

A Partnership for Worker Protection



10th Annual

Report *of the* Department of Energy *and*
National Institute of Environmental
Health Sciences
Nuclear Worker Training Program

The *Worker Education and Training Program (WETP)* supports the training and education of workers engaged in activities related to hazardous materials and waste generation, removal, containment, transportation and emergency response.

WETP is a federally funded program administered by the *Division of Extramural Research and Training (DERT)* at the *National Institute of Environmental Health Sciences (NIEHS)*, an institute of the *National Institutes of Health (NIH)* within the *U.S. Department of Health and Human Services*.

For more information about WETP, please visit our website at <http://www.niehs.nih.gov/wetp/home.htm>

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Note: All photographs used in this report are courtesy of the U.S. Department of Energy

1.0 INTRODUCTION:

Ten years ago a partnership was formed with the goal of addressing the health and safety training needs of workers at Department of Energy (DOE) nuclear weapons facilities. Authorized by Congress in the National Defense Authorization Act (42 USC 7274(d)), this partnership between government agencies, contractors, and non-profit organizations would succeed in providing site-specific, quality training to workers in a timely and cost-effective manner. Now, after a decade, this partnership remains a key tool in the effort to safely remediate these contaminated facilities, protecting neighboring communities and the environment. Just as these facilities played a major role in the defense of the United States, today's workers play a critical role in the frontline of our environmental defense. It is the quality of the work performed by these men and women, the care they show, the risks they are willing to face, that ensures the success of this national effort.

Successful partnerships are a way to share expertise and resources, to build trust, allow examination of critical issues, and to formulate and implement action plans that can be tailored to specific sites and can take advantage of the latest advances in the field of health and safety training. For the DOE/NIEHS program, this has meant improved cooperation between management and workers, improved efficiency and quality of training, enhanced ability to address worker concerns, and site-specific and trade-specific safety and health needs.

The DOE sites are complicated, featuring a combination of nuclear, industrial, demolition, and construction activities. Thus it is critical that training be not only site-specific but also trade-specific. This trade specific training has also been central to the success of the overall program.

Success in training is measured by improvements in site safety, fewer accidents and less serious accidents. At one DOE site, a project manager recently wrote the following about the training conducted by the International Chemical Workers Union, one of eight primary program awardees:

"We have participated in the training...since 1995. It has been an integral part of the safety program at our facility. The hands-on drills performed during the training helped us prepare for several real life emergencies. An acid tank failed... creating a hazardous spill situation. The response team employees cooperated to handle the spill in a safe and responsible manner, while complying with regulations and preventing environmental damage. Additionally, in 2002 an employee slipped, fell into and broke a PVC pipe containing 50% sodium hydroxide. Our emergency response training took over immediately as some of us removed and decontaminated the injured person and others responded to the chemical spill. The employee was able to return to work the next day...The ICWU Hazwoper training has a proven record of keeping workers safe, improving worker knowledge of hazardous materials and protecting the environment...We hope to continue the cooperative professional relationship...long into the future."

During the past year, as a result of this partnership, the eight primary program awardees and their sub-awardees, using a learner-centered approach, continued to promote Integrated Safety Management (ISM), working with their partners to make ISM a core component of every curriculum. The awardees continued their effort to meet the needs of a changing workforce and overcome language, cultural, and educational barriers. And finally, the awardees continued to provide a consistency and continuity of training to the DOE family, both DOE employees and contractors. In the following report, updates are



Preparing a spent fuel cask at Hanford.

provided on each of the awardee's accomplishments. There is also information about the National Clearinghouse for Worker Safety and Health Training and updates on two important meetings sponsored by NIEHS.

The NIEHS Worker Education and Training Program is very proud to have administered this program for the past ten years in partnership with the DOE, contractors and awardees. Through training, our collective goal has been to protect, as best we could, every worker at every site - for the key to protecting local communities and the environment is the protection of the individual worker.

2.0 2002-2003 PROGRAM HIGHLIGHTS: PROGRESS TO DATE

In completing the tenth year of the NIEHS/DOE Worker Education and Training Program (September 1, 1993 to August 31, 2003), the NIEHS successfully supported eight primary awardees. Across the DOE complex, the NIEHS awardees trained more than 170,000 workers and presented over 10,000 classroom and hands-on training courses, accounting for 2.5 million contact hours of actual training at an average cost of \$36.01 per contact hour (see Appendix 1).

Through an Interagency Agreement, NIEHS received \$8.5 million from the FY 2002 DOE appropriations, which provided funding to NIEHS awardees during the past year (September 1, 2002 - August 31, 2003). Of the FY 2002 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 2).

Between the budget period of September 1, 2002 to August 31, 2003, the eight primary worker training awardees and more than thirty sub-awardees delivered 1,959 courses, reaching 23,187 workers, which account for 303,633 contact hours of health and safety training at an average cost of \$26.42 per contact hour (see Appendixes 1 and 3). This training ranged from 4-hour refresher programs to more complex train-the-trainer courses lasting up to 120 hours. Fifty-four percent of the training focused on

delivering basic HAZWOPER cleanup worker training. This comprises 11,486 workers who received 80-hour training, basic 40-hour training, or 4-8 hour refresher courses (see Appendix 4). While the DOE/NIEHS awardees provided training at more than 28 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, 1,205 (62%) courses were delivered, reaching 14,748 (64%) workers, which account for 154,941 (51%) contact hours of training (see Appendix 5).

3.0 CONTINUATION OF THE PEER-REVIEWED DOE WORKER TRAINING AWARDS FOR FY 2003

After completion of the fourth program year of the projected five year long cooperative agreements, eight organizations submitted progress reports, training data, budget requests, and training plans on July 1, 2002. Budget adjustments in the proposed funding plan were based on the training needs of high-risk populations, national geographic coverage in training availability, and the published program priorities for training support. Awards were then made on September 1, 2002 for each of the programs supported with DOE Environmental Management resources. These awards ran through August 31, 2003



Hanford worker cutting a contaminated pipe.

4.0 HIGHLIGHTS FROM NIEHS DOE AWARDEE PROGRESS REPORTS

Each year, NIEHS DOE awardees submit an extensive report on the progress they have achieved during the period from September 1 through August 31. The report has a number of sections. These include: Progress Report Abstract, Training Accomplishments, Training Effectiveness, Curricula Update, Advisory Board Activities, Trainee Follow-up, and Instructor Support.

These awards are cooperative agreements requiring extensive NIEHS participation. By having awardees respond to these reporting areas, the NIEHS staff is able to be consistent in reviewing awardee progress and in ensuring the effectiveness of the entire program.

The following section takes excerpts and highlights from the progress reports in the order listed above.

4.1 Center to Protect Workers' Rights (CPWR)

I. Progress Report Abstract:

The Center to Protect Workers' Rights (CPWR) and its Construction Consortium for Hazardous Waste Worker Training has made excellent progress during this grant period. Created to support the Building and Construction Trades Department, AFL-CIO (BCTD) and its affiliates with their safety and health research and training needs, CPWR's Consortium includes the following international/national construction unions:

- Insulators & Asbestos Workers
- Boilermakers
- Bricklayers
- Carpenters
- Electrical Workers
- Iron Workers
- Painters
- Plasterers & Cement Masons
- Plumbers & Pipe Fitters
- Roofers
- Sheet Metal Workers

This group of unions represent over two million construction workers, thousands of whom work on DOE sites.

CPWR this year conducted a total of 399 classes and trained a total of 5,536 workers, technicians and support staff. They continued to develop, improve, and update several of training curriculum/programs/manuals, including 2 Hazardous Waste Refresher programs in DVD-deliverable format addressing confined space and decontamination; the Asbestos Worker Manual and accompanying Instructor Manual; the 24-hour "Bridge" hazardous waste worker course, and the OSHA 500 train-the-trainer curriculum. They also continued to collect data on training effectiveness, including completion of a training outcome evaluation; and continued development of a Web site for use by CPWR and Consortium member instructors.

II. Training Accomplishments:

CPWR's Hazardous Waste Training Program is operated in the following two ways: training conducted and administered by CPWR directly for the Boilermakers, the Bricklayers, Carpenters, Electrical Workers, and the United Association of Plumbers & Pipe Fitters, and training conducted by the six sub-grantees: the Insulators and Asbestos Workers, the Iron Workers, the Plasterers & Cement Masons, the Painters, the Roofers, and the Sheet Metal Workers.

Due to the diversity of their consortium and the transient, sporadic, and cyclical nature of their industry, CPWR continually adjusts the types and amounts of training demanded by their target population. For example, due to the overall increase in demand for training at HAMMER, the DOE training facility near Hanford, Washington, 4 courses were added to the original plan. CPWR completed a total of 277 courses at HAMMER.

III. Training Effectiveness:

CPWR continued to collect work-site and exposure history information from its trainees. During this year, a total of 5,536 individuals participated in their training programs. Of these, 1,740 responded to a survey about their work experience with hazardous waste. Of these respondents: 1,437 said they had worked at a hazardous waste site; 60 reported they had not worked at a hazardous waste site; and 243 did not answer this question.

Responses to other questions on the survey, such as have they ever encountered hazardous waste at a worksite or do they expect to perform hazardous waste work in the future, indicated that 74% of the respondents either had used, or were about to use, the training provided under this agreement.

The diversity of the workforce trained through May 31 is as follows:

- 94.7 % of the trainees were male and 5.3 % were female.
- 81.5 % of the trainees were White.
- 4.3 % of the trainees were Black.
- 5.3 % of the trainees were Hispanic.
- 0.7 % of the trainees were Asian.
- 0.3 % of the trainees were Native American.
- 7.7 % of the trainees did not identify their race in the questionnaire.

CPWR worked to include minorities in their advanced training programs, such as Confined Space and Hazardous Waste Train-the-Trainer courses, as well as in the Trainer Enhancement Program. Also, CPWR made significant progress in developing additional Spanish language information materials now posted on their safety and health web site: the electronic library of construction occupational safety and health (www.elcosh.org).

CPWR has successfully implemented the change to a standardized course evaluation form that is now being used for all courses. This has enabled CPWR to produce a summary of the evaluations for each course conducted. The summary evaluation for each course is reviewed by CPWR's Training Director to monitor participant, instructor and course performance. CPWR's training department reviews

results and monitors performance. Copies of summary evaluations are now being sent to each of the consortium partners training under a sub-grant, so that each sub-grantee receives evaluations for each course it conducts. This allows each sub-grantee to also monitor the performance of the course and to take any corrective measures needed to ensure quality training.

Also, CPWR has produced a Global Summary Evaluation Report that combines all evaluation data from all courses conducted for which they have received evaluations. Though it includes data from both the DOE and the NIEHS Hazardous Waste Worker Training Program, a separate award, the data is still very useful. On a scale of 1 to 5, with 5 being the best score, students rated the instructors at 4.5 for presenting material clearly and understandably; they rated the courses at 4.5 for helping them to recognize health hazards on the

job and to recognize unsafe work conditions and practices; and they rated teaching methods and materials consistently at 4.4 for demonstrations and hands-on activities, 4.4 for lectures and 4.4 for discussions

Periodic reviews of individual course evaluations and monitoring of test scores consistently show an extraordinarily high level of course completion among all CPWR training courses; a very high level of learning as measured by test scores; and a very high level of quality and performance in the classes as measured by the course evaluations.

Generally, the safety training programs were effective in terms of safety behaviors reported. After training, 92% of the respondents said they would request personal protective equipment

(PPE) if they thought it was needed; 91% said they would discontinue work if conditions were unsafe; 86% responded they would move from a task with unsafe conditions to a safer one; 90% of the workers expressed that they would report an unsafe condition to their foreman; and 91% of the workers believed that training would encourage them to consult an Material Safety Data Sheet (MSDS) relating to materials they were working with or around. Lastly, more than 90% of the workers felt that after training they would be more likely to ask for the monitoring of a confined space before entering it.

The survey results suggest that the safety training programs are effective for construction workers in obtaining safety knowledge and developing good safety behaviors.

CPWR was also able this year to conduct several audits of training conducted by sub-grantees, in order to verify the training effectiveness provided under the DOE/NIEHS award. The audits showed that the peer instructors were successful in delivering high quality, comprehensive and effective hands-on, participatory safety and health training.

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. 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.

IV. Curricula Update:

Based on evaluations, CPWR identified several areas for curricula improvement, particularly the need to revise the Hazardous Waste Worker Refresher curriculum annually in order to maintain trainee interest; provide additional practical exercises; increase the use of visual materials and class exercises; and continue to ensure excellent instructor quality through periodic master trainer assessment and mentoring.

Thus, CPWR held a curriculum development workshop for CPWR and sub-grantee trainers. The two-day program identified decontamination and confined space as two priority areas for the development of new Hazardous Waste Refresher curriculum. This curriculum is used extensively at DOE sites, most notably at the Hanford Site. A recent report from the HAMMER training center states, "The CPWR 8-hour HAZWOPER refresher meets all requirements of OSHA and DOE. The instructors were knowledgeable and in many cases entertaining. Students left with knowledge and experience that will lead to a safer overall workplace, which is the true intent of OSHA."

