



Department of Energy and  
National Institute of Environmental Health Sciences

# NUCLEAR WORKER TRAINING PROGRAM

FY 2005 Accomplishments and Highlights:  
*(September 1, 2004 – August 31, 2005)*





*The Superfund Amendments and Reauthorization Act of 1986 (SARA), Section 126(g), authorizes an 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. The Congress assigned responsibility for administering this program to the National Institute of Environmental Health Sciences (NIEHS), an Institute of the National Institutes of Health (NIH) within the Public Health Service (PHS) of the US Department of Health and Human Services (DHHS).*

*The National Defense Authorization Act for fiscal years 1992 and 1993 (42 USC 7274(d)) authorized the Secretary of Energy in section 3131(a)(1)(A)-(B) to make awards: “to provide training and education to persons who are or may be engaged in hazardous substance response or emergency at Department of Energy (DOE) nuclear weapons facilities; and to develop response curricula for such training and education.” The Secretary was further authorized in Section 3131(a)(2)(A)-(B) to make the training awards to non-profit organizations demonstrating capabilities in: “implementing and conducting effective training and education programs relating to the general health and safety of workers; and identifying, and involving in training, groups of workers whose duties include hazardous substance response or emergency response.”*

*To implement this, DOE entered into an agreement with NIEHS to award and administer the grants and to adapt its existing program to meet the needs of the DOE nuclear weapons complex.*

*Protecting worker health and safety through the delivery of safety and health training is a priority of the Secretary of Energy and is a primary goal of the Office of Environmental Management (EM). As the DOE’s mission has shifted from weapons production to environmental restoration, the site worker is exposed to new operations and hazards while conducting restoration activities, many of which are associated with potential exposure to hazardous substances and wastes.*

*To provide protection to workers’ health and safety, all workers at DOE sites engaged or potentially engaged in environmental restoration activities, including hazardous substance response or emergency response, are required by CERCLA and respective DOE Orders to meet the requirements of the Occupational Safety and Health Administration’s (OSHA) regulations 20 CFR 1910.120 and the EPA Hazardous Waste Operations and Emergency Response (HAZWOPER) training requirements (40 CFR 300.150).*

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*Note: All Photographs Courtesy of the Department of Energy.*



# CONTENTS

<b>1.0 Introduction</b> .....	2
<b>2.0 2004-2005 Program Highlights: Progress to Date</b> .....	3
<b>3.0 Peer-Reviewed DOE Worker Training Awards for FY 2005</b> .....	4
<b>4.0 Highlights from Awardee Progress Reports</b> .....	5
4.1 The New Jersey/New York Consortium (NJ/NY Consortium).....	5
4.2 Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE) .....	6
4.3 Laborers-AGC Education and Training Fund (L-AGC) .....	7
4.4 International Union of Operating Engineers (IUOE) .....	8
4.5 International Chemical Workers Union Center for Worker Health & Safety Education (ICWU) .....	10
4.6 International Association of Fire Fighters (IAFF).....	10
4.7 Center to Protect Workers Rights (CPWR) .....	11
4.8 Hazardous Materials Training and Research Institute (HMTRI) .....	13
<b>5.0 The National Clearinghouse for Worker Health and Safety Training Update</b> .....	14
<b>6.0 NIEHS Technical Meeting: Keeping Quality Current: An Update of the NIEHS Minimum     Criteria for Worker Health and Safety Training for Hazardous Waste Operations and     Emergency Response</b> .....	16
<b>Appendices: Program Charts</b> .....	18
Appendix 1: FY 2004 Funding.....	18
Appendix 2: Total Training by NIEHS Awardee .....	18
Appendix 3: Target Populations.....	19
Appendix 4: Percent and Total of NIEHS Courses Completed, Workers Trained, and Contact Hours, By Site.....	20
Appendix 5: FY 2005 Funding.....	21

## 1.0 INTRODUCTION

The NIEHS Worker Education and Training Program, in partnership with the DOE Environmental Management Program, has supported qualified domestic nonprofit organizations to develop and administer model health and safety education programs for hazardous materials or waste workers within the nuclear weapons complex.

Target populations for training in the DOE nuclear weapons complex include those covered by requirements of Federal Occupational Health and Safety Administration (*CFR, Title 29, Part 1910*), the Environmental Protection Agency standards for Hazardous Waste Operations and Emergency Response (*CFR, Title 40, Part 311*), regulations governing the NIEHS Hazardous Waste Worker Training Program (*CFR, Title 42, Part 65*), as well as hazardous materials transportation workers regulated by the US Department of Transportation (<http://hazmat.dot.gov/rules.htm>).

The goal of the DOE/NIEHS Worker Education and Training Program has been to provide site-specific, quality training to workers in a timely and cost-effective manner, through a partnership involving government, contractors, and labor organizations. A cornerstone of the program is the use of “worker-trainers,” employees well versed in performing a given task in a hazardous environment who are trained to instruct other workers. Benefits of the partnership include fostering cooperation

