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***FY 2000 Accomplishments and Highlights:
NIEHS/DOE Hazmat Worker Training Program***

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1 Introduction

Since the initiation of the Superfund Worker Training Grants Program in 1987, the National Institute of Environmental Health Sciences (NIEHS) has developed a strong network of non-profit organizations that are committed to protecting workers and their communities by delivering high-quality, peer-reviewed safety and health curriculum to target populations of hazardous waste workers and emergency responders.

Through the encouragement of multi-state, university-based consortiums and the development of national non-profit organizations which have focused on specific workforce sectors, this NIEHS program has established technically-proficient curriculum materials and quality-controlled course presentations. These courses have been delivered to hazardous waste workers and emergency responders in every region of the country and have established new national benchmarks for quality worker safety and health training. The program also has represented a major prevention education activity for NIEHS as technical scientific and basic research information is delivered to target populations with high-risk toxic exposures.

Throughout the U.S. Department of Energy (DOE) nuclear weapons complex, a vast and intensive cleanup effort is now underway. Tens of thousands of DOE employees involved in the cleanup program require safety and health training to help reduce the risk of their being exposed in the course of their work to hazardous materials and hazardous waste products. One effort to enhance training capabilities at these sites has been through the National Institute of Environmental Health Sciences (NIEHS) Worker Health and Safety Training Program, created in 1993 under the terms of an interagency agreement with DOE.

The goal of the NIEHS/DOE worker training program has been to provide site-specific, quality training to workers in a timely and cost-effective manner, through a partnership involving government, contractors, and labor organizations. A cornerstone of the program is the use of "worker-trainers," employees well-versed in performing a given task in a hazardous environment who are trained to instruct other workers. Benefits of the partnership include fostering cooperation between management and workers, improving efficiency and quality of training, improving the ability to address worker concerns, and empowering all stakeholders to address site-specific safety and health needs. Training is available to DOE and contractor employees; regulatory agency personnel; state, local, and Tribal government officials; and local emergency responders working in hazardous substance response and emergency response operations at DOE sites.

2 Fiscal Year 2000 Program Highlights

Summary of Training

In an effort to enhance training to DOE employees involved in the hazardous waste cleanup, the WETP has provided site-specific and quality training to workers in a timely and cost-effective manner across the DOE nuclear weapons complex. Of the tens of thousands of workers who are engaged in hazardous waste work, training needs range from basic hazardous waste operations and emergency response (HAZWOPER) courses to asbestos and lead abatement, confined space, hazard communication, respirator, radiation, and general industry safety courses.

In completing the seventh year of the NIEHS/DOE Worker Education and Training Program (FY 1994-2000), the NIEHS has successfully supported eight primary awardees. Across the DOE complex, the NIEHS awardees have trained over 102,000 workers and presented over 7,000 classroom and hands-on training courses, which have accounted for 1.6 million contact hours of actual training at an average cost per contact hour of \$40.00 (See Appendix 1).

Through an Interagency Agreement, NIEHS received \$7.5 million from the FY 1999 DOE appropriations, which provided funding to NIEHS awardees during the past year (September 1, 1999 – August 31, 2000). Of the FY 1999 funds, \$7,423,500 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).

During the past year (FY 2000), the seven primary worker training awardees and more than twenty sub-awardees across the United States have delivered 1,150 courses, reaching 15,813 workers, which account for 217,039 contact hours of health and safety training at an average cost per contact hour of \$34.20 (See Appendix 1). This training ranged from 4-hour refresher programs through more complex train-the-trainer courses lasting up to 120 hours. Between September 1, 1999 and August 31, 2000, 54 percent of the training has been focused on delivering basic Hazwoper cleanup worker training. This comprises 8,970 workers who received 80-hour training, basic 40-hour training, or 4-8 hour refresher courses out of the annual total of workers reached by the program (See Appendix 4).

While the DOE/NIEHS awardees have provided training at more than 22 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, 653 (57%) courses were delivered, reaching 8,981 (57%) workers, which account for 109,337 (50%) contact hours of training (See Appendix 5).