CPWR is also developing Decontamination and Confined Space Refresher DVD modules and has finished the

revision to the Asbestos Abatement Worker Manual, the corresponding Instructor Manual, and the 24-hour "Bridge" Hazardous Waste Worker manual. CPWR is also revising the OSHA 500 curriculum. A preliminary revision has now been completed and is currently being reviewed for accuracy and completeness.

V. Advisory Board Activities:

CPWR's Consortium Steering Committee and their Advisory Board continued to meet. Participants studied trends in the training program over the last several years. The consensus was that demand for this training is not declining, and together CPWR and its consortium need to continue to integrate these safety and health training programs into overall training activities of all participants.

VI. Trainee Follow-Up:

CPWR maintains records on course locations and number of students, employers and worksite information, including lists of employers, sites, locations, states, and types of work performed by the trainees at each of the sites.

VII. Instructor Support:

CPWR continued to support the development of health and safety trainers from the various participating unions and joint employer - union training committees. During the year, CPWR conducted three Confined Space Train-the-Trainer courses. Training consisted of the OSHA 226 regulatory-based confined space training, along with the CPWR 16-hr simulated permit-required confined space entry using full supplied-air respiratory protection with emergency retrieval equipment.

These training activities are normally followed up by sending CPWR master trainers to mentor the new confined space instructors when they give their first 16-hr confined space course

CPWR also held its annual Instructor Enhancement program this year at the HAMMER training center in Richland, Washington. Included along with the hazardous waste, lead and asbestos instructor refreshers were workshops on the union approach to health and safety, on the Seattle Building Trades'

OSHA-sponsored Hearing Protection Train-the-Trainer, on CPWR's Disaster Response training for skilled support personnel, and on site-specific issues and technological advances in hazardous waste work, as used at the Hanford Site.



Hanford worker preparing to remove contaminated equipment.

4.2 International Association of Fire Fighters (IAFF)

I. Progress Report Abstract:

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. The goals of the program are two fold:

To determine the specific needs of fire service personnel in and around DOE facilities, conduct appropriate training and evaluate the results of the training.

To ensure institutional competency after project completion by training qualified instructors at each location to continue hazardous materials training beyond the completion of this award.

468 students were trained in the DOE and DOE Radiation projects during this period.

The training conducted this year focused on ten hazardous materials emergency response levels. This included Hazardous Materials Instructor Training, First Responder Operations, Confined Space Operations, Infectious Diseases, Clandestine Drug Labs, Radiation, Incident Management, Pesticides, Technician, and Instructor Development Conference.

Through the offering of established and customized courses, the IAFF exceeded its projected goals for training during the year. Under the cooperative agreement for the fiscal years of 2001 to 2005, the IAFF proposed training at least 400 emergency responders who work at or near the identified DOE sites every grant year.

II. Training Accomplishments:

This year's training accomplishments were significant in three main aspects:

1. The IAFF increased the number of Instructor Training events over the previous year. As of August 31, 2003, the IAFF had delivered nine Instructor Training events to almost 160 new fire service trainers at or around sites in the DOE nuclear weapons complex. It is estimated that over 8,000 students will receive First Responder Operations training annually, based on the Instructor Training events conducted this year.
2. The IAFF revamped its web site (www.iaff.org) to provide training guidance, programs to download and up-to-date case studies for use in field training events. IAFF had five online learning modules and 20 web-based case studies for inclusion in lesson plans during course delivery. An interactive web portal project for survey completion and conference registration was also created. In addition, the Technician program was released in DVD/CD ROM media format.
3. The IAFF made significant progress in revising several key courses for emergency responders. The revisions incorporate interactive learning and the Small Group Activity (SGA) methodology into digital media technologies (e.g., CD ROM, PowerPoint®, etc.). The final product will be ready for release in the first quarter of 2004.

IAFF conducts training at Hanford, Savannah River, Oak Ridge, Rocky Flats and Lawrence Livermore, Nevada Test Site, Argonne National Labs, West Valley, Yucca Mountain and Sandia National Laboratories.

IAFF hazardous materials training can be divided into two categories: (1) Direct delivery to specific fire departments and (2) Instructor Training for fire service trainers from many different fire departments, conducted regionally.

Direct training provides expertise when skilled instructors are not available at the local level. For example, an untrained fire fighter, upon completing a series of training programs, could effectively respond to radiation incidents using selected offensive as well as defensive tactics.

Instructor Training enables IAFF/DOE trainees to educate other response personnel at DOE sites in defensive emergency response operations. Regional Instructor Training educates and equips instructor candidates and, therefore, it becomes more costly to deliver. Because costs for conducting Instructor Training are greater than Direct Training, a greater portion of their overall budget was expended to fund Instructor Training.

Instructor Training increases the capacity of individual DOE sites to provide their own hazardous materials training. It is estimated that each student who received Instructor Training will train approximately 50 students per year. As IAFF trained 168 instructors this year, an estimated 8,400 students each year ($168 \times 50 = 8,400$) will be trained in First Responder Emergency Medical Services, Technician, Confined Space Operations and Weapons of Mass Destruction.

III. Training Effectiveness:

Each IAFF course participant is required to complete multiple assessments. The evaluation is used to determine pre- and post-course competencies, and the effectiveness of the presentation, subject matter and materials. The course participant also evaluates each instructor's effectiveness. All of this data is entered into a data gathering system. As part of their Quality Assurance Program (QAP), selected performance measures are included in a report sent to all the entities involved in the training event (i.e., sponsoring departments and labor groups). This data is retained in a master database for future evaluation needs.

Performance was evaluated for both Instructor Training and Direct Training. Participants in the Instructor Training program were evaluated primarily by observing their presentations, particularly a final presentation of an assigned section of materials from one of the IAFF hazardous materials training programs. Trainees of the First Responder courses received extensive didactic and hands-on training that requires demonstrated skill proficiency.

IAFF also obtained responses from trainees regarding the materials, training environment, and Master Facilitators. Evaluations of the training process were conducted throughout each training program so that modifications could be made as needed. The evaluations show that the majority of ratings for Fiscal Year 2003 training programs were in the "very good" to "excellent" range.

In addition to data reflecting trainee understanding and competence, the IAFF collects data on the impact of training on work practices and worker health and safety. Trainees are interviewed to assess whether they have made changes in their personal behavior since taking the IAFF course and whether positive changes in administrative practices have occurred. At follow-up evaluations, the IAFF also re-administers the course exam.

The IAFF also reviews departmental incident reports, logs from fire officers and personal interviews following incidents to compile anecdotal reports of training impact. In addition, the IAFF continues to monitor morbidity and mortality data through the Death and Injury Survey conducted by the IAFF's Health and Safety Department.

IV. Curricula Update:

As part of the IAFF internal framework training curricula are continuously updated. A Curricula Development Coordinator was hired under the current Cooperative Agreement. As a result, the IAFF has the ability to make changes that will reflect new federal regulations and standards.

Current curricula update activities include revisions to the Hazardous Materials Instructor Training Program, including Train-the-Trainer (First Responder Operations); Train-the-Trainer (First Responder Operations/Confined Space Operations) and, Train-the-Trainer (Technician); revisions to the core First Responder Operations Course; Translation of the First Responder Operations course into Spanish.

In addition, the IAFF has developed six online learning modules based on their First Responder Operations course. They include:

First Responder Operations: Every Incident Is a Potential HazMat Incident
Bunkers and Bottles: Getting the Most from Your Gear
How Toxins Attack: You, Your Crew and Your Family
Routine Personal Decontamination: Getting Clean and Staying Healthy
Reporting Exposure: How a Sheet of Paper Can Help Guard Your Health
Fitness on the Front Line: Staying Prepared

V. Advisory Board Activities:

The IAFF Advisory Board met July 17 - 18, 2003, in San Diego, California in conjunction with the Instructor Development Conference (IDC). The HazMat staff updated the Advisory Board of department changes and current grant reports, including NIOSH, NIEHS/DOE, NIEHS and DOT. As part of the agenda, the Advisory Board reviewed the HazMat Department's training performance, program highlights and key initiatives. Updates on the accreditation study, First Responder Operations course revision and curricula development updates were also reviewed.

VI. Trainee Follow-Up:

The IAFF is currently conducting an extensive trainee follow-up evaluation study. The results of this study will be available after July 1, 2004. As part of this training effectiveness evaluation, a random sample of Confined Space Operations trainees are contacted within 12 months after the completion of training to assess knowledge/skill retention and the impact of training on response activities. In addition, the IAFF is conducting a follow-up survey of Instructor Trainees to assess their use of IAFF hazardous materials training programs for training fire fighters and other response personnel in their departments. The IAFF is planning to collect and tabulate this data via their website.

VII. Instructor Support:

The IAFF has maintained the skills of IAFF Master Facilitators through:

- Master Facilitators meetings,
- Written communication,
- IAFF staff visits to classes,
- Verbal review of feedback forms by IAFF staff with individual Master Facilitators.

During the week of July 14th-16th in San Diego, California, the IAFF conducted an Instructor Development Conference (IDC) for trainers who have taught recent DOE courses. With the exception of the introductory and morning general sessions, the conference consisted of guest speakers and workshops. The topics for guest speakers included cultural diversity, risk management, instructor skills training and new technologies in HazMat and WMD.



Savannah River workers in PPE.

4.3 International Chemical Workers Union Center for Worker Health & Safety Education (ICWUC)

I. Progress Report Abstract:

This year, the International Chemical Workers Union Center for Worker Health & Safety Education (ICWUC) continued to deliver training initiated during the course of the grant. This project is operated as a consortium in cooperation with the International Association of Machinists and Aerospace Workers (IAM). Training is currently being delivered at three DOE sites: Kansas City, Oak Ridge, and Hanford through the Hammer facility as 40-hour Emergency Response classes, 24-hour Treatment, Storage and Disposal classes, 8-hour refreshers, and a class to bridge the 24-hour class into a 40-hour class. Given the needs of each site contractor, the majority of the classes fall into the 8-hour refresher category. The total number of persons trained and trainers developed at all DOE sites as of August 31, 2003 is 2,195 persons at 172 sessions; 19,061.5 contact hours.

Workers at these sites are members of ICWUC, IAM, or other locals affiliated with the respective Atomic Trades and Labor Councils as well as salaried personnel. The key to this training has been an experienced and seasoned group of 24 DOE trainers from the shop floor who have completed their Chemical Emergency Response program followed by the train-the-trainer program, with most having completed a further apprentice type program under the guidance of the Director of Trainer Development. The Center has improved these trainer sessions during the current grant year by designing all advanced trainer courses to meet the specific needs of each DOE site as well as each trainer.

II. Training Accomplishments:

At the three sites that were active last year, quality training is being delivered at a similar total level as the last grant. This year they had a reduction in training numbers at Hanford, primarily a reduction in the number of workers requiring the 40-hour Hazardous Waste Operations course, but there was an increase in training at Oak Ridge. In addition ICWUC was able to conduct two weeks of training of trainers at Rocky Flats and develop 2 Fernald trainers. The history of the DOE grant at each site has demonstrated some fluctuation from year to year and site to site. This is the result of workforce and scheduling demands by the contractors.

At Oak Ridge, TN; Hanford, WA, and Kansas City, MO, there is a core group of experienced on-site trainers who present the programs while overall quality control is provided by the Center. Worker-Trainers are key to the program. These on site trainers from the shop floor have completed the ICWUC Chemical Emergency Response program followed by the Train-the-Trainer program. The vast majority have completed a further apprentice type program under the guidance of the Director of Trainer Development. This consists of Trainer Practice/Refresher and Technical Skills sessions, co-facilitation with educational staff and experienced trainers, and on site observation by Center staff. The Center improved these trainer sessions during the year by designing all trainer development activities to meet the specific needs of each DOE site as well as each trainer. They have an experienced and seasoned group of twenty four (24) DOE trainers who have been conducting training on site from one to nine years; exactly the anticipated goal when the original DOE grant application was proposed in 1993. In addition, there are 18 trainers at Amarillo, Fernald and Rocky Flats who can begin training immediately upon securing agreements with site management. Due to turnover, they trained sixteen new trainers during the year, ten for the Rocky Flats site. All sites have revised their programs to incorporate each site's Integrated Safety Management System program. This includes the seven Guiding Principles of Integrated Safety Management (ISM) and the five core ISM Functions. Key to the Center's activities is the 3rd Guiding Principle: "Personnel shall possess the experience, knowledge, skills and abilities that are necessary to discharge their responsibilities."

At Oak Ridge, ICWU and IAM trainers have taught twenty four (24) eight-hour Site Worker to 316 workers (2,624 person-hours); and eleven (11) 24-hour RCRA Site Worker courses to 69 workers (1,656 person-hours). Two Oak Ridge trainers attended the July, 2003 Train-the-Trainer class for an additional 80 person-hours. This is a total of 387 workers who were trained in these sessions for a total of 4,360 person-hours of training. In addition, the Oak Ridge trainers taught for the equivalent 200 trainer days. These numbers are a 20% increase from last year.

At Hanford, IAM and IBEW trainers conducted forty one (41) one-day CERCLA refresher courses, three (3) forty hour Hazardous Waste Operations, one (1) 24 hour "Superfund Bridge" class, four (4) 24 hour RCRA TSD site worker courses, seventy seven (77) respirator refresher classes (mostly four hour refreshers with a limited number three hour refreshers and initial 8 hour respirator classes; for a total of 1,716 participants for 13,165.5 person hours. These programs are conducted with the cooperation of the HAMMER facility, a nationally recognized and independently federally funded regional training facility that has a close working relationship with the Hanford contractors. In addition, the Hanford trainers practiced their modules on site for the equivalent of 71 trainer days and taught for the equivalent of 250 trainer days.