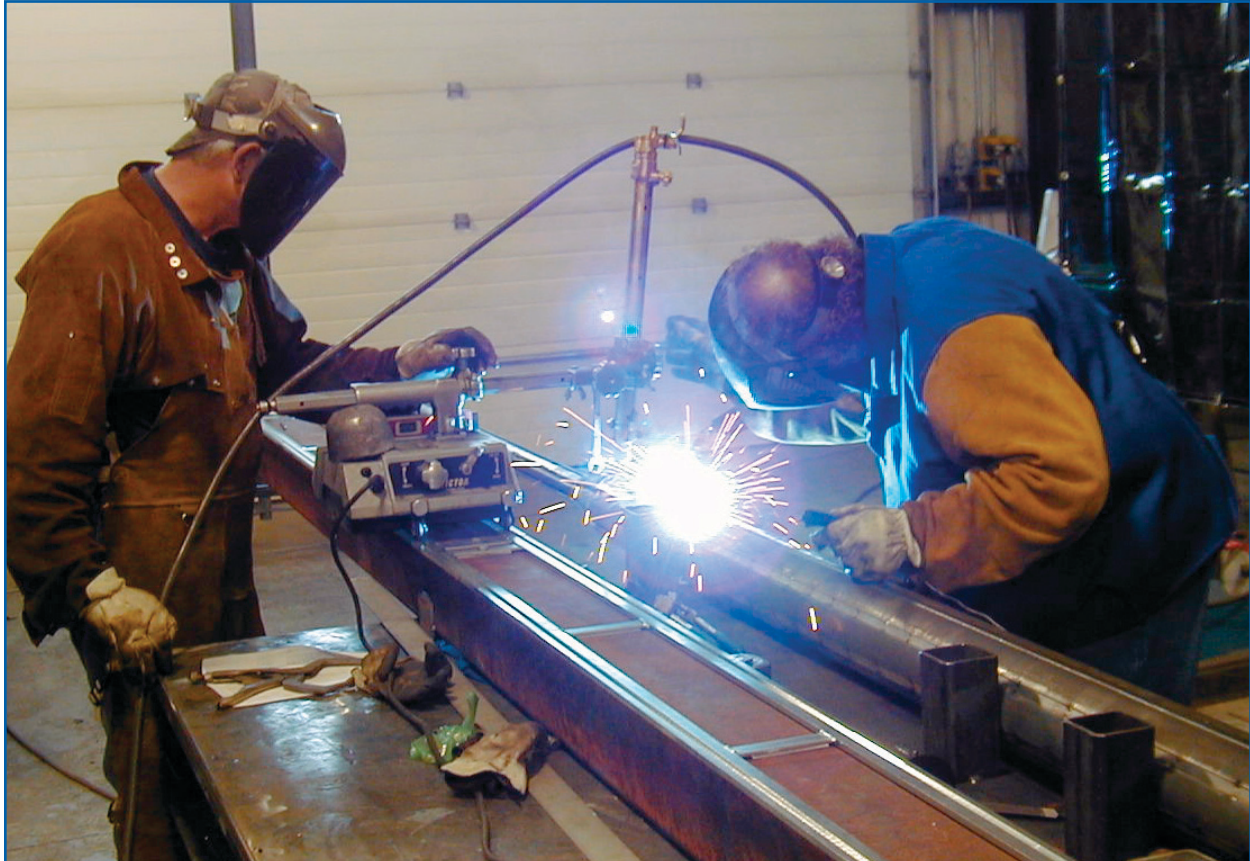
between management and workers, improving efficiency and quality of training, improving the ability to address worker concerns, and empowering all stakeholders to address site-specific safety and health needs. NIEHS, through its awardees, has provided high quality hazardous substance response or emergency response training to ensure that:

1. DOE site workers are aware of the hazards that exist at DOE sites;
2. Workers are prepared to work safely in such hazardous environments to prevent accidents from occurring; and
3. Workers have sufficient knowledge of their work environment and hazardous conditions to identify hazardous situations and to take appropriate actions to protect themselves, fellow workers, and the environment.

Across the DOE complex, approximately 2.8 million contact hours of hazardous materials training were delivered by the NIEHS/DOE awardees between 1994 and 2004. During this period, dozens of different courses were offered by eight awardees to workers at sites throughout the DOE complex. The awardees have trained more than 199,000 workers and presented nearly 15,000 classroom and hands-on training courses.



## 2.0 2004-2005 PROGRAM HIGHLIGHTS: PROGRESS TO DATE



In completing the 12th year of the NIEHS/DOE Worker Education and Training Program (September 1, 1993 to August 31, 2005), the NIEHS successfully supported eight primary awardees. Across the DOE complex, the NIEHS awardees trained more than 224,000 workers and presented over 16,000 classroom and hands-on training courses, accounting for 3.2 million contact hours of actual training.

Through an Interagency Agreement, NIEHS received \$8.4 million from the FY 2004 DOE appropriations, which provided funding to NIEHS awardees during the past year (September 1, 2004 - August 31, 2005). Of the FY 2004 funds, \$8.0 million was allocated to continue support of the NIEHS/DOE Worker Training Program to provide safety and health training across much of the DOE complex (see Appendix 1).

Between the budget period of September 1, 2004 to August 31, 2005, the eight primary worker training

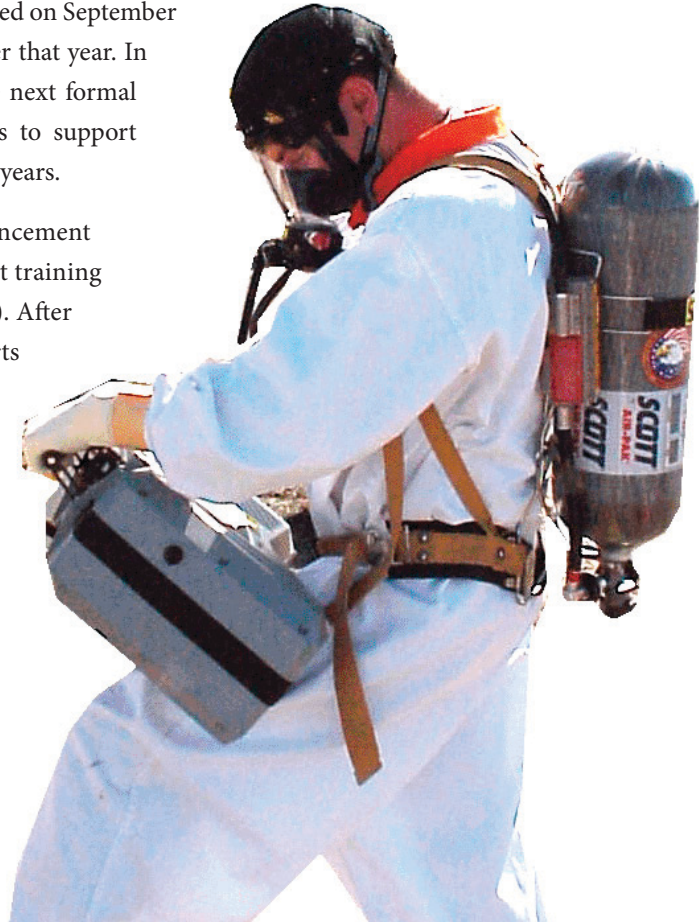
awardees and more than thirty sub-awardees delivered 1,961 courses, reaching 25,442 workers, which account for 329,840 contact hours of health and safety training (see Appendixes 2). This training ranged from 4-hour refresher programs to more complex train-the-trainer courses lasting up to 120 hours.

Forty-nine percent of the training focused on delivering basic HAZWOPER cleanup worker training. This comprises 11,489 workers who received 80-hour training, basic 40-hour training, or 4-8 hour refresher courses (see Appendix 3). While the DOE/NIEHS awardees provided training at more than 24 DOE sites during the past year, over half of the training provided was at two of the largest DOE sites, Hanford and Oak Ridge. Between the two sites, 787(40 %) courses were delivered, reaching 12,617 (50 %) workers, which account for 170,913 (52 %) contact hours of training (see Appendix 4).

### 3.0 PEER-REVIEWED DOE NUCLEAR WORKER TRAINING AWARDS FOR FY2005

Initial awards under the DOE program were made in 1993 for a three-year period. Additional funding was secured for a second round of training awards, which began in 1995. A briefing for DOE staff involved in the initiative was held in August 1995 to gather input on DOE priorities for the final funding plan. Adjustments were made to reflect the suggestions of DOE staff. A review by the National Advisory Environmental Health Sciences Council (NAEHSC) was completed on September 14-15, 1995 and awards were made, effective later that year. In the fall of 1999, the NIEHS WETP released the next formal program announcement requesting applications to support training activities for the FY 2000-2004 program years.

