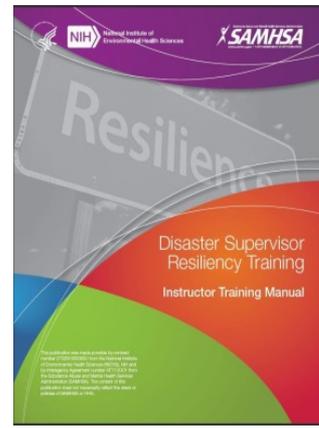
Strategic Plan Goal 8 and WTP

Enhancing EHS teaching at all levels of education and training



Building the Knowledge Base: Publications, Products, and Activities

- Disaster Resilience Training Project
 - Community, Supervisor and Care Provider Trainings
 - Train the Trainer model for community members
 - Includes an introduction to occupational health
- 2015 HAMMER Trainers Exchange
 - March 3-5, 2015 Richland, WA



Strategic Plan Goal 10 and WTP

Evaluating the economic impact of health policies and practices



Building the Knowledge Base:

The Economic Impact of the Environmental Career Worker Training Program

- Assessed the economic impact of the ECWTP
- Conducted by labor economists from the College of the Holy Cross
- The cumulative total value added of the ECWTP is estimated to be \$1.79 billion from 1995 through 2013, or roughly \$100 million annually
- ECWTP increases the probability of employment by approximately 59 percent

Purposes of WTP Benefits Study

- To respond to NIEHS Strategic Goal 10, in particular part (b)
Evaluate the economic impact of policies, practices, and behaviors that reduce exposure to environmental toxicants, through prevention of disease and disabilities, and invest in research programs to test how prevention improves public health and minimizes economic burden.
- To evaluate, quantify, and document the wide range of benefits of WTP ECWTP
- To develop methodology for WTP Benefits
- Share the results with stakeholders





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Evaluation of the Economic Impact of the NIEHS Worker Training Program- Environmental Career Worker Training Program

August 2015

Sharon D. Beard, MS -Industrial Hygienist, NIEHS WTP

The analysis was completed in collaboration with Bryan Engelhardt, Robert Baumann,
College of the Holy Cross; Kathy Kiel, College of the Holy Cross; Deborah Weinstock, Larry
Reed, Justin Crane, MDB, Inc.



\$1.79 Billion
Total value added

\$717 Million
Reduced spending

\$2.28 Million
Additional local support in 2013

Top Jobs after ECWTP

- ❖ Asbestos
- ❖ Environmental



Avg. Increased Wages

59%

Increased probability of employment for ECWTP graduates

Benefits

Earnings
\$1,593M

Taxes
\$717M

Community Input
\$2.28M

Safety Savings
\$153M

Crime Savings
\$22.1M

Hiring Savings
\$16.8M

Strategic Plan Goal 11 and WTP

Promoting communication and collaboration between researchers and stakeholders



Raising Awareness, Building Collaborations, and Advancing Research

- Protecting workers from biological threats: Ebola as a driver for biosafety training in the U.S. (APHA 2015)
- Disasters & OHS: Health surveillance, building resilience, and training (APHA 2014)
- Economic Impacts of ECWTP (NEMA 2015)

Building the Knowledge Base: Publications, Products, and Activities

- Managers' perceptions of the value and impact of HAZWOPER worker health and safety training (Am. J. Ind. Med)



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Knowledge Management and Data Science at NIEHS

Big Data at NIH

- **Sustainability** — how to maintain a vibrant research infrastructure driven by digital data at a time when budgets are flat, yet data are growing at an unprecedented rate.
- **Training** — supporting the workforce of tomorrow when biomedical research increasingly relies on computational, mathematical, and statistical analysis and beyond.
- **Innovation** — through the [Big Data to Knowledge \(BD2K\)](#) initiative, stimulating the best developments in the data science community.
- **Process** — refining NIH internal processes to make the most of the data revolution.
- **Communication** — breaking down barriers to new initiatives, as data have no boundaries as defined by national or agency funding.

EHS Big Data – what do we have?