At Kansas City, IAM Local 990 trainers delivered three 8-hour Industrial Emergency Response Refreshers to a total of 60 participants (480 person hours). In addition, the Kansas City trainers practiced their modules on site for the equivalent of 15 trainer days.

The Cincinnati Center continues to serve a number of roles including the initial introduction for prospective trainers and DOE contractors to the Center's adult education methods and style. The Cincinnati facility is the central facility for the advancement of trainers who are the primary deliverers of courses under the DOE grant.

III. Training Effectiveness:

ICWUC continued to implement participant evaluation methods developed during the course of the DOE grant. These tests are site specific and are developed by the site trainers with technical support from Center staff. They identify learning needs at the beginning of the program and are written simply to measure

fundamental skills that relate to each module. ICWUC worked closely with DOE to develop tests that are consistent with DOE regulations and orders. These include wording of particular questions, ensuring similar but not identical questions in key subject areas and other methods to vary pre and post questions.

Pre-tests and post-tests are administered to all participants in the initial general site worker training. Pre-training scores from multiple day courses at most sites in topic areas related to chemical protective clothing, respirators, decontamination and labels & placards continue to show a significant training

need. The ongoing analysis and monitoring of scores continues to be an effective quality assurance tool both of the participants and trainers. Many participants are asked three open-ended questions about what was the most important part of the program, how did they use the information and how do they compare this program to past training. Half of previous years' participants reported they learned new information as a result of the current refresher course. In general participants reported that they appreciated the interactive learning environment, being taught by on site worker trainers, the reinforcement of the dangers of hazardous materials both at work and at home, and the site-specific information used in the refreshers.

IV. Curricula Update:

During the year, the Center continued to adapt, modify and integrate materials for educating workers regarding chemical emergency response and hazardous waste work. All material is continually reevaluated and modified to reflect the current Department of Energy priorities. The material being delivered at the three sites had elements of the Department of Energy's Integrated Safety Management (ISM) program, including incorporation of ISM Guiding Principles and Core Functions. With the assistance of the Center's Nuclear Coordinator, Education Director and the Educational Staff, revised site-specific refresher manuals are prepared for each site.

At Hanford, the new refresher curricula was based on a special request from a Hanford contractor to include lessons learned from a recent incident where workers were splashed with acid while changing a flange in the tank farm. At Hammer's request the class stresses the toxicological effects of chemicals and routes of entry into the body. This is accomplished through both small group activities as well as two videos supplied by Hammer which include site-specific information, monitoring and decontamination procedures and equipment. Information and illustrations provided on the Hanford Intranet are shown and discussed. This information explains how the waste tanks are monitored for vapors and the chemicals present. Finally a small group activity dealing with a chemical emergency is conducted. This exercise deals with both a radiological and chemical hazard. Using a deck of cards, students prioritize actions and sequences of notification through decontamination. Trainees are required to defend their decisions and discuss why the cards are ordered in their decision making process. This process is directly related to DOE's Integrated Safety Management directive. The ISM core functions are discussed throughout the day as they apply to each individual module.

At Oak Ridge, the core of the new refresher are the Department of Energy Integrated Safety Management principles. First, the core requirements of the ISM process are discussed establishing the relationship of working safely in an emergency situation. As classes continue through the day, the links between the class and core requirements of ISM are stressed. Utilizing small group activities, students are required to 1) Define scope of work; 2) Identify the hazards associated with the exercises; 3) Identify ways to control the hazards; and 4) Perform the work within the guides of their plan. This refresher also emphasizes the importance of communication and lines of authority while completing the group exercises. A review of the application of OSHA standards is also conducted during the day. Finally, at the end of the day, the core concepts are discussed and related to everyday work. Emphasis is placed on how the thought process works both on the job and at home.

The new Kansas City course was designed to emphasize the decontamination process from start to finish, ending with the students disassembling the decontamination line and packing the materials in

DOT approved waste containers. This course was developed after the Honeywell plant participated in a mock drill. It was determined in the post incident critique that emphasis needed to be placed on the actual tear down and disposal of contaminated waste.

V. Advisory Board Activities:

The Board of Advisors for the Center's DOE and EPA Hazardous Materials Worker Training Program, met on May 20, 2003 in Akron, Ohio.

The projected training at Rocky Flats and possible opportunities and protocol at Amarillo were discussed. Other topics of the Board meeting were the planned advanced topics in emergency response program, the recent Weapons of Mass Destruction NIEHS supplemental grant application, the next round of competitive grants, the pre and post training evaluation results and overall operation of the Center.

To coordinate the training at the targeted DOE facilities, the Center has held meetings of its Nuclear Advisory Committee. At these meetings, there is discussion of the current status of training at each site, the development of new refresher material, presentations by subject matter experts, and the review of adult education training techniques. Also addressed are other aspects of the DOE program such as partnership efforts to DOE contractors, coordination of documentation of training with the ICWUC Center staff and assistance from NIEHS and DOE offices.

VI. Trainee Follow-Up:

All participants in Center programs are currently employed at either Hanford, Oak Ridge, Kansas City, Fernald or Rocky Flats. Both Hanford and Oak Ridge are NPL sites; the Kansas City participants are all members of the plant emergency response team. Their major effort in the follow up of DOE participants is the long-term evaluation project. The DOE evaluation tool gathered site-specific information regarding the use of resources and ability to improve work place conditions. This data confirmed the general success demonstrated during previous years.

VII. Instructor Support:

The Center has an ongoing program of encouraging professional development for educational staff and on site trainers in order to improve their knowledge and skills necessary to effectively facilitate health and safety modules.



Paducah, Kentucky workers repacking waste.

The Director of Trainer Development leads the five-day Train-the-Trainer, Trainer Practice/Refresher and Technical Skills classes. He has instituted consistent evaluation methods that allow the trainer to develop at his/her own speed while ensuring consistency and quality in program delivery. Each session continues to be an opportunity for rank and file trainers to provide important support for

the Center's full-time instructors. In addition, each session is a valuable educational experience and on-the-job training for the trainers

The trainer practice session is one area where trainers can practice their skills, observe other trainers' styles, and receive feedback from the Director of Trainer Development and other educational staff. The technical skills trainer session is reserved for those trainers who have mastered the fundamental adult education skills and need a fuller background in a number of the subject matters that their modules touch upon. These programs assist the Center in assuring the site contractors that trainers have the technical capability to conduct HAZWOPER training.

During Technical Skills programs, the Center brings in subject experts, who are familiar with ICWCU methods, for presentations followed by in depth discussion with the trainers.

4.4 International Union of Operating Engineers (IUOE)

I. Progress Report Abstract:

During the year, the IUOE provided training to 2,361 trainees through the DOE Training Program. There were 276 workers trained in the 40-Hour Basic Superfund Site Workers course, 2,054 workers in the 8-Hour Site Worker Refresher course, and 31 workers in the 24-Hour RCRA TSD Site Worker.

IUOE constantly reevaluates, supplements, and/or revises course material and content to incorporate the most current and practical information. New or revised course material incorporated into IUOE curriculums within the last year include site-specific decontamination and drum handling methods, updated emergency response systems and personal protective equipment (PPE) guidance, and information concerning weapons of mass destruction (WMD). The IUOE's Master Instructors, prepared by the Train-the-Trainer and supported by the IUOE's diverse group of health and safety professionals, are constantly networking to assure that students are provided with the most accurate, pertinent, and advanced information available. IUOE Instructors have also taken the opportunity to tour job sites in order to forge a better understanding of prospective students' responsibilities and needs.

The IUOE DOE Training Program provides a unique educational environment, which is enhanced by bringing together students of varying backgrounds, job responsibilities, and areas of expertise. Classes are designed to assure student interaction and involvement and to provide an opportunity to share relevant work experiences. Expanded introductions, group exercises, and a relaxed class atmosphere have proven to be effective methods for active student participation. The worker-peer training method employed by the IUOE DOE Training Program since its inception enhances class participation while remaining a cost effective and successful approach.

The IUOE DOE Training Program is available to anyone affiliated with a DOE contract, which produces a diverse class. This creates a better learning environment and provides students with a unique insight to the challenges and responsibilities faced by various crafts, health and safety professionals and managers. This year alone, the program has trained skilled workers representing every craft; environmental, industrial hygiene, and radiation professionals; waste treatment and transportation specialists; and company managers.

Due to the nature of a DOE facility, site security has been an ingrained way of life but training must extend beyond security and emergency response team personnel to the general plant population. The IUOE DOE Training program is meeting these needs through instructor awareness sessions and the inclusion of Homeland Security guidance information in 8 and 40-Hour HAZWOPER units.

The IUOE DOE Training Program does not exclude student involvement upon their exit from the training class. A conscientious effort is made to assure that participants and co-workers have a constant resource at

their disposal. IUOE Instructor/staff contact information is provided to each class to assure timely support. The IUOE's vast networking capabilities include Master Instructors, and Health and Safety Professionals nationwide with years of both classroom and practical experience. Common inquiries include training requirements, radiological protection issues, web site resource

availability, hearing protection, Hazmat-Homeland security applicability, facility assessment and vulnerability, and respiratory protection questions.

II. Training Accomplishments:

During the year, the IUOE provided training to 2,361 trainees under the DOE Training Program at various DOE locations, in particular Oak Ridge, INEEL, and Hanford. The IUOE has trained over 23,000 workers since the beginning of the DOE cooperative agreement in 1993 through a broad spectrum of hazardous waste training.

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. The continuing transition from a Management and Operating (M&O) Contractor System to the current Management and Integration (M&I) approach assures a dramatic increase in the role of subcontractors in facility operation. In many cases this denotes a younger less experienced work force employed by companies with limited training budgets. The change in facility management systems (M&O to M&I) also diversifies the classroom (especially the 8-Hour Site Worker Refreshers) by mixing long-time experienced workers with those who are relatively new to the profession. The IUOE DOE Training Program uses this diversity to enhance the learning experience by promoting student participation through expanded introductions (including explanations of student experience and present duties), group exercises, lessons learned, and open discussions.

Continued implementation of ISM principles at DOE facilities is intended to involve the workers in the task of improving health and safety on the job. Workers must be knowledgeable in hazard assessment techniques and in general concepts of worker protection for this to be effective. The IUOE is committed to increasing worker awareness of their rights and responsibilities concerning safe work practices. These goals are met through emphasis of ISM ideology, inclusion of site-specific examples, student involvement, and easy access to IUOE's network of Master Instructors, Health and Safety Professionals, and developed reference materials.

Increased terrorist threats and heightened homeland security concerns have changed the course of health and safety training. What was once seemingly a concern for security and emergency response personnel only has become a source of apprehension for the entire work force. The IUOE is taking a proactive approach to assuring that homeland security issues are included in every HAZWOPER course. Examples of the curriculum revisions are potential chemical weapons and the possible effects of their successful deployment in toxicology units, biohazard possibilities and consequences in bio-bloodborne pathogen units, and potential dirty bomb utilization results in radiation protection units.

The IUOE DOE Training Program serves a diverse group of subcontractors who employ individuals with extensive talents and responsibilities. These training opportunities are not limited to Operating Engineers. The training population consisted of boilermakers, chemical operators, construction workers, electricians, engineers, environmental technicians, environmental engineers, facility managers, health physics technicians, industrial hygienists, insulators, laboratory technicians, laborers, machinists, painters, pipe fitters, planners/estimators, project directors, quality assurance engineers, radiation safety officers, scientists, sub-contract technical representatives, truck drivers, and waste transportation managers.

The IUOE conducted two Master Instructor Refreshers within the past grant period. During one refresher, training consisted of Weapons of Mass Destruction training, a WMD Response practical demonstration and a roundtable discussion concerning the training requirements and curriculum necessary for WMD Response workers.

To date, 1,413 Homeland Security certification cards have been issued for IUOE members completing training and over 4,000 additional students are proposed to attend training.

III. Training Effectiveness:

Master Instructors hand out questionnaires at the beginning of each class and 1,207 have been returned and tallied. 78.5 percent of the trainees completed the gender question and 85.1 percent were male. 996 trainees provided their race, with 3.5 percent identifying themselves as black, 1.2 percent as Hispanic, and 83.7 percent as white.

Of the 1,019 trainees that responded about their educational level, 2.4 percent reported having neither completed high school nor received a General Equivalency Diploma (GED). Five percent reported receiving their GED and 39.7 percent received their High School Diploma. Almost 53 percent of the group reported they had attended college.