During 2004, NIEHS released a program announcement for the WETP requesting applications to support training activities over a five-year period (FY 2005-2010). After a lengthy review by committees of outside experts and other federal agencies, in a resulting competition, NIEHS announced eight (8) new awards for the DOE Program in September 2005. This training assistance program is targeted for workers engaged in environmental restoration, waste treatment, and emergency response activities at sites in the DOE's nuclear weapons complex.



*A Tank Farm Worker at Hanford using a monitoring instrument.*



## 4.0 HIGHLIGHTS FROM AWARDEE PROGRESS REPORTS



*Retrieval of Buried Waste From Low Level Burial Grounds, Hanford*

The following section examines each of the eight DOE/NIEHS awardees and their sub-awardees. It considers who are these consortia? Who benefits from their services? How many benefit? And are there specific

examples or anecdotes from their progress reports that provide useful insights into the nature of health and safety training in this country?

### 4.1 The New Jersey/New York Consortium (NJ/NY Consortium)

**Who they are:** The University of Medicine and Dentistry of New Jersey - School of Public Health (UMDNJ); The University at Buffalo.

**Who benefits:** The University of Medicine and Dentistry of New Jersey - School of Public Health (UMDNJ) provided training, as requested, to Brookhaven National Laboratory (BNL) and Princeton Plasma Physics Laboratory (PPPL) employees. At Brookhaven National Laboratory, they have trained personnel from the industrial hygiene, environmental remediation, reactor, waste management and other departments. The University at Buffalo provided training to employees at West Valley Nuclear Services. Each institution provides flexibility

in their training programs to accommodate additional training needs that arise each year.

**How many:** The New Jersey/New York Hazardous Materials Worker Training Center, during this reporting period, has provided 78 courses for a total of 515 workers trained, corresponding to 5,750 contact hours of training.

The New Jersey/New York Hazardous Materials Worker Training Center (NJ/NY HMWTC) completed five years of training on August 31, 2005. During the period of September 1, 2000 to August 31, 2005, the NJ/NY HMWTC trained 3,103 workers in 418 courses, totaling 35,854 hours of training.

**Brookhaven National Lab, Princeton Plasma Physics Lab, and West Valley:** The NJ/NY HMWTC continued to meet the health and safety training needs of the DOE workers at Brookhaven National Lab, Upton, NY; Princeton Plasma Physics Lab, Princeton, New Jersey; and West Valley, Buffalo, NY, during this period. Since the inception of the program in 1992, the Center worked closely with the safety staff at these facilities to meet their training needs.

The majority of the training provided to all three sites was the 8-hour Refresher. Of most importance to the West Valley site was the 16-hour bridge course. This allowed the workers to upgrade from the 24-hour General Site Worker to the 40-hour Initial training.

The Brookhaven site was a US Army site before it became a DOE laboratory. Because of the recent research awards it received from DOE, the site needed to conduct several major demolition and renovation projects. UMDNJ provided the workers at this site with several construction safety courses to meet their needs. Since Brookhaven and PPPL were undergoing excavation projects to remove contaminated soil from the site, UMDNJ provided them with “competent person” level training in excavation and



*Brookhaven workers remove contaminated soil*

trenching. UMDNJ also provided Brookhaven with several awareness level construction safety courses.

Since the inception of the DOE program at UMDNJ, they have provided PPPL's rescue services personnel with an annual 8-hour Confined Space Refresher and the 8-hour Hazardous Materials Operations Refresher training on-site in Princeton, New Jersey. Since these rescue workers are on three, eight hour rotations, UMDNJ offered these courses three times a year, onsite for the convenience of the entire battalion.

## 4.2 Paper, Allied-Industrial, Chemical and Energy Workers (PACE)



*Hanford tank farm workers taking samples*

**Who they are:** The Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE) represents more than 320,000 workers who manufacture paper, refine oil, and make chemicals, nuclear materials, pharmaceuticals, automobile parts, appliances, small engines, and many other products. PACE provides training through their Tony Mazzocchi Center for Health, Safety and Environmental Education (TMC).

**Who benefits:** PACE provided training as requested at six DOE sites where it has members: 1) Idaho National Environmental & Engineering Laboratories, Idaho Falls, Idaho; 2) Mound Facility, Miamisburg, Ohio; 3) K-25 Facility, Oak Ridge, Tennessee; 4) Paducah Uranium Enrichment Facility, Paducah, Kentucky; 5) Portsmouth Uranium Enrichment Facility, Piketon, Ohio; 6) Hanford Site, Richland, Washington.

**How many:** By the end of the 2004-2005 grant year, PACE had provided training at the six targeted DOE sites. This represented instruction to 2,594 students, for 23,688 contact hours in 142 classes. For the five year period, they reached 17,215 students in 1,085 classes for 158,130 contact hours.

**Training Trainers:** By the end of the 2004-2005 grant year, the TMC in cooperation with the Labor Institute provided advanced training to 36 DOE worker-trainers to ensure that they have the skills and qualifications necessary to

deliver the NIEHS program curriculum using TMC's Small Group Activity Method (SGAM). The TMC in cooperation with the Labor Institute also conducted site-specific DOE Strategic Planning Meetings at each of the TMC represented DOE sites (Hanford, INEEL, Portsmouth, Paducah, Mound, Oak Ridge), which are currently conducting Hazardous Waste Operations Training.

### 4.3 Laborers/Associated General Contractors Education and Training Fund (L-AGC)

**Who they are:** This consortium is headed by the Laborers/Associated General Contractors Education and Training Fund (L-AGC) and includes the International Brotherhood of Teamsters.

**Who benefits:** The DOE worker training courses were conducted by seven regional and two mobile training centers. They include: Augusta, GA (for Savannah River), Brighton, CO (for Rocky Flats), Edgewood, NM (for Los Alamos), Idaho Falls, ID (for Idaho National Environmental and Engineering Laboratory), Las Vegas, NV (for Nevada Test Site), Oak Ridge, TN (for Oak Ridge), Pasco, WA (for Hanford), Iowa Mobile Unit (for assistance at Oak Ridge, Nevada Test Site, Rocky Flats, and Los Alamos), West Virginia Mobile Unit (for DOE Headquarters).

**How many:** During the time period September 1, 2004 to August 31, 2005, the Laborers-AGC Education and Training Fund (Laborers-AGC) and the International Brotherhood of Teamsters (IBT) combined programs conducted 703 courses for 7,788 trainees. This accounts for 156,897 contact hours of training.