40 ZETTABYTES
[43 TRILLION GIGABYTES]
of data will be created by 2020, an increase of 300 times from 2005

6 BILLION PEOPLE have cell phones

2005 **2020**

Volume SCALE OF DATA

It's estimated that **2.5 QUINTILLION BYTES** [2.3 TRILLION GIGABYTES] of data are created each day

Most companies in the U.S. have at least **100 TERABYTES** [100,000 GIGABYTES] of data stored

WORLD POPULATION: 7 BILLION

The FOUR V's of Big Data

From traffic patterns and music downloads to web history and medical records, data is recorded, stored, and analyzed to enable the technology and services that the world relies on every day. But what exactly is big data, and how can these massive amounts of data be used?

As a leader in the sector, IBM data scientists break big data into four dimensions: **Volume, Velocity, Variety and Veracity**

Depending on the industry and organization, big data encompasses information from multiple internal and external sources such as transactions, social media, enterprise content, sensors and mobile devices. Companies can leverage data to adapt their products and services to better meet customer needs, optimize operations and infrastructure, and find new sources of revenue.

By 2015 **4.4 MILLION IT JOBS** will be created globally to support big data, with 1.9 million in the United States

As of 2011, the global size of data in healthcare was estimated to be **150 EXABYTES** [161 BILLION GIGABYTES]

Variety DIFFERENT FORMS OF DATA

By 2014, it's anticipated there will be **420 MILLION WEARABLE, WIRELESS HEALTH MONITORS**

4 BILLION+ HOURS OF VIDEO are watched on YouTube each month

30 BILLION PIECES OF CONTENT are shared on Facebook every month

400 MILLION TWEETS are sent per day by about 200 million monthly active users

The New York Stock Exchange captures **1 TB OF TRADE INFORMATION** during each trading session

Velocity ANALYSIS OF STREAMING DATA

Modern cars have close to **100 SENSORS** that monitor items such as fuel level and tire pressure

By 2016, it is projected there will be **18.9 BILLION NETWORK CONNECTIONS** – almost 2.5 connections per person on earth

1 IN 3 BUSINESS LEADERS don't trust the information they use to make decisions

Veracity UNCERTAINTY OF DATA

Poor data quality costs the US economy around **\$3.1 TRILLION A YEAR**

27% OF RESPONDENTS in one survey were unsure of how much of their data was inaccurate

Sources: McKinsey Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPECT, QAS



National Clearinghouse for Worker Safety and Health



Training Resources Available

National Clearinghouse for Worker Safety and Health Training

The National Clearinghouse for Worker Safety and Health Training is a national resource for hazardous waste worker curricula, technical reports, and weekly news on hazardous materials, waste operations, and emergency response. Funded by the National Institute of Environmental Health Sciences (NIEHS) Worker Training Program (WTP), the National Clearinghouse provides technical assistance to WTP staff, program awardees, and the general public.



<http://tools.niehs.nih.gov/wetp>

The National Clearinghouse Website

The National Clearinghouse website provides information on training issues that are important to workers engaged in activities involving hazardous materials and waste generation, removal, containment, transportation, and emergency response. Available resources include:

- An online catalog of hazardous waste and emergency response training curricula.
- Information on training methods, training evaluation, and e-learning tools and techniques.
- Reports, guidance documents, and research articles on current and emerging issues related to the protection of hazardous waste and emergency response workers and their communities.
- Research products and technical workshop reports.
- Safety and health training tools addressing a variety of natural and man-made disasters.
- Weekly news summaries on developments related to worker safety, health, and training.

The National Clearinghouse Online Curricula Catalog

The National Clearinghouse Online Curricula Catalog offers the public access to free electronic training curricula developed by WTP awardees. In most cases, these materials are available for immediate download. Users can search the online curricula catalog by one of the four WTP program areas, or by training provider (awardee), course subject, course title, or course language.

The National Clearinghouse e-Newsbrief

The National Clearinghouse e-Newsbrief is a free weekly newsletter focused on developments in the world of worker health and safety. Each issue includes summaries of the latest worker health and safety news from newspapers, magazines, journals, government reports, and the Web, along with links to the original documents. The newsletter also features updates from government agencies that handle hazardous materials and worker safety issues. The e-Newsbrief is delivered to subscribers every Friday.



Herramienta de limpieza de derrames de petróleo de NIEHS



Planes de Salud y Seguridad

- OSHA tiene regulaciones que requieren que los empleadores hayan detallado los Planes de Salud y Seguridad (HASP) para proteger a los trabajadores que participan en las operaciones de limpieza.* El HASP sirve como una guía a seguir para los empleadores y los trabajadores durante sus operaciones diarias para evitar la propagación de la contaminación, lesiones, y la muerte.