Numerous trainees reported significant and varied exposures to hazardous substances on the questionnaire. Ninety-six percent responded that they have worked on a hazardous materials job site during their career. When asked which of the following hazards they were exposed to in their work careers, they reported:

- 47.4 percent to heat stress
- 45.7 percent to asbestos
- 40.1 percent to solvents
- 39.4 percent to welding fumes
- 33.4 percent to lead/lead paint
- 36.5 percent to concrete dust/millings
- 20.1 percent to asphalt fumes
- 21.1 percent to silica
- 15.8 percent to benzene

The students have worked on a wide range of hazardous materials sites located at DOE facilities or at other locations. The percentages are as follows:

- 21.5 percent on TSD sites
- 11.8 percent on Leaking UST removal projects
- 14.6 percent on RCRA corrective action
- 8.0 percent on other federal site
- 6.3 percent on EPA/NPL sites
- 7.6 percent on Military base cleanup
- 7.7 percent on other sites
- 7.5 percent on Emergency response actions
- 4.9 percent on Voluntary/Private sites
- 5.1 percent on State-lead sites
- 3.3 percent on Emergency removal projects
- 2.1 percent on Brownsfields

The IUOE local unions conducted pre and post testing of trainees attending the 40-Hour Basic Site Worker Course. Data revealed that pretest scores averaged 60.4 percent, while posttest scores increased to 91.5 percent. With this increase in test scores, one conclusion can be made: the trainee learned and retained the information during the course.

Training through hands-on demonstrations has always been an integral part of the IUOE program. Hands-on training activities during General Site Worker training courses are evaluated for relevance and effectiveness during Master Instructor refreshers, at which time new hands-on activities are also discussed and developed. Evaluation checklists are used for evaluating participants' performance and skill level.

Instructors are trained in the course elements of the hands-on exercise including PPE dress-out, decontamination procedures, and safety issues in regard to operating heavy equipment while wearing PPE. Trainees are evaluated to assure that each specific task was performed satisfactory. Evaluators are also critiqued after each session to improve their own evaluating procedures.

Trainees attending courses authorized through the IUOE were asked to evaluate each course upon completion. These forms were forwarded to the IUOE Beckley office for review. Upon review, comments convey that the training provided through the local unions was presented in an excellent manner, instructors were knowledgeable in the subject, and training manuals and materials were exceptional.

Some of the trainee comments were:

The instructors were highly qualified, but easy to understand on technical topics.

Very informative, excellent teaching abilities of the instructors.

Outstanding job, well presented.

I return every year for the refresher class and it is always good.

A lot of good reminders were mentioned, it's a good reminder of things we should be aware of.

The course was very easy to understand.

Things were made very simple; instructor had no problems explaining anything at any time during the course.

Of the almost 20 years of HAZWOPER refreshers this was the most entertaining and more importantly pertinent.

Instructors were very knowledgeable, enthusiastic, and able to bring real world experiences and examples into the classroom.

Material is presented in an interactive format and students are encouraged to participate. Local and current events are discussed to highlight and supplement training objectives.

A very solid overall program. I appreciate the effort to modify the material annually.

The IUOE provides specialized training in a timely manner and meets client needs in times of emergency. For example the Oak Ridge Facility conducted a special 24-Hour Bridge Training for Master Mechanics essential to operations at the DOE Environmental Management Waste Management Facility (EMWMF) located at the Y-12 Plant in Oak Ridge Tennessee within days of the facility's scheduled opening. The special session enabled the multi-million dollar waste facility to open on time ensuring uninterrupted operations along with substantial cost savings.

When asked if worker protection practices have improved on construction sites, participants responded:

76.2 percent had seen general safety improve.

67.2 percent felt that MSDS availability had improved over the last year.

67.8 percent had noticed improvements in HazCom training.

64.4 percent felt that they had noticed improvements in the use of respirators on their job sites during the last year.

IV. Curricula Update:

IUOE completed the following curricula revisions and updates:

8-Hour Supervisor Course Revision: Course curriculum and PowerPoint presentations were developed or revised to include Health and Safety Plan (HASP), respiratory protection, and waste management.

8-Hour Refresher Update: 8-Hour Refresher modules utilized in the Oak Ridge Facility continued to be revised on an annual basis to reflect new health and safety practices and standards, as well as to address site-specific topics of interest.

The following 8-Hour Refresher modules were created or revised:

- Bloodborne Pathogens/Bio Hazards.
- Chemical Hazards.
- Personnel/Equipment Decontamination.
- Drum Handling Safety.
- Human Factors and Industrial Ergonomics.
- Hearing Conservation.
- Personal Protective Equipment.
- Emergency Response.

8-Hour Refresher Lesson Plan: This was developed to reflect the 8-Hour Refresher revisions described above.

8-Hour Refresher Student Reference: This was designed to enhance the students learning experience by providing a copy of the PowerPoint slides used during the training course with space for note taking.

24/40-Hour Pre and Posttest Revision: The 24/40-Hour Pre and Posttests were revised to assure clarity and to better reflect student retention level of the most important HAZWOPER issues.

V. Advisory Board Activities:

During the year advisory board members meet a number of times. This included meeting with Master Instructors for extensive dialogue regarding the program including the enhancements that need to be made for the Train-the-Trainer and Master Instructor Refresher Programs, and the 40-Hour Basic Superfund Site Worker and 8-Hour Site Worker Refresher Courses.

The IUOE established an Advisory Board of Stationary Engineers in August 2002 to review and provide input to Homeland Security and Energy Infrastructure course content and curriculum. The IUOE has incorporated these courses into its regular 40-Hour and 8-Hour courses, as well as its Train-the-Trainer and Master Instructor Refresher Programs.

VI. Trainee Follow-Up:

The IUOE trainee tracking system currently maintains statistical data for IUOE members and other individuals trained by IUOE instructors. The current data management system houses student information and courses taken with completion dates. Detailed reports consisting of courses offered, class attendance history, certified Hazmat operators and geographical location are available from the IUOE database. The IUOE DOE Training program provides training for hundreds of subcontractors nationwide including the examples listed below:

BNFL, Inc.-Oak Ridge Work

BNFL employees are currently involved in decontamination and decommissioning (D&D) of numerous buildings at East Tennessee Technology Park (ETTP), formerly K-25 Plant. Hundreds of BNFL employees are trained on an annual basis at the International Environmental Technology and Training Center (IETTC) -Oak Ridge Facility.

National Priority List (NPL) Sites

The Oak Ridge Reservation (ETTP, Y-12, and ORNL), INEEL and the Hanford, Washington sites are facilities presently included on the NPL. Each contains countless clean-up and corrective action sites within their boundaries. These include, but are not limited to, wastewater treatment plants and landfills (legacy and active); RCRA and TOSCA permitted waste storage facilities, security firing ranges, and research and development labs (active and inactive). Common ongoing environmental restoration projects at these sites include building decontamination and decommissioning, hydro-fracture injection well plugging and abandonment, underground storage tank, surface impoundment, ponds, and burial ground remediation. The IUOE trains over 1000 students employed at these facilities annually.

ATG-Richland

ATG employees are involved in processing radioactive and mixed wastes received from nuclear facilities throughout the United States. They transform the received waste stream to a form that complies with landfill waste acceptance criteria for burial.

Military Bases

DOE contractor employees successfully completing the IUOE training are involved in cleanups at military bases throughout the United States. Military Base legacy problems include landfills, fuel storage areas, service stations, burial sites, hazardous waste storage areas, fire training areas, entomology shops, maintenance shops, storage tanks, sewage treatment plants, crash sites, radiological storage areas, and firing ranges. Common contaminants include fuels, solvents, radiological constituents, dioxins/furans, PCBs, heavy metals, depleted uranium shells, pesticides, herbicides, and explosives.

Decontamination and Decommissioning (D&D)

D&D work is especially prevalent at DOE facilities. D&D workers are faced daily with potential exposures to harmful contaminants. Some of the more common exposure issues involve uranium, asbestos, beryllium, lead, mercury, and exhaust fumes. The nature of D&D involves operating in aged, run-down, structures with poor lighting and no ventilation. These conditions create additional challenges. The PPE requirements limit visibility and dexterity, which presents potential problems when working in areas of high personnel and equipment activity. High noise levels present problems from both a hearing protection and overall awareness standpoint. Heat stress and hypothermia are also very real concerns. The IETTC-Oak Ridge Facility annually trains more than 500 BNFL employees.

VII. Instructor Support:

The IUOE serves as the support center for Master Instructors who conduct classes at DOE facilities. Support activities include:

- Class and instructor scheduling
- Class material needs assessment, procurement, and shipping
- Reference material guidance and development
- Class attendance documentation packet completion
- Student badge production and delivery
- Monitor instructor and course evaluations
- Central contact point for DOE Site Training Coordinators and personnel

IUOE DOE Training Program participants are encouraged to take advantage of the organization's diverse network of health and safety professionals and training opportunities. The following are a few of the inquiries and requests received in the past year and the IUOE response to each.

TPG Applied Technology contacted the IUOE seeking training opportunities for fire fighters from communities surrounding the Oak Ridge Reservation with cooperative agreements to assist in times of need. The IUOE found openings in scheduled classes to accommodate this request.

BNFL frequently requires additional 8-Hour Refresher courses above and beyond those scheduled at the beginning of the Fiscal Year. The IUOE provided three additional training sessions to meet the needs of the world's largest D&D provider.

DOE subcontractors and other organizations often request IUOE instructors to conduct Safety Meetings, special training sessions or participate in Health and Safety Conferences. During the year,

IUOE training program personnel conducted four safety meetings in Oak Ridge and a Heat Stress Unit at the Tennessee Safety and Health Congress and Exposition.



Demolition work at Savannah River.

4.5 Hazardous Materials Training and Research Institute

I. Progress Report Abstract:

Kirkwood Community College's Hazardous Materials Training and Research Institute (HMTRI), sponsor of the Community and College Consortium for Health and Safety Training (CCCHST), supports universities, colleges and community training providers serving Department of Energy (DOE) environmental restoration and waste management sites. The intent of CCCHST-DOE is to provide convenient, consistent, and cost-effective, NIEHS-approved worker training to DOE, contractors, subcontractors and public officials serving DOE facilities. HMTRI is converting existing hazardous materials curriculum to an open-entry, open-exit format to be electronically delivered to students by CCCHST-DOE colleges. Member colleges will complement electronic curriculum with required hands-on training and local instructor support for students. The five-year goal is to train a minimum 1,500 workers, technicians, and supervisors to protect themselves, their facilities, and their communities from exposure to hazardous materials encountered during hazardous waste site clean-up, in the transportation of hazardous materials, and in the response to releases of hazardous materials. Current CCCHST-DOE members are located at the following educational institutions serving their respective DOE facilities:

Aiken Technical College at the Savanna River Site, SC

Amarillo Community College at the Pantex Plant, TX

University of Tennessee, Knoxville, TN at the Oak Ridge Field Office Sites, as well as Paducah, KY, and Portsmouth, OH sites.

II. Training Accomplishments:

During this year, CCCHST-DOE delivered 218 courses to 1,894 students for a total 17,993 contact hours of instruction. The University of Tennessee delivered 149 courses to 1,020 students for a total 4,517 contact hours of instruction. Training was provided for the Oak Ridge complex, the Portsmouth Gaseous Diffusion Plant, and the Paducah Gaseous Diffusion Plant. Amarillo Community College delivered 43 courses to 616 students for a total 10,668 contact hours of instruction at the DOE Pantex facility in Amarillo, Texas. Aiken Technical College delivered 26 courses to 258 workers for a total 2808 contact hours of instruction.

Twenty (20) students have participated in web-based instruction delivered by the University of Tennessee (UT). There are 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). 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.

In addition to Hazwoper-on-the-Web, HMTRI has converted for web-based delivery its Waste Site Supervisor course; its Waste Site Worker Refresher course--which is updated every year with four new hours of instruction; and a 24-hour Moderate-Risk Waste Site Worker course for workers who enter a site occasionally for specific limited tasks and are unlikely to be exposed to over-permissible exposure limits. HMTRI also converted Haz Mat Transportation (six hours) to a web-based format and added to its content Homeland Security training as required by the DOT. The course also offers a Rad Transportation unit to meet DOE needs. The Hazardous Waste Worker Refresher updates for this year include four new exercises

using photos with “drag and drop” responses that must be matched and ordered. For example, one exercise requires students to match required PPE with specific hazards.

III. Training Effectiveness:

The effectiveness of the overall project is measured in several ways including: (1) hands-on and electronic testing of students, (2) electronic course evaluations completed by students, (3) student tracking and follow-up to demonstrate that training protects workers, employers and the environment, (4) employer follow-up to verify that students have required skills and knowledge, that competencies gained through 1910.120 training are applied on the job, and that management has implemented and/or enforced health and safety measures in the workplace.

Students attainment of competency is demonstrated by successful completion of hands-on, participatory exercises and by 70 percent correct completion of final test questions at the conclusion of each course.

HMTRI course evaluation forms allow students, at the conclusion of a course, to measure satisfaction with instructions, lesson texts and course materials, graphics, colors and screen designs, links to other sites, instructor communication and support, availability of technical assistance, facilities/equipment, network environment and software.

Student follow-up is conducted by the University of Tennessee. HMTRI course enrollment data, completed by each student at the start of a course, is used to track student demographics and maintain records for the employer, the college and NIEHS. Enrollment information includes the student’s email address, employer, employer address, occupational classification (professional, technician, office, workers: skilled craft, semi-skilled operative, unskilled laborer, service worker), occupational activity, number and type of waste sites annually worked, days employed at each site, home address, congressional district, gender, age, and ethnic group. Students taking refresher training through the same Consortium member in subsequent years will be surveyed electronically to document the effect of the initial course on worksite behavior and to track the individual’s employment history.