During the past five years (September 1, 2000 – August 31, 2005), Laborers-AGC and the International Brotherhood of Teamsters (IBT) conducted more than 600,000 contact hours of training. Over 35,000 workers received valuable health and safety and job skills training. Training sites conducted more than 3,000 courses, experiencing some of the highest demand for training in the history of the program.

**HAMMER – Student Evaluations:** The HAMMER Training Facility is associated with the Hanford DOE Site. Workers who participate in courses at HAMMER complete evaluations at the conclusion of the courses. These evaluations provide information on how the students view the courses, instructors and facilities.

HAMMER inputs the data from the evaluations into a database and produces evaluation summary sheets. The

At the DOE site in Portsmouth, OH, in the past grant year, training included 8-hr program training, 16 hr Incident investigation training and Lessons Learned training. Also trained were trained eight new worker-trainers representing the sites in Paducah KY, Hanford WA, Carlsbad NM, and Oak Ridge TN.



*Construction workers completing the concrete work at the Bulk Vitrification Pilot Plant, Hanford.*

evaluations rate course content, instructor presentation, and props/facilities. The rating system is as follows:

- 1 – Very Unfavorable
- 2 – Unfavorable
- 3 – Favorable
- 4 – Very Favorable

The ratings for the worker-trainers utilized by the IBT DOE Worker Training Program ranged from 3.3 to 4.0. The following is a sample of the comments recorded on the evaluations:

- Teamsters put the “fun” back into training, keeping the interest up and the atmosphere friendly.
- Absolutely the best respirator training hands-on and facilities I’ve ever had.
- Props for training were excellent, very helpful, along with instructor input and guidance to reinforce lessons and what to expect.
- Of all the training offered to NCOs, this is the best class with the most useful training. We actually walk away with additional knowledge.
- Instructors make class interesting and were good at explaining the “real world” applications.
- Excellent team teaching techniques.
- Nice balance of book work and hands-on work. Kept class aware and interested.
- Talked to “our” level, not management’s.

## 4.4 International Union of Operating Engineers (IUOE)

**Who they are:** The International Union of Operating Engineers (IUOE) represents 360,000 workers including operating engineers (heavy equipment operators, mechanics, and surveyors), stationary engineers who maintain buildings and industrial complexes, nurses and other health workers, and a variety of public employees.

**Who benefits:** The diverse student roster for the IUOE DOE Training Program includes employees of Y-12 National Security Complex, ORNL, East Tennessee

Technology Park (ETTP) all of the Oak Ridge Tennessee facility; INEEL, Battelle, Bechtel National and Fluor-Hanford. Managing Contractors for the sites listed above are BWXT (Y-12), UT-Battelle (ORNL), Bechtel Jacobs (ETTP), Bechtel BWXT Idaho (INEEL), Battelle, Bechtel National and Fluor-Hanford (Hanford). In addition, the IUOE DOE Program trains workers from hundreds of subcontractors throughout the DOE complex including British Nuclear Fuels Limited Inc. (BNFL) – the largest decontamination and decommissioning (D&D) contractor in the world.

The IUOE DOE Training Program is available to all personnel affiliated with a DOE contract. This creates a diverse class makeup consisting of individuals with extensive talents, experience, and responsibilities, which greatly enhance the educational environment. In FY 2004, the training classes consisted of boilermakers, chemical operators, construction workers, electricians, engineers, environmental technicians, environmental engineers, facility managers, health physics technicians, industrial hygienists, insulators, laboratory technicians, laborers, carpenters, machinists, painters, pipe fitters, planners/estimators, project managers, quality assurance engineers, radiation safety officers, scientists, subcontract technical representatives, truck drivers, and waste transportation experts and managers.

**How many:** From September 1, 2004, through August 31, 2005, the International Union of Operating Engineers (IUOE) National Hazmat Program (NHP) has trained

2,320 trainees under the DOE Training Program at various DOE locations. The IUOE provided training courses in Aiken, South Carolina at the Savannah River Site,



*Toppling B371 at Rocky Flats where reinforced concrete walls were up to 4' thick in some areas.*

Richland, Washington at the Hanford Facility, and in Oak Ridge, Tennessee, where the IUOE NHP Oak Ridge office is located. There were 168 workers trained in the 40-Hour

Basic Superfund Site Worker courses, and 2,126 in 8-Hour Site Worker Refreshers. The IUOE also provided other training courses, such as the

24 and 16-Hour Basic Superfund Site Worker course to 26 workers. Total students trained exceeded the IUOE's projections of 1,775 students by 545.

### **Meeting the challenges of a changing workplace and world:**

The IUOE DOE training program is designed to meet the needs of the ever changing work mission and environment facing Department of Energy facilities and workers. Training challenges include DOE facilities transitioning from a Management and Operating (M&O) Contractor System to the current Management and Integration (M&I) approach, downsizing and dwindling budgets, Integrated Safety Management (ISM) implementation and understanding, ever-present terrorist threats, heightened homeland security awareness needs, and proper preparation and precautions for natural disaster response. IUOE's Certified Instructors and health and safety professionals are prepared to meet these needs.

The M&O to M&I transition fosters a dramatic increase in the role of subcontractors in facility operation. This combined with the loss of many long-time DOE facility employees due to downsizing and advancing age results in a younger less experienced work force employed by companies with limited training budgets. This demands a source of quality training at competitive prices. The IUOE NHP is providing both. The change in facility management systems and natural turnover in DOE site personnel creates a diverse classroom mixture combining long-time experienced workers with those who are

relatively new to the profession or geographical area. The IUOE NHP training program recognizes the opportunity that this distinct classroom makeup provides and employs the students' distinct work knowledge to enhance the classroom learning experience. This is accomplished by encouraging students to actively participate by inviting responsible and pertinent commentary at any time during instructor presentations as well as through expanded introductions (including explanations of student experience and present duties), group exercises, and lessons learned, and open discussions.

One of the key components of ISM principles is worker input in improving health and safety aspects of the job. In order for this to be an effective health and safety management tool each and every worker must be increasingly knowledgeable concerning recognition of potential health and safety hazards associated with the job and proper preparation and protective practices that must be employed to assure worker safety. The IUOE NHP is committed to increasing worker awareness of their rights and responsibilities concerning safe work practices. These goals are met through classroom emphasis of ISM

ideology, use of specific examples and lessons learned, subject matter experts, student involvement, and promoting and providing easy access to IUOE NHP's network of Certified Instructors, health and safety professionals and informative organization developed reference materials.