Revise el HASP de su empleador ¡antes de empezar a trabajar!

*OSHA, 29 CFR 1910.120(b)(4)(ii)

PROGRAMA DE EDUCACIÓN Y DE CAPACITACIÓN DE LOS TRABAJADORES



NIH Disaster Research Response Web Site : <http://dr2.nlm.nih.gov>

U.S. Department of Health and Human Services www.hhs.gov

NIH Disaster Research Response

NIH National Institute of Environmental Health Sciences
U.S. National Library of Medicine

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Tools & Resources

A searchable database of federally reviewed research tools including surveys, questionnaires, clinical forms, etc., meant to help establish baselines and cohorts for research following disasters. [Click for more](#)

Find Tools & Resources



Training & Exercises

Training and Exercises utilized to prepare the post-disaster response now available for planner use.

Learn More



Search

Clear Search Terms

Print/Download

Refine Your Results

Data Collection on

- Environmental Exposure(s) (6)
- General Health (22)
- Mental Health (54)
- Occupational Health (16)
- Social Support (6)
- Specific Body Systems (13)
- Specific Disasters (25)
- N/A (22)

Publication Year

- Unknown (5)

Displaying records 1 - 6 of 6

Expand All

Collapse All

Page 1 of 1

Results/Page 10

Sort Newest First

1. [Appendix D: Recognition and Management of Mold-Related Illness Table B: Questions for Patients with Common Symptoms; Table C: Environmental Questionnaire; Table D: Current Symptoms](#)

Source: National Institutes of Health, Disaster Research Response Project

Annotation: University of Connecticut Health Center, Division of Occupational and Environmental Medicine, Center for Indoor Environments and Health has mold questionnaires in Tables B, C, and D of Appendix D (page D-1) of "Guidance for Clinicians on the Recognition and Management of Health Effects related to Mold Exposure and Moisture Indoors." Questionnaires in the tables consist of a general health history, items pertaining to possible symptoms, work/residence settings and locations for the respondent, potential exposures, and diagnostic assessment. Table B: Questions for Patients with Common Symptoms is on page D-3. Table C: Environmental Questionnaire is on page D-4. Table D: Current Symptoms: History and Relationship to Home, Work, or School (For Patients in which a Potential Exposure to Mold Exists) is on page D-6.

Ease of Use in Disaster Setting: Moderate
Population: Residential/Workplace
Length: 50 questions
Administered by: Self Administered/Self Report
Language(s): English
[\[less\]](#)

URL: <http://www.oehc.uchc.edu/clinserv/MOLD%20GUIDE.pdf>

ID: 7815. From [Disaster Lit](#), a database of the U.S. National Library of Medicine.

2. [QEESI \(Quick Environmental Exposure and Sensitivity Inventory\)](#)

Source: National Institutes of Health, Disaster Research Response Project

Annotation: This validated questionnaire, the Quick Environmental Exposure and Sensitivity Inventory, or QEESI[®], also known as the "TILT Test," helps researchers, doctors, and their patients identify individuals with multiple chemical intolerances. The QEESI was developed as a screening questionnaire for multiple chemical intolerances (MCI). The instrument has four scales: Symptom Severity, Chemical Intolerances, Other Intolerances, and Life Impact. It can be used to assess the onset of new or intensified symptoms following an event.



Networks

The Environmental Health Science Disaster Research Network is a new group consisting of NIEHS-sponsored research centers, grantees, and academic partners interested in facilitating improved national research capabilities and responding to environmental emergencies and disasters.

Learn More



Collaboration

Information on initial research capabilities including:

- ▶ HHS Science Policy Agency Team (
- ▶ The NIOSH Disaster to Enhance Res
- ▶ Intra-NIH Disas

Learn More

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Networks	Contact

WTP data resources - examples

- Collections of data
 - Training rosters
 - Demographics of trainees
 - Courses taken
 - Evaluations from trainees
 - Trainee follow-up
- Possibilities for data
 - Evaluation of individual trainings
 - Impacts of local programs
 - Short term and long term impacts nationwide

What are the questions that we can answer in the field of occupational health and safety with WTP data?

Are you willing to share you data? Are you willing to combine data for analyses of common interest? Are you willing to combine the WTP data with other public sources of OHS data?



NIEHS

50th

Anniversary Celebration

November 2016



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Thank You!

Questions?