In a recent survey of Hazwoper-On-the-Web students, HMTRI reported that:

Over 83% of the students felt the online network environment was user friendly.

67% of the students felt there was good technical quality.

75% felt there was good quality in the training materials.

83% agreed on the appropriateness of course topics.

58% of the students liked the sequence of the course topics.

75% liked the instructor’s attitude.

67% of the class felt the instructor had good technical knowledge.

75% felt the instructor had good teaching skills and expertise.

Overall, 75% of the class liked the course.

IV. 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
- Hazwoper 8-Hour Refresher on the Web
- 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
- Waste Site Worker Health & Safety - 40 hrs
- Waste Site Worker Health & Safety Refresher - 8 hrs

All texts and overheads are provided to CCCHST instructors on a CD-ROM for ease of duplication. The academic portion of the 40-hour Hazwoper-on-the-Web course is also available to CCCHST-DOE colleges. The grant pays licensing fee costs for the web-based version.

Hazwoper-on-the-Web translations to Spanish were completed in 2001 and updated during this period. The Spanish audio is also transcribed to Spanish text so that either Spanish or English text can be displayed with the Spanish audio. This allows workers to read along with the audio. If a student is hampered by a slow Internet connection or by a computer without audio capabilities, the worker can alternatively read the information presented in the audio, making the web-based training more user friendly.

Links to Spanish language websites are also included such as the Spanish version of OSHA's Plain Language workplace poster. Over 800 entries contained in the course glossary have been translated into Spanish.

V. Advisory Board Activities:

The CCCHST-DOE Advisory Board met May 6, 2003 at Aiken Technical College in Aiken, South Carolina to review worker training activity: classroom, hands-on and on-line.

In addition, the Board observed an online demonstration of Cyntelix software proposed for use in new HMTRI programming.

VI. Trainee Follow-Up:

The University of Tennessee is working diligently to follow-up with students trained online during the year. A long-term evaluation is being conducted using the given email addresses of the students.

VII. Instructor Support:

To become a member of CCCHST, instructor(s) from applicant organizations must successfully complete a two-week Great Environmental Safety Trainers (GreatEST) Train-the-Trainer Institute, and participate in training evaluation and data collection. To continue membership in CCCHST, instructors must annually enroll in Refresher training and continue to participate in evaluation and data collection. Refresher training may be completed on-line once every two years. At the GreatEST Institute trainers receive and learn



Dredging contaminated sediments at Oakridge National Laboratories

to teach from a turnkey curriculum with Power Points, teaching aids, and training exercises that meet and surpass NIEHS minimum criteria. Curriculum is provided to CCCHST instructors on CD Roms with Adobe Acrobat formatting. Instructors are licensed to use and duplicate the curriculum for one-year. Licensing agreements are renewed during annual Instructor Refresher training.

CCCHST provides licensed trainers on-going technical assistance through print and electronic communication with emphasis on web-based delivery of texts, training resources, and technical assistance.

4.6 Laborers-AGC Education and Training Fund (Laborers-AGC)

I. Progress Report Abstract:

During the time period September 1, 2002 to August 31, 2003, the Laborers-AGC Education and Training Fund (Laborers-AGC) and International Brotherhood of Teamsters (IBT) combined programs conducted 656 courses under the DOE Environmental Worker Education and Training Program (EWTEP, including courses conducted with supplemental funding). This accounts for 123,073 contact hours of training. Together, the IBT and Laborers-AGC trained 6,461 workers (2,001 IBT and 4,471 Laborers-AGC).

During the year, Laborers-AGC also held its annual Instructor Development Program (IDP) for all instructors to learn new teaching methodologies, acquire updated information and skills in construction and environmental remediation, and to create and use effective teaching tools and materials. Laborers-AGC and IBT DOE instructors attended the program. Also of note was that the HW Worker Refresher manual was translated into Spanish along with supporting materials. Both the Spanish and the English versions are currently being reformatted to make them easier to read.

This year the IBT conducted 142 courses under the DOE worker training program. A total of 2,001 workers participated in the training, accounting for 20,320 contact hours.

The IBT Central/Southern Region Training Center was re-opened in May 2003. The new center, which is located at Teamsters Local Union 179 in Joliet, IL, is now providing environmental and health and safety training under the DOE EWTEP.

Three regional Instructor Development Programs provided 40 hours of class time for IBT instructors in teaching techniques, developments in hazardous waste transportation and remediation, and in DOT regulations among other topics. IBT also began the translation of the 40-hour Basic Hazardous Waste Worker Manual and the 8-hour Hazardous Waste Refresher Manual into Spanish.

II. Training Accomplishments:

The Laborers-AGC DOE worker training courses were conducted by seven regional and two mobile training centers.

1. Augusta, GA (for Savannah River)
2. Brighton, CO (for Rocky Flats)
3. Edgewood, NM (for Los Alamos)
4. Idaho Falls, ID (for Idaho National Environmental and Engineering Laboratory)
5. Las Vegas, NV (for Nevada Test Site)
6. Oak Ridge, TN (for Oak Ridge)
7. Pasco, WA (for Hanford)
8. Iowa Mobile Unit (for assistance at Oak Ridge, Nevada Test Site, Rocky Flats, and Los Alamos)
9. West Virginia Mobile Unit (for DOE Headquarters)

The courses that were held under the DOE worker training program during this program year include:

80-hour HW Worker	8-hour HW Worker Refresher
45-hour HW Operations	8-hour HW Supervisor Refresher
24-hour HW Limited Access	50-hour HW Operations/Anthrax for Law Enforcement
40-hour Asbestos Abatement Worker	40-hour Asbestos Abatement Supervisor
8-hour Asbestos Abatement Worker Refresher	8-hour Asbestos Abatement Supervisor Refresher
40-hour Lead Abatement Worker	8-hour Lead Abatement Worker Refresher
Radiological Worker II	Radiological Worker II Refresher
Radiological Worker II Challenge	Cutting and Burning
Fire Watch	Hoisting and Rigging
OSHA 10-Hour	OSHA 30-Hour
Permit-Required Confined Space	Scaffold User
Respiratory Protection	Microbial Remediation
Site Specific Training (INEEL: Computer-Based)	

A total of 504 course presentations were held from September 1, 2002 through August 31, 2003, under the DOE worker training program with 4,300 participants. These figures represent 95,801 contact hours of training. A total of 218.6 training weeks were presented. This is 30.2 weeks over the goal of 188.4 weeks (116% of goal).

Training increased at several DOE training sites during the current program year. For example, better relationships with contractors at the Rocky Flats DOE site have resulted in increased demand for training, both in the amount and in the type of training requested.

Laborers-AGC and its affiliated training funds have been training DOE workers since 1994, helping to create

a pool of qualified Laborers who come to demolition and decommissioning jobs with the skills needed to keep them and others safe. Under the program, Laborers-AGC has trained approximately 26,600 workers through program year 2002. This training represents about 800,000 contact hours provided at an average cost of approximately \$27.22 per contact hour.

The IBT DOE Worker Training Program provided regional training through five training centers. The training centers are:

1. The HAMMER Training Facility located on the Hanford DOE Site
2. The Teamsters Local Union 631 Construction Industry Training Trust located in Las Vegas, NV
3. The Construction Teamsters Training and Upgrading Fund of Southern California (CTTUFSC) located in Fontana, CA
4. The Eastern Region Training Center located at Teamsters Local Union 251 in East Providence, RI
5. The Teamsters Local Union 509 Training Center located in Cayce, SC
6. The Central/Southern region Training Center located in Joliet, IL
7. The Teamsters Local Union 282 Job Training Trust fund in Lake Success, NY

From September 1, 2002 through August 31, 2003, the IBT DOE Worker Training Program:

Certified 175 workers in the 40-hour HW Worker Course

Certified 989 workers in the 8-hour HW Refresher Course.

Certified 4 workers in the 24-hour Radiological Control Worker II Course

Certified 41 workers in the 16-hour Emergency Response Course.

Certified 719 workers in the 4-hour Respiratory Protection Refresher Course

Certified 42 workers in the 24 or 16 hour Composite (Bridge) Courses.

Certified 86 workers in the 4-hour Hazardous Materials Transportation Awareness course incorporated into the 40-hour Hazardous Waste Worker course.

III. Training Effectiveness:

Laborers-AGC evaluates the trainee's mastery of course material is conducted in two basic ways:

1. Classroom and hands-on activities performance
2. Administration of a final course exam

In addition, information on the trainees' use of the skills and information learned through the HW worker and refresher training is obtained through the HW Refresher course application. Information on work history, skills used, problems encountered, and each trainee provides responses to those problems.

Various records are kept on each trainee throughout the duration of the HW Worker or HW Operations course including:

1. Trainee record sheet for pulse, temperature, and weight
2. Trainee fit test record
3. Performance test observation form for inspecting and donning half-face air purifying respirators (APRs)
4. Performance test observation form for inspecting and donning full-face APRs
5. Performance test observation form for doffing and cleaning APRs

Trainees are also given standard operating procedure (SOP) sheets to complete on the mock hazardous waste site. The SOP sheets detail procedures trainees would see on a hazardous waste site. Instructors monitor these activities and evaluate each trainee's ability to complete these assignments in a proficient and safe manner.

At the conclusion of most of the courses conducted under the DOE program, the students take a written exam. For the program year, 92 percent of trainees successfully completed the training in which they were enrolled. Only a small percentage did not complete the course. Reasons for non-completion include: failing to pass exam, failure to pass the medical screening and dropping out before the course was completed. In addition, L-AGC compiled information from a total of 3,667 HW Refresher worker surveys. Information from the applications is summarized below.

For workers trained under the DOE program, the skills with the greatest number of used "very often" and "often" responses were as follows:

- Injury protection (hearing protection, hot/cold stress, back protection)
- Hazard recognition
- OSHA rules/regulations
- Fall protection
- Respiratory protection

Trainees were also asked to identify how often they were involved with or noticed various problems on work sites. The problems most frequently encountered on environmental remediation sites as reported by workers trained under the DOE program are, in descending order:

- Equipment and tools in poor condition
- Poor housekeeping
- Untrained supervisors or co-workers
- Improper or inadequate PPE
- Fuel leaks or spills

Work site problems that were least frequently encountered included in ascending order:

- Missing labels or lack of access to MSDS
- Inappropriate site safety plan
- Fuel leaks or spills
- Improper or inadequate PPE
- Inadequate site-specific training

Trainees were asked to identify any topics they feel needed to be included in the HW worker training program. As in past years, the most common response was that training in CPR and First Aid instruction would be highly beneficial. Many workers indicated they would like to have more hands on training using PPE during the HW Refresher courses. Several also indicated they needed more information on regulations and on new technologies used in PPE and monitoring equipment. Several also commented that supervisors and the contractors needed training in proper PPE selection and how PPE needs can be addressed with the contractor.

From the evaluations, it is clear that workers are using their training. Here are a few comments:

“I have become aware of hazards encountered in jobs, that were not part of the job, like lead paint, asbestos, chemicals, etc. My respirator training has allowed me to know and state acceptable air exposures or over exposures and to demand the right PPE.”

“I examined the new job site, noting the position of equipment, identified hazards, routes of access and egress, and safety resources such as MSDS and eye wash stations. The course has made me a much safer worker and a much better supervisor.”

“A fellow worker fell and became unconscious in a confined space. My training allowed me to perform a rescue of the victim.”

“I witnessed a crew member fall to heat stress. I rushed to the person, cooled them down, stayed with the person, gave him plenty of water, made him stay still for a period of time, monitored his heart rate until it returned to normal, and moved him into the shade.”

IBT’s program also utilizes pre and post training testing and hands-on demonstration of skills.

IBT also conducted an extensive Outcome Survey addressing the following questions related to the DOE Worker Training Program:

Were the trainees able to acquire employment on DOE sites?

In what types of jobs were the trainees and controls employed?

Were the trainees able to obtain higher wage jobs or better working conditions as a result of participating in the DOE Worker Training Program?

What are the job classifications and wages of the trainees?

What safety and health skills, qualifications, and training do trainees and the control group possess?

Did the DOE Worker Training Program impact workplace safety?

What is the percentage of trainees who maintained their certifications and/or participated in additional safety training?

The Outcome Survey analysis identified five key findings:

The IBT DOE trainees are 6.5 times more likely to work at DOE sites and 8.5 times more likely to work at hazardous waste sites than are workers in the control group. DOE trainees are 6.5 times more likely to work with hazardous waste and 5.5 times more likely to work with radioactive materials than the control group.

The trainees who participated in the IBT DOE 8-hour Hazardous Waste Refresher Course earned approximately \$5,300 more in the previous year than did the control group. In reviewing income analyses from the survey, it is estimated that IBT DOE Refresher Training may have generated between \$1.6 and \$8.6 million in additional income for this category of trainees.

IBT DOE trainees are more likely than the workers in the control group to possess higher safety knowledge and confidence. Trainees are 3.6 times more likely to have scored 63% or more on key knowledge questions. Trainees were four to ten times more confident in their ability to perform key safety activities than the control group. In addition, the IBT DOE trainees are more likely than the control group to engage in skilled activities related to the training, e.g. using respirators and personal protective clothing and conducting decontamination procedures.

IBT DOE trainees are more likely than the control group to find their safety training to be of value in avoiding chemical hazards, improving workplace conditions, and increasing income and/or job security.