Increased terrorist threats and heightened homeland security concerns continue to influence the course and curriculum of health and safety training. What once was the sole concern for security and emergency response personnel has now become the responsibility of the entire work force. The IUOE NHP is taking a proactive approach to assuring that homeland security issues are included in every HAZWOPER course conducted by the Organization. Homeland/Energy Security information is now routinely included in HAZWOPER units. Examples of this include chemical weapons and the possible effects of their successful deployment in toxicology units, bio-hazards which could be utilized by terrorist groups in Bloodborne/Bio units, dirty bomb information in Radiation Protection units and examples of new Chemical/Biological/Radiological/Nuclear (CBRN) respirators in respiratory protection units.



*Dismantling a water tower at Hanford*

## 4.5 International Chemical Workers Union (ICWU)

**Who they are:** This consortium is based at the Center for Worker Health & Safety Education which is operated by the International Chemical Workers Union (ICWU) in cooperation with the United Steelworkers of America (USWA), the International Association of Machinists and Aerospace Workers (IAM), the American Flint Glass Workers (AFG), the Rubber Plastics Industry Conference of the USWA (R/PIC), the Aluminum, Brick and Glass Workers Division of the USWA (ABGWD), the Coalition of Black Trade Unionists (CBTU), the United Food and Commercial Workers Union (UFCW) and the American Federation of Teachers (AFT). The consortium also includes the University of Cincinnati and the Greater Cincinnati Occupational Health Center.

**Who benefits:** Workers at Hanford, Oak Ridge, Rocky Flats, and Kansas City DOE sites.

**How many:** The total number of persons trained at all DOE sites through August 31, 2005 was 1,973 persons at 149 sessions (17,742 person hours).

**I Could Have Saved a Life Today:** In implementing the new eight hour refresher material in Oak Ridge, the Department of Energy's Integrated Safety Management (ISM) remains the cornerstone of the program. This thought process is reinforced using the film "I Could Have Saved A Life Today". The film is centered on a worker who looks the other way when a co-worker is performing a job in an unsafe manner and is killed while doing this job. This film is based on an actual incident.

A thorough review of the OSHA standards dealing with worker protection is then conducted. This is accomplished using the small group activity method. Participants work in small groups researching questions dealing with work-

ers rights and safety issues. Special emphasis is on the Department of Energy's policy of the employee's right to stop work if an employee feels the work is unsafe. This process is then compared to OSHA's General Duty Clause, its application and the more limited right to refuse unsafe work in OSHA inspections.

Each year a new scenario is developed on either a lessons learned or actual scenario.. This is done using a "Deck of Cards" format. Students are given a set of cards with emergency actions listed in reference to the new scenario. Participants then place the cards in the order they believe actions should be taken. Each group is free to add actions they deem necessary but are not included in the original deck supplied for the module.

In a continuation of a module introduced last year, a chemical research module was developed. This module utilizes four different chemical resources. Working together, each small group is given a list of the suspected chemicals and the reference materials for those products. Each group is then given clues found in some of the resource material for their assigned chemical. The participants then complete a supplied matrix eventually narrowing the chemical down and providing the identity to the rest of the class. An instructor led discussion then takes place on the toxicology aspects of the chemicals. Emphasis is placed on routes of entry and target organs, with emphasis placed on exposures both at work and at home.

A review module continues to be used based in the form of a Hazmat squares game. This game provides the opportunity to review all materials not stressed in an individual module format.

## 4.6 International Association of Firefighters (IAFF)

**Who they are:** The International Association of Fire Fighters (IAFF) has more than 2,700 affiliates, representing 263,000 fire fighters and paramedics in more than 3,500 communities in the U.S. and Canada.

**Who benefits:** The IAFF continues to address the hazardous materials training needs of emergency responders in those geographical areas proximate to sites within

the DOE Nuclear Weapons Complex. This includes Hanford, Savannah River, Oak Ridge, Rocky Flats, Lawrence Livermore, Nevada Test Site, Argonne National Labs, West Valley, Yucca Mountain and Sandia National Laboratories.

**How many:** A total of 832 students were trained under the IAFF/DOE project as of August 31, 2005. These

students were trained during 19,424 contact-hours in 43 separate classes. Specifically, the following courses were delivered:

- (29) Confined Space Operations course
- (9) First Responder Operations course
- (2) Clandestine Drug Labs course
- (1) Confined Space Rescue course
- (1) Pesticides course
- (1) Instructor Development Conference

#### **IAFF HazMat Quality Assurance Program (QAP):**

The IAFF developed an integrated Quality Assurance Program (QAP) to ensure the efficient and consistent delivery of high-quality hazardous materials training programs. The QAP consists of several components, including a checklist, Internal QA Report (IQAR), External QA Report (EQAR) and Program Auditing Function. The QA checklist allows course coordinators and field instructors to identify and proactively address issues integral to program quality. The IQAR provides internal feedback on course efficiency and effectiveness and is a valuable monitoring tool. External reporting, using the EQAR, provides timely feedback to stakeholders such as instructors and sponsoring agencies. Program auditing is accomplished through periodic data analyses and on-site visits by HazMat staff and consultants. The ultimate goal of the QAP is to incorporate quality assurance into every aspect of course planning, delivery and evaluation.

## **4.7 Center to Protect Workers' Rights (CPWR)**

**Who they are:** The Center to Protect Workers' Rights (CPWR) and its Construction Consortium for Hazardous Waste Worker Training includes the following international-national construction unions: Insulators & Asbestos Workers, Iron Workers, Boilermakers, Painters, Bricklayers, Plasterers & Cement Masons, Carpenters, Plumbers & Pipe Fitters, Electrical Workers, Sheet Metal Workers. These unions represent over 2,000,000 workers.

**Who benefits:** Workers at Hanford, Oak Ridge, Kansas City, Princeton, Stanford, Nevada, DOE headquarters, Paducah, Fernald, Argonne East, and Savannah River.

Their Scantron® system was refined to generate reports within ten days of completion of a training program. Details of the three primary QAP tools are listed below:

- A. The **Quality Assurance Checklist** was developed to address issues of program quality prior to, during, and after training events. The Training Coordinator assigned to a given program can use the checklist to ensure all necessary logistics are completed in a timely manner. Instructor assignments, training, materials shipments and other components of the program are clearly documented. As a result, the projects gain consistency across all events.
- B. The **Internal Quality Assurance Report** is an important part of any training conducted by the IAFF. This internal tool is designed to ensure that all planning, logistics, registration and reporting functions are completed properly. IAFF staff also gain valuable budget tracking indicators so that they can target functions or events that may limit their ability to meet grant objectives.
- C. The **External Quality Assurance Report (EQAR)** allows the IAFF to distribute a review of pre- and post-test scores and a graphic depiction of key evaluation efforts to the sponsoring department or agency and others directly associated with the program. The information affords those involved an opportunity to improve performance where necessary.

**How many:** The CPWR consortium conducted 245 of the 226 courses projected for a completion rate of 108%, training 3,868 students of 3,000 projected, for a completion rate of 129%, delivering 51,034 training contact hours of 44,874 projected for a completion rate of 114%

**Literacy Issues:** CPWR has evolved a teaching strategy over the years now used by all their instructors. As part of their on-going instructor development/enhancement activities, CPWR trainers are encouraged to develop and use strategies that promote group participation, teamwork, joint problem solving and other participatory methods that help learning among individuals with low

literacy levels. CPWR trainers are made aware that over one-third of U.S. workers have difficulties with reading and writing, and that most health and safety materials are written at a college reading level. It is the incorporation of proven adult education techniques into the CPWR curriculum that promotes participatory training. In addition, CPWR's new DVD-based Hazardous Waste Refresher modules ensure that all class participants, regardless of their individual literacy level, can benefit from the material. This is especially valuable when any given class may contain students with widely divergent literacy levels.

Additionally, CPWR trainers are instructed to be careful about asking someone to read from a paper, flipchart, overhead transparency or other printed material. While conducting group work, instructors are asked to read the instructions aloud to be sure that everyone understands what they are supposed to do. Usually the instructor will ask that each group select a recorder who enjoys writing, thereby removing any likelihood that a non-reader will be asked to write. A key value in using small group activities is that limited-proficiency readers can participate in the group discussions and are able to contribute



*Retrieving Waste Drums at Hanford*

to the collective knowledge and problem-solving of the group. In addition, the heavy emphasis on hands-on training allows limited proficiency participants to get the full value from the training. One of the most valuable aspects of CPWR training for all students, regardless of their literacy level, is the opportunity to engage in simulated work situations using a variety of personal protective equipment with various simulated hazards. Learning occurs using peer training, group work, training simulations based on classroom discussion, and teamwork. Participatory training techniques help ensure that all participants acquire the skills and knowledge to protect themselves in hazardous situations.

*A Mechanical Shear Demolishes an Excess Storage Tank at Hanford*



## 4.8 Hazardous Materials Training and Research Institute (HMTRI)

**Who they are:** This consortium is lead by Kirkwood Community College's Hazardous Materials Training and Research Institute (HMTRI) and includes the Community and College Consortium for Health and Safety Training (CCCHST). There are 93 colleges and universities, five community-based organizations, eight governmental units, 12 independent training providers and one union in CCCHST, representing 32 states and one territory.

**Who benefits:** Workers, technicians, and supervisors at Savannah River, Pantex, Oak Ridge, Paducah, Portsmouth, and Idaho National Engineering Laboratory.

**How many:** During this fiscal year, as of August 31, 2005, CCCHST-DOE collectively delivered 516 courses to 5,552 students for a total 30,993 contact hours of instruction. Fifty-two students completed instruction online.

Training data by site follows:

- Amarillo Community College at the Pantex Plant, Amarillo, TX
  - 42 courses, 457 students, 5,775 contact hours
- University of Tennessee, Knoxville, TN at the Oak Ridge Field Office Sites, as well as Paducah, KY, and Portsmouth, OH sites
  - 457 courses, 5,095 students, 25,209 contact hours

Fifty two students enrolled in on-line courses delivered by the University of Tennessee There have been two UT locations for distance learning, a facility with four computers at UT's Energy, Environment and Resources Center (EERC) on Dutchtown Road and a facility with four computers at the Access Center in the East Tennessee Technology Park (ETTP). The Dutchman Road facility was moved to the UT Conference Center in the middle of the fifth grant year. Most students taking HazWOPER-On-the-Web and the HazWOPER Refresher prefer to take the coursework at their offices or homes. The instructor provides hands-on training and proctors the final online exam at the UT locations or at a third-party site monitored by a UT selected instructor.

**Curricula Update:** HMTRI provides consortium members with quality, up-to-date, technically accurate curriculum. The HMTRI textbooks and teaching aids available to CCCHST-DOE colleges include:

Advanced Hazmat-Hazmat Specialist  
Confined Space Awareness  
Confined Space Entry  
DOT: HazMat Training Awareness  
DOT: Job Specific HazMat Training  
DOT: Truck Drivers Hazmat Training  
Emergency Response to Chemical Spills Technician Level  
Emergency Response to Chemical Spills Technician Level Refresher  
HazWOPER 40-Hour-on-the-Web (24 hours online)  
HazWOPER 24-Hour Moderate Risk (24 hours online)  
HazWOPER 8-Hour Refresher on the Web (8 hours online)  
Hazard Communication Right-to-Know  
Hazardous Waste Site Supervisor - 8 hrs  
Incident Command  
Incident Command Refresher  
Mold Awareness & Inspection  
Operations Emergency Response  
Operations Refresher  
OSHA 500 Construction 10-Hour  
OSHA 501 General Industry 10-Hour



*Tank Farm Workers at Hanford*

## 5.0 NIEHS NATIONAL CLEARINGHOUSE FOR WORKER SAFETY AND HEALTH TRAINING UPDATE



The National Clearinghouse for Worker Safety and Health Training provides strong technical support to the NIEHS awardees that conduct hazardous waste worker training around the DOE weapons complex. The Clearinghouse has regularly featured articles in its electronic newsletter that is distributed weekly to over 700 subscribers about chemical and radiological issues around the complex. Recent eNewsbrief articles covered critical challenges like the Hanford tank farms, provided subscription links to other newsletters such as *Hanford News*, presented highlights from DOE workshops, and featured the interim report about DOE's plans at the Savannah River site.

The Clearinghouse's website, [www.wetp.org](http://www.wetp.org), has a library that houses numerous reports on environmental, health and safety topics specifically related to DOE. DOE, with technical support from WETP, produced innovative communication tools called Technology Safety Data Sheets for workers. The Clearinghouse website contains numerous Technical Safety Data Sheet (TSDS) examples and also houses a database of ES&H curricula developed for DOE workers by NIEHS awardees with DOE funds that are available to professional trainers.

Part of the Clearinghouse support includes attending and presenting at DOE technical meetings. In September 2004 Dr. Bruce Lippy, the Director of the Clearinghouse, attended a meeting of the NIEHS DOE trainers as well as the HAMMER Medical Surveillance Subcommittee and Steering committee meetings at the AFL-CIO building in Washington, DC. He also attended the Fall 2005 HAMMER Medical Surveillance Subcommittee and Steering Committee meetings.

Dr. Lippy served on the advisory board for the Department of Energy's Special Interest Group for Industrial Hygiene and spoke to that organization in October of 2004 about the NIEHS mold training guidance. He also worked with members of the DOE Topical committee on integrating safety into design to determine if there was interest in reconstituting the group. He also submitted a suggested panel to DOE for the Chemical Management workshop.