Ninety-five percent of the IBT DOE Refresher trainees returned to renew their certifications; 75% of the trainees who participated in the 40-hour Basic Hazardous Waste Worker Course returned to renew their certifications; and 84% of trainees who participated in the Radiological Worker II Course returned to renew their certification.

These outcomes support the premise that the IBT DOE Worker Training Program reaches workers who need and use the training, and that these workers believe that the program provides useful training.

The following are a few comments from workers about the training:

“We pre-planned each job, identified the hazards and safety responses.”

“By being aware through training we avoid putting batteries on same load with corrosives or flammables.”

“I give weekly safety meetings.”

“Asked driver to close tail gate and secure hazmat drums in truck even if for a short distance.”

“The Teamster training is handy on and off-site daily.”

“I urged co-worker to fill gas cans on ground rather than the bed of a pick-up truck.”

“Explained rad and toxic waste spills to an employee so he would be able to handle and secure situation.”

“Alert others of a potential dangerous situation.”

“Notified supervisors of improper placarding of trailers.”

“An unknown package broke open – I advised coworkers to leave area and notify supervisor.”

“Put hazardous waste in the right waste stream package, rad waste, etc.”

“Always be aware of the area around you. Always watch for each other.”

“I’m more aware and I can handle chemical spills, etc. Classes are important with the threat of war so we know what to do with new chemicals and germ warfare. We need to be brought up to date.”

“My co-workers and I work much safer due to the training we’ve had.”

“It has heightened my awareness about all safety and hazardous conditions on all my jobs.”

“The DOE hazmat training has given me a lot of insight into how to protect myself in the workplace.”

IV. Curricula Update:

For Laborers-AGC, the following are the course revisions and new course materials that were developed during the program year:

Hazardous Waste Worker Spanish Translation

Hazardous Waste Worker Refresher

Basic Emergency Response Awareness (BERA)

Computer Assisted Training and Distance Learning

HW Worker Videos

During the year IBT revised its Spanish language curriculum materials.

V. Advisory Board Activities:

The Laborers-AGC/IBT combined HW Advisory Board met two times during the 2002 – 2003 program year.

Items discussed included:

1. Quality Assurance/Quality Control and Monitoring
2. Medical protocol for training clearance
3. Status reports on the EPA and DOE EWTEP, Brownfields, and Minority Worker Training Programs
4. Microbial Remediation Training
5. Anthrax Curriculum and Training
6. Weapons of Mass Destruction (MWD) Training
7. LaborersLEARN
8. NIEHS Awardees Meeting and Trainers Exchange
9. Training of new medical professionals
10. Final reports on the 2001-2002 program year for Minority Worker Training, Brownfields, and EPA and DOE EWTEP
11. Video development
12. QA/QC and monitoring activities
13. HW Refresher Application and Survey form
14. Laborers LEARN
15. New training initiatives

VI. Trainee Follow-Up:

Laborers-AGC has documented where trainees have gone to work after initial training (post-HW Worker training). These trainees return for their annual HW Refresher course and, at that point, are asked to identify their job locations and the type of work they undertook. This data has been gathered through the HW Refresher Application and is being input into a database so reports can be run as needed.

The following is a summary of the number of workers employed at different environmental remediation jobs during 2002 and 2003.

1. 152 trainees worked at 11 Superfund (EPA/NPL sites).
2. 27 trainees worked at 14 Voluntary Private Cleanups.
3. 243 trainees worked at 13 military sites.
4. 474 trainees worked at 25 Federal-Lead sites.
5. 12 trainees worked at 2 State-Lead sites
6. 21 trainees worked at 13 RCRA Corrective Action sites.
7. 1 trainee worked on 1 Emergency Response Action
6. 165 trainees worked at 35 other hazardous waste sites or sites that Laborers-AGC was unable to classify or identify.

DOE trainees held a total of 400 hazardous waste jobs during the past year. Another 295 DOE trainees reported working on radiation remediation jobs. A summary of the type of work conducted by DOE trained Laborers follows:

Work Conducted	Number of workers
Hazardous Waste	400
Radiation	295
Asbestos	243
Lead	76
Above/Below Ground Tanks	33
Biological Hazards	29
Refinery or Chemical Plants	20
Unexploded Ordnance	18
Mold Remediation	14
Anthrax	3

The IBT DOE Worker Training Program targets workers currently employed at DOE sites. Thus workers trained at Hanford and Savannah River, for example, are still employed at these sites. In addition 117 workers acquired employment, or were already employed, on the Nevada Test Site; and 35 workers acquired employment at the Nellis Air force Base.

VII. Instructor Support:

Laborers-AGC policy continues to require that instructors satisfactorily complete the basic 80-hour HW Worker course. Upon completion of the 80-hour course, instructors are given an additional 40 hours of instruction in the HW New Instructor course. Finally, in order to teach any other environmental course, the instructor must attend a course-specific train-the-trainer.

In December 2002, a DOE Radiological Worker Refresher was held for instructors from the Pasco, WA (Hanford DOE facility) and Idaho Falls, ID (INEEL DOE facility). Also a Hoisting and Rigging Train-the-Trainer (T-T-T) was held on May 13 – 18, 2003 at the Illinois Laborers' and Contractor's Training Fund in Mt. Sterling, Illinois.

In order for instructors to maintain their certification, Laborers-AGC requires participation in the annual Instructor Development Program (IDP). The IDP is a multi-year program designed to enhance instructional skills and knowledge through participation in professional development, technical, and hands-on courses. Professional courses focus on the skills and knowledge necessary to become a more effective instructor. Technical courses provide instructors with current industry information along with the background information necessary to teach specific subject matter.

Laborers-AGC also realizes that the training funds cannot operate smoothly without the work that is conducted by secretaries and bookkeepers. Each year Laborers-AGC holds a Secretaries/Bookkeepers Meeting for the NIEHS EWTEP and DOE training sites. The meeting provides a combination of presentations, hands-on activities, quizzes, and discussions to help the participants understand and use materials provided and required by Laborers-AGC.

From June 2 through June 6, 2003 the IBT's instructors attended the IDP with the instructors from the Laborers-AGC. During this time, IBT's program manager and the industrial hygienist met with the IBT instructors to discuss the agenda and the purpose of IBT's Regional IDPs, and gave them assignments for the Regional IDPs. These assignments may include preparation of lesson plans and training aids among other duties. IBT also conducted three regional IDPs for their instructors. These allowed more individualized attention to each instructor's needs and facilitated each instructor's participation in small group activities.

4.7 Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE)

I. Progress Report Abstract:

PACE continues to provide all requested HAZWOPER required training at six DOE sites where they have 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.

PACE held its Annual Technical Meeting for worker-trainers (Occupational Safety and Health Education Coordinators, OSHECs), and continued progress on their Solidarity Research Evaluation Project (SREP). Working with the Labor Institute, PACE produced a new workbook for the annual 8-hour refresher course, piloted, revised, and distributed it for use at all sites. PACE continued to work closely with site contractors to maintain an emphasis on the advancement of the Integrated Safety Management (ISM) initiative.

II. Training Accomplishments:

As of August 31, 2003, PACE has provided training at six targeted DOE sites. PACE trained three new Occupational Safety & Health Education Coordinators and conducted a 28-hour Annual Technical Training session for DOE site trainers. This represents instruction to 3,072 students, for 33,464 contact hours in 168 classes. They held a PACE Evaluation Team meeting and participated in multi-grantee meeting as part of the Solidarity Research and Evaluation Project (SREP). PACE also participated in a multi-grantee meeting to facilitate the sharing of curriculum and trainee experiences.

As of August 31, 2003, PACE in cooperation with the Labor Institute provided advanced training to 31 DOE worker-trainers to ensure that they have the skills and qualifications necessary to deliver the NIEHS program curriculum using PACE's Small Group Activity Method (SGAM). This 3.5 day (28-hour) Annual Technical Training Meeting session was conducted in April 2003 in Cincinnati, OH. PACE in cooperation with the Labor Institute also provided curriculum to enhance the curriculum writing skills of 33 worker trainers.

III. Training Effectiveness:

The site-specific Occupational Safety and Health Education Coordinators (OSHECs) played a pivotal role in conducting assessments and following up on the results. Their interaction with site contractors provided a continuous working relationship that helps meet the needs of both workers and contractors. PACE Headquarters staff supports this interaction and gets involved in those situations that have "best practice" application potential across the industries. The strength of their program is the ownership assumed by the Local Union's trainers as well as the elected leadership. The PACE International Union's grant staff provided support, record keeping, and guidance that is intended to empower the Local to advance the program in such a way that it continues to meet the needs of the employees, management, and support organizations as a valuable part of the ISMS approach to Health and Safety.

Since it began participating in the Solidarity Research and Evaluation Project (SREP¹) in 1998, PACE has worked to ensure that its program assessment activities are carried out in a way that follows the principles of worker participation, empowerment, and organizational capacity building. Much as it has done in the realm of promoting workers as trainers, workplace investigators and program developers, PACE used the past year to continue the development of its Evaluation Team. Accordingly, not only has PACE made substantial progress in moving its program evaluation initiatives forward, it achieved this progress while expanding the role of the Evaluation Team.

The role of the Evaluation Team continued to expand this grant year. The 18 member Evaluation Team now includes: 1) ten worker-trainers representing DOE and EPA sites (including paper, nuclear and oil sector representation), 2) six PACE and Labor Institute staff, and 3) two New Perspectives' evaluation consultants. There is at least one worker-trainer representative from each of the five impact evaluation case study sites. Worker-trainer and staff team members have participated in designing and piloting evaluation forms such as surveys and interview guides; collecting and analyzing data; reviewing report drafts, and strategic planning for the dissemination of evaluation findings.

This year, a worker-trainer member of the Evaluation Team, on leave from the shop floor, organized the evaluation of the annual OSHC technical meeting. This worker-trainer revised a previously used survey instrument, coordinated surveying, analyzed results, and wrote the draft and final reports.

Members of the Evaluation Team are also designing the evaluation of the PACE National Health and Safety School scheduled for November 2003 for worker and management representatives from all PACE-represented industries. The preliminary plan calls for near end of school surveys, breakout section surveys, as well as interviews with returning participants to learn about the impact of previous schools back in the workplace.

The Evaluation Team conducted its work via numerous conference calls that advance the processes of analysis, writing, and report dissemination. The Team also met in-person in conjunction with the Solidarity Research and Evaluation Project (SREP) (October, 2002) and PACE's Annual Technical meeting (April 2003) to further PACE's evaluation efforts and, in particular, to discuss the roll-out of the impact study reports.

The impact evaluation study of PACE's systems of safety-based health and safety programs is a two-year study being conducted by the PACE Evaluation Team within the paper, oil, and nuclear industry sectors of PACE. The goals of this study are to: 1) identify the best practices used in implementing PACE's programs and 2) understand the impact of PACE's programs. This five-site study includes 2 DOE and 3 EPA case study sites. Four of the five sites participating in the study are implementing the Triangles of Prevention (TOP) Program (1 DOE and 3 EPA). Consultation on the study was provided by the University of North Carolina at Chapel Hill Survey Research Center and the Biostatistics Department of the School of Public Health.

IV. Curricula Update:

The understanding of systems of safety among safety team members has been continually growing, maturing and becoming more sophisticated. As a result new and more engaging educational concepts have continued to evolve and find expression in new and more advanced training modules.

Annual Refresher Training: the annual eight-hour refresher workbook reflects the curriculum team's developing sense and internalization of system-based safety. The workbook is comprised of four activities or modules. The first is entitled Identifying Hazards. The second module is a Lessons Learned Activity. The next activity, Assessing Hazards, has two stated purposes; the first is to help workers understand how the

“health and safety plan (HASP)” can be used as a health and safety tool. The second is help workers become more familiar with the techniques used to identify hazards at a waste site and to be alerted to the possibility that unexpected hazards may arise at any time. Finally, the last activity, Personal Experiences, ask participants to apply the lessons they have learned, both in this training and from the work place as a whole, and consider what hazards could have been avoided or remediate from a systems of safety perspective. This module is intended to “pull” all the learning’s from the training together and have participants apply them to their personal experience.

Train The Trainer Manual: this manual is comprised of nine training modules and an 81 page Appendix containing Supplemental Information. Each module or combination of modules serves three purposes; to teach the Small Group Activity Method techniques, to introduce and reinforce Systems of Safety concepts and, to introduce and reinforce prevention of accidents due to release of hazardous materials. This manual pulls together in one place the best practices that have developed around their training program. It is designed to be a living document, updated and revised periodically in order to incorporate new and innovative training techniques and materials.

Other New Activities: several new training modules were developed and piloted at the annual technical meeting for trainers this year in Cincinnati. They include: a new Systems of Safety activity with a new scenario and illustrated fact sheets, a new card sort activity designed to get workers to consider the hierarchy of prevention, a new activity entitled “Jump Starting You Health and Safety Training.” The purpose of this activity is to help the trainers consider strategies for recruiting more training opportunities at their work sites. They also created an activity called “This Year in Training” in which trainers shared their success in applied health and safety and training.