Don Elisburg, consultant to the Clearinghouse, serves on the Advisory Board for two of the DOE grantees, Kirkwood Community College and the Laborers-AGC. Mr. Elisburg attends a yearly Advisory Board

meeting for Kirkwood and two Advisory Board meetings a year for the Laborers-AGC. Mr. Elisburg and John Moran (also a consultant to the Clearinghouse) have worked through the Department of Labor on its efforts around DOE transition to external regulation of worker safety and health.

On March 8th, 2005 Joseph "Chip" Hughes, Jr. MPH, Director of the Worker Education and Training Branch, National Institute of Environmental Health Sciences and Bruce Lippy, Ph.D., CIH, CSP, Director, National Clearinghouse for Worker Safety and Health Training presented at the joint EFCOG/DOE Chemical Management Workshop. The topic of their presentation was "Reducing Vulnerability to Chemical Facility Terrorism by Training Workers: Effective Models from the NIEHS Hazardous Waste Worker Community." Hughes noted that over the last 17 years his program had trained over a million workers to safely handle hazardous materials and respond to emergencies in workplaces as diverse as hospitals and nuclear weapons plants. He pointed out that a major thrust has been to empower workers at chemical plants through training that meets the requirements of the OSHA 1910.120. The PACE union has used NIEHS funds to develop an innovative Systems of Safety (SOS) program that employs peer trainers to teach other workers to evaluate accidents and near misses for root causes and to participate on management-labor teams performing system safety analyses, such as Failure Modes and Effects Analysis.

Dr. Lippy noted that the International Chemical Workers Union Center for Worker Health and Safety Education has offered a chemical emergency response course for workers who respond to industrial leaks and spills. Their four-day course on chemical emergency response focuses on prevention through preplanning and good standard operating procedures. Whenever possible, they attempt to work with management to include a major simulation of a plant emergency to help the community better prepare, as they did at Cabot Chemical.

Dr. Lippy noted that the International Association of Fire Fighters also trains their members about the unique hazards of chemical plant fires including those intentionally set by foreign terrorists or homegrown arsonists. This training, too, was made possible by funding from DOE.

Deborah Weinstock, the current director of the National Clearinghouse, attended the DOE Chemical Management Workshop in Washington DC from March 14-16 2006. Topics covered included advances in chemical emergency response, control banding, global harmonization standard, and nanotechnology. Chip Hughes, NIEHS, and Deborah Weinstock also attended the April 2006 HAMMER Medical Surveillance Subcommittee meeting and the Steering Committee meeting in Washington, DC.

Future activities include an assessment and examination of specific awardee activities and focus across the DOE complex.

## 6.0 NIEHS TECHNICAL MEETING:

### *Keeping Quality Current: An Update of the NIEHS Minimum Criteria for Worker Health and Safety Training for Hazardous Waste Operations and Emergency Response*

On March 30-April 1, 2005 in Los Angeles, CA. NIEHS WETP conducted a national technical meeting to update the NIEHS Minimum Criteria for Worker Health and Safety Training for Hazardous Waste Operations and Emergency Response. It was the third such training quality workshop conducted by the program since its creation in 1987; the initial workshop, conducted in 1990, produced the “Minimum Criteria for Worker Health and Safety Training for Hazardous Waste Operations and Emergency Response” followed by the “Interpretive Guidance” to the Minimum Criteria conducted in 1994. The initial “Minimum Criteria” served as the basis for the non-mandatory Appendix E to the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard at 29 CFR 1910.120.

A revision of the Criteria was needed because there have been significant advances in the development and application of advanced training technologies and substantial recent attention to all-hazards preparedness training for the emergency response community since 9/11 and the creation of the Department of Homeland Security.

The workshop was attended by over 110 participants from the WETP, the WETP grantees, and others invited from the public and private sectors. The workshop process included an opening plenary session with two expert panels, six breakout sessions on topical areas from the preliminary draft straw man document, and a closing plenary of reports and discussions of findings and recommendations from each breakout session. A draft workshop report was prepared following the workshop and sent to all participants for review and comment. After

consideration of the comments received, final criteria were prepared and issued. These are available on line at <http://www.wetp.org/wetp/>

The guidance document recognizes advances in adult education in the hazardous waste operations and emergency response sector, particularly advanced training technologies application and integration, requirements for additional training programs to support HAZWOPER work, and post-9/11 all-hazards preparedness training including that for skilled support personnel.

The guidance emphasizes the principles of adult education, establishes minimum criteria for designing training programs, establishes quality control requirements for training programs, and provides generic guidelines for training curriculum . The latter addresses the three primary sectors established in the HAZWOPER standard: hazardous waste operations [29 CFR 1910.120 (b)-(o)], RCRA Treatment, Storage, and Disposal (TSD) operations [29 CFR 1910.120(p)], and emergency response operations [29 CFR 1910.120(q)].

In addition, training grant program awardees are required to annually conduct quality control audits and certify that their programs comply with this guidance.

The following are broad, overarching principles that were used to frame the more detailed guidance of the document.



*Operating Engineers use Shears to Cut Away Sections of Plant 8 at Fernald*

1. 29 CFR 1910.120 provides the needed framework for protecting hazardous waste workers and emergency responders. It is the most proactive OSHA standard for protecting workers who respond to disasters, both natural and manmade. In the

- latter category, OSHA has indicated that terrorist acts involving chemical, biological, radiological, and nuclear weapons would be covered by the standard. Acts involving explosive agents may also be covered, depending on the types of exposures generated by the acts.
2. The guidance is primarily intended for organizations that provide hazardous waste worker and emergency response training under grants from NIEHS, but may likewise prove valuable to any organization that provides similar occupational health and safety training.
  3. The document draws upon and references other guidance materials that provide excellent recommendations for training the intended target populations. Of particular note are the National Fire Protection Association guidelines and the FEMA "Guidelines for Haz Mat/WMD Response, Planning and Prevention Training: Guidance for Hazardous Materials Emergency Preparedness (HMEP) April 2003 Edition. The FEMA guidance has been fully adopted by reference in this document.
  4. Whenever there was doubt about the appropriate category of training, the document advises that the more comprehensive and protective should be applied.
  5. Peer-to-peer training with hands-on activities is recognized as the most effective model for worker training. The guidance recommends that hands-on training should fill at least one-third of the training program hours.
  6. The Criteria recognize that computer-based training methods can greatly augment the effectiveness and reduce the cost of hazardous waste worker training, but should not be the sole form of training when workers' health and safety are at risk especially with respect to skills training.
  7. Proven adult-learning techniques should be the core of all worker training under the Criteria.
  8. Worker safety and health training must be preceded by a needs analysis to ensure the appropriate knowledge, skills and attitudes are being transmitted. The training must be followed by a proper evaluation to document the knowledge, skills or attitudes were acceptably transmitted and that the worker possesses the necessary abilities to perform the tasks.
  9. Post-disaster training must be tailored to the specific hazards presented by each disaster and should be revised as often as significant new hazard information becomes available or the stage of the disaster changes.
  10. The original 1991 Minimum Criteria guidance was the basis of the OSHA non-mandatory appendix on training in the 1910.120 standard (Appendix E, Training Curriculum Guidelines). This update of the Minimum Criteria maintains most of the original recommendations; changes are intended to make the original material more clear, relevant, or protective of workers.