V. Advisory Board Activities:

The Management and Scientific Advisory Board to the DOE/NIEHS training grant met on November 18, 2003 in Nashville, TN. At the one-day meeting the Board heard progress reports on the DOE grant. The board also heard reports and discussed potential new initiatives linking 1910.120 training to: 1) a joint labor-management pollution prevention initiative being discussed by a major oil company, and 2) a WMD/Homeland Security Initiative offered by PACE staff.

Advisory board members attending included: Charles Levenstein, Chairperson; Judy Guerriero, R.N. M.P.H. and Steve Markowitz, M.D. Contractual representatives included Les Leopold, Paul Renner, Mark Griffon and Toby Lippin. Staff members in attendance included: Dave Ortlieb, Director and PI, Tom McQuiston, Mike Gill, Doug Stephens, Herman Potter, and Sylvia Kieding.

VI. Trainee Follow-Up:

All of those trained by PACE under the current training grant are employees at a DOE site. Their continued employment and work assignments in affected areas is reflected in their annual repetitive attendance. PACE distributes attendance forms in each of their classes to allow them to identify the job classification, previous safety & health training, and demographic characteristics of each trainee. The information on this form enables them to compare the perceived training needs as described by union officers and staff with the actual needs as reported by the trainees. Their data collection system makes it possible to track the trainees as to their continuation of employment and relevant job assignments regarding 1910.120 requirements.

VII. Instructor Support:

Thirty-eight (38) DOE OSHECs attended PACE's Annual Technical Meeting in Cincinnati, OH in April 2003 where PACE provided technical training in Systems of Safety, Small Group Activity reinforcement, and site visitation design as part of their SREP advancement. This meeting provided 28 hours of curriculum introduction, review and skill development.

It is important to stress that in the PACE delivery system, trainers are not experts on subject matter. They know what is in the workbook. They are not trained to provide off-the-cuff guidance on health and safety issues that are not covered. Instead, PACE prepares its worker-trainers to lead a discussion and discovery process within the Small Group Activity Method (SGAM). The trainers work to improve their understanding and use of this pedagogical method. Part of their technical focus at the annual meeting is recognizing the important contribution that empowered trainees can make as a result of their training classes.

Curricula and workbooks are the key to the learner-centered approach—the better the curricula, the better the training. Those worker-trainers who participate in curriculum writing gain extra insight into training and thereby become better trainers. The worker-curriculum writing process, guided by the Labor Institute, involves conceptualizing, writing, research, and evaluation of the material. Those worker-trainers, who did not write the curriculum in question, piloted and reviewed the revised workbooks. This process of curriculum writing enriches the worker-trainers involved. Invariably it leads to better training. The goal is to involve increasingly more worker-trainers in the curriculum writing-evaluation process. This year, three DOE trainers participated in the writing of the new refresher workbook, four other trainers conducted and reviewed the pilot class, and the rest of the trainers reviewed and provided comments on the new material at the annual meeting.

4.8 New Jersey/New York Hazardous Materials Worker Training Center (NJ/NY Center)

I. Progress Report Abstract:

The New Jersey/New York Hazardous Materials Worker Training Center provided 88 courses for a total of 532 workers trained, corresponding to 6736 contact hours of training. The University of Medicine and Dentistry of New Jersey-School of Public Health (UMDNJ) provided training, as requested, to Brookhaven National Laboratory and Princeton Plasma Physics Laboratory employees. 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.

II. Training Accomplishments:

The University of Medicine and Dentistry of New Jersey-School of Public Health provided training for personnel at Princeton Plasma Physics Laboratory and Brookhaven National Laboratory. Courses are scheduled to meet the individual needs of the sites, and therefore require continuous coordination with personnel from the DOE sites.

The hazardous waste training program continued to be part of the Centers for Education (CET) and Training, within the School of Public Health, Office of Public Health Practice (OPHP). A goal of the OPHP is to meet education and training needs of public health professionals in New Jersey. The training provided has led to the reduction of illness and injuries, as reported in previous progress reports, which is part of the mission of the School of Public Health.

10TH. ANNUAL REPORT OF THE DEPARTMENT OF ENERGY AND
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES NUCLEAR WORKER TRAINING PROGRAM

During this period, UMDNJ trained 371 workers for 4,768 contact hours at Brookhaven National Laboratory (BNL) and Princeton Plasma Physics Laboratory (PPPL). At BNL, they trained personnel from the industrial hygiene, environmental remediation, reactor, waste management and other departments. UMDNJ provided the following courses at BNL: one 40-hour courses for a total of nine workers trained; one 8-hour Hazardous Waste Supervisor course for a total of 3 workers trained; 14 8-hour Annual Refresher courses for a total of 201 trained; one 4-hour Asbestos Awareness Training course for a total of 5 workers; one 8-hour Asbestos Handler Refresher for a total of 10 workers trained; and three 8-hour Operations and Maintenance Refresher for a total of 25 workers. Two sessions of the 30-hour OSHA Construction course were also offered at Brookhaven National Lab. A total of 58 workers attended these four days of training.

At PPPL, they trained personnel from the environmental remediation, emergency services and industrial hygiene divisions. For all of the PPPL training, individuals register for regularly scheduled courses in New Brunswick. However, when a number of PPPL personnel need the same course at the same time, they offer the course on-site. Over the past year, three employees participated in the 40-hour course, 12 in the 8-hour Annual Refresher, one in the five day, 40-hour Asbestos Contractor/ Supervisor course and one in the 8-hour Asbestos Contractor/Supervisor Refresher course. Also conducted were three 8-hr Emergency Response Technician Refresher courses for a total of 18 workers; one worker in the 4-hour Asbestos Inspector (AHERA) Refresher; 6 workers in the 30-hour OSHA Construction course and three 8-hour Confined Space Refresher courses for a total of 17 workers. These courses were all provided at CET in New Brunswick.

For the convenience of the PPPL fire and emergency response personnel, UMDNJ conducted three sessions of the 8-hour Confined Spaces Refresher and the 8-hour Emergency Responder Technician Refresher on-site in Princeton, New Jersey. Since the emergency response personnel work in 24-hour shifts at the lab, UMDNJ was asked to conduct the training at the beginning of their Saturday shift. Over a period of six weeks, all six of the battalions will receive refresher training. For the 8-hour Emergency Responder Technician Refresher, UMDNJ used the Anthrax response at the West Hamilton Postal Facility to illustrate the need for proper selection of PPE, decontamination, and the role of the first responder, when called to an emergency situation.

UMDNJ became an Authorized OSHA Training Institute (OTI) Outreach Training Provider in January 2003. UMDNJ was awarded this authorization through a competitive application process. Through this program, UMDNJ is allowed to offer 20 courses developed by OSHA in construction, general industry, and industrial hygiene. UMDNJ was contacted by the Brookhaven Physical Plant and requested to conduct an OSHA 510, the 30-hour Construction course. UMDNJ offered this course twice in Upton, NY, training 58 workers.

The University at Buffalo, Toxicology Research Center is responsible for training workers at West Valley Nuclear Services. They have trained 161 workers for approximately 1,968 contact hours primarily conducted at the West Valley Demonstration Project facility. They have conducted four 24-hour Hazardous Waste Worker Courses for 21 personnel. Also conducted were eight 8-hour Hazardous Waste Worker Refresher courses for a total of thirteen persons from the facility, one 40-hour Initial Certification course for 2 workers and sixteen 8-hour RCRA Refresher courses for 60 workers. They also conducted five Emergency Response Operations level courses for 19 personnel and conducted seven 16-hour "Bridge" Courses for 35 site personnel to upgrade their 24-hour HAZWOPER status to 40 hours. They have also conducted four HAZWOPER Supervisor courses for 11 personnel. These last two courses were conducted as part of the continued shift to D & D operations. During the early part of this year, they also spent considerable instructor hours working with WVDP personnel developing a completely new HAZWOPER refresher course for the year that will complete training requirements for both 24-hour and 40-hour HAZWOPER trained workers. The same will

occur during the next program year. The shortfall between projected and actual training numbers was due to the recent and drastic downsizing at the facility and the move by WVDP to grant equivalency for site briefings and other training in lieu of the Refresher course. Although, the number of courses has decreased somewhat and the number of students per course has also dropped, they maintain the number of courses as necessary to maintain synchronization with worker shift schedules.

III. Training Effectiveness:

UMDNJ has an evaluation team whose members are experienced in statistics, computer programming, and study and instrument design. They also have experience in qualitative and quantitative data collection and analysis. Evaluation strategies employed by the Center have been published so that others involved in health and safety training can adapt existing methodologies. Data on prospective trainees are collected using a scannable registration form that includes variable categories and subcategories used in the database for the NIEHS Worker Training Grant programs. Multiple employment variables (job duty, setting, and title), with education data, enable a more exact determination of a trainee's job category. The trainees are also asked about becoming ill or injured from hazardous materials; if s/he is in medical surveillance and, if so, the specifics of the program; if s/he had health and safety training in the prior two years; and if s/he is represented by a union.

Registrations, tests and course evaluations are forwarded to UMDNJ with a Course Report form, which provides an inventory of forms enclosed and includes a section for training staff to include comments. Comments from instructors are noted and data are logged by receipt date and course date(s). With the addition of impact assessment focus groups, UMDNJ's activities will expand to include review, coding and analysis of focus group manuscripts and notes.

The survey shows that twenty-seven percent of the trainees reported their primary job duty as RCRA/TSD work, while a large proportion (21%) reported "other". Open-ended responses for "other" were reviewed and coded revealing a diversity of job duties. With regards to occupational categories, "Professional" (24%), "Technician" (17%) and "Service Workers" as well as "Laborers" (which were 5% and 6%, respectively) were the most commonly reported. Lastly, the primary work setting for most was a DOE site (65%).

NIEHS guidelines call for proficiency measures of trainees using demonstration and/or written items. The Consortium administers a skills demonstration checklist for procedures in equipment handling and mock decontamination. Where relevant, these activities include special skills and procedures for the presence of radioactive conditions. Evaluation of these activities is straightforward: trainees in relevant courses are not considered to have completed the course without successful and orderly demonstration of checklist items. Trainees may repeat a demonstration during the course of the assessment.

As demonstrated by the evaluation data collected, UMDNJ and Buffalo are providing quality courses that meet the objectives. Their instructors are well prepared (3.7 rating out of 4.0), knowledgeable (3.6) and have excellent communication skills (3.7). The courses completely meet the stated objectives (91%) and the material presented is appropriate for the intended audience (91%).

IV. Curricula Update:

UMDNJ revised the 8-hour Refresher course to include a new case study. Two in-class exercises were developed to assist the students recognize the hazard of exposure and determine the level of protection they need to work safely in that environment. The first exercise asked the students to find hazard types, properties, routes of entry and health hazards from exposure. The second exercise required that the students determine level of personal protective equipment they need to conduct the investigation.

Buffalo made no major revisions to curricula this year.

V. Advisory Board Activities:

The Advisory Board meets annually. At meetings or through individual contacts the members provide feedback on training currently being offered, critique curricular materials, review student evaluations including impact data, bring relevant regulations to the attention of faculty and provide advice on training opportunities that the Center should pursue. Informal input is received from members throughout the year; this will include correspondence and development of working groups, as well as serving as peer reviewers of courses as part of their ongoing evaluation process.

VI. Trainee Follow-Up:

Because all trainees are employees of DOE facilities or contractors, the Consortium, tracking of workers to obtain data on work-site experiences can be obtained directly from the various DOE facilities.

VII. Instructor Support:

All UMDNJ instructors in the program are professionals currently active in the hazardous waste industry. They must keep current with new legislation, equipment, and trends in the industry to operate effectively at their usual employment sites. Instructors attended the trainer's workshop in Orlando, Florida, sponsored by NIEHS. The information they gathered was shared with all other instructors. In addition, several instructors are certified industrial hygienists or certified safety professionals, and therefore need to obtain professional development credits through participation at professional meetings to maintain their certification.

University at Buffalo instructors attended a series conducted by the University in basic and advanced use of the Photoshop program. In addition, an instructor attended a USDOT Conference and Annual Meeting in Indianapolis to maintain his DOT expertise. Finally, two instructors attended the NIEHS trainer's workshop.



Cutting overhead pipe at Paducah

5.0 NIEHS NATIONAL CLEARINGHOUSE FOR WORKER SAFETY AND HEALTH TRAINING UPDATE

The NIEHS National Clearinghouse for Worker Safety and Health Training (Clearinghouse) is a national resource for members of the worker education and training community. It targets workers and trainers who are involved in the handling of hazardous waste and radioactive materials or in responding to emergency releases of hazardous materials and terrorist actions.

Funded by the NIEHS WETP, the National Clearinghouse is the primary communications channel through which the WETP distributes technical reports, news updates, and training information to its awardees, interested members of the hazardous materials worker-training community, and the public. This past year the Clearinghouse also provided a wide array of communication services to the WETP.

This was a year of significant change and progress in terms of staffing and project work. The contract year began with the welcome introduction of a new staff member, Dr. Bruce Lippy, who now holds the position of Director of the NIEHS National Clearinghouse for Worker Safety and Health Training. Dr. Lippy brought a highly relevant technical background (he is a Certified Industrial Hygienist and a Certified Safety Professional) to the Clearinghouse team, as well as knowledge of the WETP awardee community and its training history to this contract. As the new Project Director of the contract, his arrival brought a subsequent review of FY2002 contract tasks and reporting requirements, resulting in the revision and streamlining of tasks and procedures. In addition, some new tasks were added that addressed emerging or new priorities for NIEHS Worker Education and Training Branch (WETB) staff.