*Large Sections of Low Level Radioactively Contaminated Scrap Metal are Sized and Reduced to Fit Into Containers That are Shipped Off-Site for Disposal: Portsmouth Gaseous Diffusion Plant*

# APPENDICES

## Appendix 1: FY 2004 Funding

DOE/NIEHS Worker Education and Training Awards for Budget Period 09/01/2004-08/31/2005	
Awardee	DOE Award
International Chemical Workers Union Council	\$466,941
International Association of Fire Fighters	\$635,777
Laborers-AGC Education and Training	\$2,712,562
Paper, Allied-Industrial, Chemical and Energy Worker International Union	\$1,136,022
University of Medicine & Dentistry of New Jersey	\$522,469
International Union of Operating Engineers	\$1,083,662
Center to Protect Workers' Rights	\$1,254,823
HMTRI Kirkwood Community College	\$218,882
<b>TOTAL</b>	<b>\$8,031,138</b>

## Appendix 2: Total Training by NIEHS Awardee

DOE/NIEHS Worker Education and Training Awards For Budget Period 09/01/2004-08/31/2005			
Awardee	Courses Completed	Workers Trained	Contact Hours
International Association of Fire Fighters	43	832	19,424
University of Medicine & Dentistry of New Jersey	78	515	5,750
International Union of Operating Engineers	85	2,320	24,312
Paper, Allied-Industrial, Chemical and Energy Worker International Union	142	2,594	23,688
International Chemical Workers Union Council	149	1,973	17,742
Laborers-AGC Education and Training	703	7,788	156,897
Center to Protect Workers' Rights	245	3,868	51,034
HMTRI Kirkwood Community College	516	5,552	30,993
<b>TOTAL</b>	<b>1,961</b>	<b>25,442</b>	<b>329,840</b>

### Appendix 3: Target Populations

DOE/NIEHS Target Populations 09/01/2004 – 08/31/2005						
Target Populations	Courses Completed	% Courses Completed	# Workers Trained	% Workers Trained	# Contact Hours	% Contact Hours
CERCLA Cleanup <sup>1</sup>	666	34%	11,489	45%	159,997	49%
RCRA/Industrial	49	2%	461	2%	7,556	2%
Emergency Response	24	1%	314	1%	5,136	2%
Radiation	533	27%	5,597	22%	40,449	12%
Lead Abatement	2	0%	11	0%	88	0%
Asbestos Abatement	223	11%	2,744	11%	58,244	18%
Hazmat Transport	5	0%	54	0%	376	0%
Other Safety and Health	459	23%	4,772	19%	57,994	18%
<b>TOTALS</b>	<b>1,961</b>	<b>100%</b>	<b>25,442</b>	<b>100%</b>	<b>329,840</b>	<b>100%</b>

<sup>1</sup>The overall majority of training remains in the CERCLA Cleanup training.

## Appendix 4: Percent and Total of NIEHS Courses Completed, Workers Trained, and Contact Hours, By Site

DOE/NIEHS Worker Education and Training Program Percent and Total of NIEHS Courses Completed, Workers Trained, and Contact Hours, by Site for Budget Period 09/01/2004-08/31/2005						
Site	Courses Completed		Workers Trained		Contact Hours	
	Number	Percent	Number	Percent	Number	Percent
Argonne East	7	0%	119	0%	2,768	1%
Ashtabula	3	0%	102	0%	816	0%
Brookhaven National Laboratory	34	2%	378	1%	4,048	1%
Department of Energy - Headquarters	16	1%	209	1%	2,312	1%
Fernald Integrated Demonstration Site	1	0%	28	0%	896	0%
Formerly Utilized Sites Remedial Action Program	2	0%	29	0%	808	0%
Hanford Waste Vittrification Plant	425	22%	6,192	24%	58,634	18%
Idaho National Engineering Laboratory	163	8%	632	2%	10,255	3%
Kansas City Plant	12	1%	185	1%	3,392	1%
Lawrence Berkeley	4	0%	39	0%	984	0%
Lawrence Livermore National Laboratory	39	2%	737	3%	16,728	5%
Los Alamos National Laboratory	45	2%	581	2%	9,852	3%
Mound Plant	17	1%	251	1%	3,570	1%
Multiple DOE sites	10	1%	191	1%	5,792	2%
Nevada Test Site	51	3%	735	3%	13,820	4%
Non-DOE Sites	476	24%	5,090	20%	24,889	8%
Oak Ridge Field Office	362	18%	6,425	25%	112,279	34%
Paducah Gaseous Diffusion Plant	43	2%	656	3%	8,312	3%
Pantex Plant	41	2%	441	2%	5,648	2%
Pinellas Plant	1	0%	10	0%	80	0%
Portsmouth Gaseous Diffusion Plant	37	2%	770	3%	5,672	2%
Princeton Plasma Physics Laboratory	20	1%	161	1%	1,526	0%
Rocky Flats Office	38	2%	397	2%	10,624	3%
Sandia Albuquerque	2	0%	35	0%	2,008	1%
Santa Susanna Field Laboratory	2	0%	15	0%	240	0%
Savannah River Site	75	4%	867	3%	20,975	6%
Weldon Springs	3	0%	42	0%	720	0%
West Valley Demonstration Project	32	2%	125	0%	2,192	1%
<b>TOTAL</b>	<b>1,961</b>	<b>100%</b>	<b>25,442</b>	<b>100%</b>	<b>329,840</b>	<b>100%</b>



## Appendix 5: FY 2005 Funding

DOE/NIEHS Worker Education and Training Awards For Budget Period 09/01/2005-08/31/2006	
Awardee	DOE Award
International Chemical Workers Union Council	\$721,424
International Association of Fire Fighters	\$589,030
Laborers-AGC Education and Training	\$2,571,600
United Steelworkers of America <sup>1</sup>	\$1,579,636
International Brotherhood of Teamsters	\$636,213
International Union of Operating Engineers	\$1,283,597
Center to Protect Workers' Rights	\$1,765,081
HMTRI Kirkwood Community College	\$229,826
<b>TOTAL</b>	<b>\$9,376,407</b>

<sup>1</sup> Name change from Paper, Allied-Industrial, Chemical and Energy Worker International Union