A major focus of the WETP activity this year continued to be that of training requirements for worker populations whose job responsibilities introduced the potential to respond to WMD or other large-scale events involving chemical, nuclear, biological, radiological or explosive agents. Accordingly, Clearinghouse staff supported and spearheaded a number of projects in support of the WETP's WMD training initiative, including: logistics and content coordination of the New Threats workshop in October of 2002; the completion and promotion of the Feasibility study in December of 2002; a brief examination of the TOPOFF 2 exercise in May 2003; and the representation of the WETP's WMD efforts at various presentations and meetings throughout the contract year.

The Clearinghouse produced and disseminated a new Brownfields Minority Worker Training Program (BMWTP) brochure and working with awardees to raise awareness of the BMWTP at the Brownfields 2003 conference and in their own organizations and local media. In addition, the Clearinghouse continued to publicize a weekly E-Newsbrief - a free weekly newsletter focusing on new developments in the world of worker health and safety. Each issue provides 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. Also featured each week are updates from government agencies that handle hazmat and worker safety issues such as DOE, EPA, and OSHA. Current and past Newsbriefs can be viewed at: <http://www.wetp.org/wetp/index.cfm>.

The Clearinghouse continued to maintain its website where technical reports, curricula, and other information is made available. (<http://www.wetp.org>)

The Clearinghouse is proud to support the work of the WETP and its awardee community, particularly during a time in U.S. history when policy makers remain highly focused on the funding, preparedness, and training needs of awardee worker populations. The Clearinghouse staff continues to be responsive to the WETP's communications and technical needs, demonstrating ongoing support of the Program's priorities and overall mission.

6.0 UPDATE ON TWO IMPORTANT NIEHS MEETINGS - 4TH NATIONAL TRAINERS EXCHANGE AND TRAINING FROM THE INSIDE OUT: ASSESSING AND REFINING OUR PROGRAMS

6.1 4th National Trainers Exchange -Training for Change: Changing Our Training

“Worker Training” is a constantly changing field, particularly in the area of occupational safety and health where scientific research, regulatory and legislative initiatives, and innovations in educational methodology are applied on an almost daily basis. With funding from the NIEHS WETP, 18 different Awardee consortia including 8 DOE NIEHS awardees, representing over 80 individual organizations, have developed one of the most highly skilled networks of trainers in this country. Periodically, because these expert trainers are in the forefront of their profession, the NIEHS WETP organizes a two-day conference, entitled the National Trainers Exchange, for them to showcase new methods and techniques and to share and evaluate their current practices. The NIEHS WETP believes that this Trainers Exchange is important in advancing the profession of occupational safety and health training; therefore, the proceedings from this conference are carefully documented. These are found at: http://wetp.org/wetp/NTX_CD/Start.html

The 4th. National Trainers Exchange was the largest held by the WETP with over 250 health and safety trainers participating in 40 interactive workshops and plenary sessions. Based on extensive input from trainers and consortia, these sessions were concentrated in the areas of Advanced Training Technologies (e-learning), Instructor Development, Life Skills and Literacy, and Weapons of Mass Destruction (WMD) and Emergency Response. Each workshop/plenary was organized according to adult learning principles and included, as appropriate, participatory activities, hands-on demonstrations of particular training techniques, skill building exercises, or facilitated discussions of technical issues.

Of special note were those workshops in the Life Skills and Instructor Development and the WMD/ Emergency Response tracks. The life skills sessions on cultural awareness and competence allowed many trainers to grapple with issues of cultural stereotyping including race, age, abilities, and language. Each session also provided attendees with a series of tools that can be used in re-shaping their own classroom and teaching environments. The WMD sessions on Critical Incident Stress Management (CISM) and What You Need to Know About Bioterrorism Diseases received very positive evaluations. The CISM model by the International Association of Firefighters shared the key elements for effective stress management before, during and after critical incidents. For example, it addressed how pre-disaster preparedness such as team development and pre training could maximize the effectiveness of a stress management program. The HMTRI/Community College Consortium conducted the bioterrorism session, which included presentations and facilitated discussion. Focusing on seven of these biological agents (Bacillus anthracis, Variola major, Francisella tularensis, Yersinia pestis, Clostridium botulinum, Staphylococcus aureus, and Salmonella enteritidis) the different exposure routes, emergency response requirements, personal protection needs, long and short-term health impacts and fatality rates were examined.

6.2 Training from the Inside Out: Assessing and Refining Our Programs

In December 2003, the NIEHS WETP held a combined awardees meeting and technical workshop entitled “Training from the Inside Out: Assessing and Refining Our Programs.”

All 8 DOE/NIEHS program awardees actively participated in these events. Discussed during the awardees meeting were a summary of training delivery to workforce sectors and types of training over the past five years; accomplishments and new opportunities of proposed special initiatives from the last RFA; a look at

workshop topics, recommendations, and insights from technical workshops over the past 5 years.

This was followed by roundtable presentations and discussion on the topic of program and organizational effectiveness, challenges and emerging issues. There is great variety among the NIEHS WETP awardees: differences in size, organizational structure, mission, and training audiences. In view of this, the discussion considered what standards for measuring organizational effectiveness recognize these differences? How should these standards be used? Three awardees presented examples of how to pursue the goal of building, maintaining, and using an effective organization or consortium, which was followed by a discussion of the variety of measures already being used within the WETP community.

The following day the technical workshop focuses on emerging issues for worker training. This included a discussion of how the awardees have adapted to address issues of diversity, outreach and cultural competence. As the demographics of the construction and the remediation workforces change, there is a need to review training strategies to engage these populations. According to OSHA, by 2002, 29 percent of all construction workers were Hispanic and 37 percent of all fatalities were Hispanic. In 1996, 56 percent of all Hispanic construction fatalities were foreign-born workers, but in 2002, 81 percent of the fatalities involved foreign-born workers. This session was designed to assist attendees in addressing these challenges.

Later, the topic of training and homeland security was explored. A review of the collective work of the NIEHS WETP community from September 11, 2001 to the present was given. Particular emphasis was placed on collaborations on training for construction workers, skilled support personnel, and awardee activities supported by supplemental funding for terrorism preparedness.

Other topics included Public Health Strategies to Protect Workers During Responses to Terrorism; Chemical Terrorism: The View from the U.S. Chemical Safety and Hazard Investigation Board Emergency Response and Protecting Infrastructure Workers: Training At-Risk Sectors in Emergency Response

Breakout sessions followed on the topics of skilled support personnel, instructor and worker training; Chemical security; and Hazmat for health care and infrastructure workers.

On the final day, after an address by Dr. Kenneth Olden, Director, NIEHS, the following topics, considered emerging issues within the health and safety community, were discussed: Mold: Health and Training Implications for Worker Populations; and Advanced Training Technologies and /E-Learning.

The proceedings from this important meeting are being finalized and will soon be available on the National Clearinghouse website: wetp.org.

7.0 CONCLUSION

The past year of the DOE/NIEHS partnership shows that cooperation between federal agencies, non-profit awardees, contractors, and the workers themselves can result in a program that, in the simplest of terms, saves lives and prevents injury and illness.

The commitment of the awardees described in this report to principles of integrated safety management combined with their ability to provide both site specific and trade specific training has resulted in safer worksites, safer communities, and a cleaner environment.



Waste removal at Hanford

During the upcoming budget year (FY 2003), NIEHS WETP will continue to support these eight primary awardees. There will be \$8,022,138 (see Appendix 6) in education and training awards distributed. The result of this investment will be the continued emphasis on worker health and safety across the entire DOE complex.

Once again, the NIEHS WETP is proud to join the DOE in its commitment to excellence in safety and health training.

APPENDICES: PROGRAM CHARTS

Appendix I: Training Parameters

Final Ten Year Summary: DOE/NIEHS Worker Education and Training Program

TRAINING PARAMETERS ¹	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	TOTAL
Number of Awardees	8	8	8	7	7	7	7	8	8	8	
Courses Completed	476	1,086	1,193	1,270	979	922	1,152	1,379	1,954	1,959	10,416
Workers Trained	7,107	13,566	18,642	18,394	15,048	14,049	15,860	18,833	25,399	23,187	170,085
Contact Hours	184,604	249,704	290,938	244,212	217,666	202,997	218,087	245,436	302,723	303,633	2,460,000
Dollars Awarded	\$11,887,000	\$9,891,526	\$9,719,474	\$8,935,000	\$7,996,000	\$8,436,000	\$7,423,500	\$8,200,000	\$8,076,971	\$8,022,138	\$88,587,609
Cost Per Contact Hours	\$64.39	\$39.61	\$33.41	\$36.59	\$36.74	\$41.56	\$34.04	\$33.41	\$26.68	\$26.42	\$36.01

¹Data based on program years of training, which begin on September 1, 1993 through August 31, 1994; and continues this pattern for the next years.



Removing contaminated equipment at Hanford

Appendix 2: FY 2002 Funding

DOE/NIEHS Worker Education and Training Awards for Budget Period 09/01/2002-08/31/2003

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	\$209,882
TOTAL	\$8,022,138

Appendix 3: Total Training by NIEHS Awardee

EPA/NIEHS Worker Education and Training Total Training for Budget Period 09/01/2002-08/31/2003

AWARDEE	COURSES COMPLETED	WORKERS TRAINED	CONTACT HOURS
Center to Protect Workers' Rights	399	5,536	59,200
HMTRI Kirkwood Community College	364	2,562	21,314
International Association of Fire Fighters	26	468	12,568
International Chemical Workers Union Council	172	2,195	19,062
International Union of Operating Engineers	86	2,361	28,216
Laborers-AGC Education and Training	656	6,461	123,073
University of Medicine & Dentistry of New Jersey	88	532	6,736
Paper, Allied-Industrial, Chemical and Energy Worker International Union	168	3,072	33,464
TOTAL	1,959	23,187	303,633

Appendix 4: Target Populations

DOE/NIEHS Target Populations 09/01/2002 – 08/31/2003

Target Populations	Courses Completed	% Courses Completed	# Workers Trained	% Workers Trained	# Contact Hours	% Contact Hours
CERCLA Cleanup	673	34%	11,486	50%	164,206	54%
RCRA/Industrial	125	6%	1,378	6%	13,380	4%
Emergency Response	41	2%	555	2%	13,688	5%
Radiation	352	18%	2,198	9%	20,531	7%
Lead Abatement	6	0%	35	0%	1,144	0%
Asbestos Abatement	203	10%	2,612	11%	47,960	16%
Hazardous Material	5	0%	67	0%	904	0%
Other	553	28%	4,856	21%	41,820	14%
TOTALS	1,959	100%	23,187	100%	303,633	100%

¹ The overall majority of training remains in the CERCLA Cleanup training.

Appendix 5: 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 09/01/2002-08/31/2003

SITE	COURSES COMPLETED		WORKERS TRAINED		CONTACT HOURS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Argonne National Laboratory	17	1%	434	2%	6,862	2%
Ashtabula	10	1%	126	1%	1,032	0%
Bettis Plant	4	0%	91	0%	1,376	0%
Brookhaven National Laboratory	22	1%	302	1%	3,960	1%
Fernald Integrated Demonstration Site	9	0%	134	1%	1,832	1%
Formerly Utilized Sites Remedial Action	5	0%	106	0%	1,328	0%
Grand Junction	2	0%	20	0%	470	0%
Hanford	587	30%	7,791	34%	59,912	20%
Idaho National Engineering Laboratory	205	10%	1,497	6%	14,450	5%
Kansas City Plant	12	1%	113	0%	1,840	1%
Lawrence Livermore National Laboratory	4	0%	60	0%	2,448	1%
Los Alamos National Laboratory	17	1%	246	1%	6,016	2%
Mound Plant	20	1%	293	1%	2,992	1%
Nevada Test Site	53	3%	664	3%	13,208	4%
Oak Ridge Field Office	618	32%	6,957	30%	95,029	31%
Paducah Gaseous Diffusion Plant	35	2%	583	3%	7,972	3%
Pantex Plant	44	2%	642	3%	11,708	4%
Portsmouth Gaseous Diffusion Plant	22	1%	382	2%	6,040	2%
Princeton Plasma Physics Laboratory	24	1%	75	0%	1,168	0%
Project Chariot	1	0%	10	0%	80	0%
Rocky Flats Office	48	2%	510	2%	15,604	5%
Sandia Albuquerque	7	0%	92	0%	4,880	2%
Santa Susanna Field Laboratory	2	0%	3	0%	72	0%
Savannah River Site	94	5%	1,147	5%	25,380	8%
St. Louis Airport Site	6	0%	79	0%	696	0%
Weldon Springs	3	0%	41	0%	328	0%
West Valley Demonstration Project	45	2%	161	1%	1,968	1%
Other ¹	43	2%	628	3%	14,982	5%
TOTAL	1,959	100%	23,187	100%	303,633	100%

¹ Includes: Department of Energy – Headquarters and others

Appendix 6: FY 2003 Funding

DOE/NIEHS Worker Education and Training Awards for Budget Period 09/01/2003-08/31/2004

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
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TOTAL	\$8,022,138