2.1 Continuation of the Peer-Reviewed DOE Worker Training Awards for FY 2000

After the completion of the fifth program year on the projected five-year long cooperative agreements to support worker training activities, 7 organizations submitted progress reports, training data and budget requests and training plans on July 1, 1999. 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 made on September 1, 1999 for each of the programs supported with DOE Environmental Management resources. These awards run through August 31, 2000.

Highlights of the training activities carried out by the NIEHS/DOE Worker Training awardees during the FY1999 program year include:

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

The DOE worker training courses were conducted by the LAGC at six 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. Las Vegas, NV (for Nevada Test Site); 5. Oak Ridge, TN (for Oak Ridge); 6. Pasco, WA (for Hanford); 7. Iowa Mobile Unit (for assistance at Oak Ridge); 8. West Virginia Mobile Unit (for DOE Headquarters). The International Brotherhood of Teamsters (IBT) DOE Worker Training Program provided regional training through its two training centers. The training centers are: 1. The Northern California Teamsters Apprentice Training and Education Trust Fund located in Rancho Murieta, California and 2. The Central/Southern Region Training Center located at Teamsters Local Union 89 in Louisville, Kentucky. Training weeks under the DOE HWWTP were divided among the sites based upon projections for remediation work at the various DOE facilities. However, anticipated work at the sites were delayed due to changes in contractors, work stoppages because of safety issues, or for other reasons. Therefore, completed training weeks at the various sites vary significantly from that which was projected at the start of the training year. For example, Laborers-AGC expected to conduct a large amount of training for the Rocky Flats DOE site, but major worker layoffs at the site virtually halted cleanup progress and it has yet to resume. Training needs necessarily went down due to this unforeseen circumstance. On the other hand, training needs were expected to be high at the Oak Ridge DOE facility because of various decommission and decontamination activities. This did indeed turn out to be the case, and the Oak Ridge training facility conducted the largest amount of DOE training of any of the training sites so far this year. The Augusta site and the Pasco facility for the Savannah River and Hanford DOE facilities also conducted large amounts of training respectively.

The courses that were held under the DOE worker training program during this program year include: 80-hour Hazardous Waste (HW) Worker, 8-hour HW Worker Refresher, 45-hour HW Operations, 8-hour HW Supervisor Refresher, 40-hour Asbestos Abatement Worker, 40-hour Asbestos Abatement Supervisor, 8-hour Asbestos Abatement Worker Refresher, 8-hour Asbestos Abatement Supervisor Refresher, 16-hour Asbestos Control Certification, 40-hour Lead Abatement Worker, 8-hour Lead Abatement Worker Refresher, Radiological Worker II, Radiological Worker II Refresher, Cutting and Burning Fire Watch, Hearing Conservation, and Hoisting and Rigging. In addition, Forklift training, First Aid, and OSHA 10 and OSHA 30 courses were conducted at the request of DOE or DOE contractors at no cost to the DOE worker training program.

Laborers-AGC conducted follow-up interviews with DOE Hazardous Waste contractors. The findings from the contractor discussions reinforced all aspects of the Hazwaste skill standards. Contractors noted that demolition and building skills were at least equally important as HW remediation skills. They also emphasized that HW worker skills are becoming more important on non-hazardous waste construction sites. The following conclusions about HW Worker training and work were made based upon the HW skills standards project results:

1. The skill standard content and information validates the existing training (content and value).
2. HW Workers need a much broader skill and knowledge base than is currently being provided by just the HW Worker training course.
3. Safe and productive HW workers must use other construction skills at least 66% of the time on the job.
4. A broad array of tools and equipment is used on a hazardous waste site.
5. Employability skills are critical.
6. Site-specific training needs to be rethought and reconfigured in timing and content.

Computer Assisted Training and Distance Learning by L-AGC

Laborers-AGC has been reviewing various options and ideas for developing computerized training, both as a classroom tool and as an alternative method of delivering course material. It has become more apparent that the demand for distance learning has increased, and that this will continue to grow. Therefore, Laborers-AGC's focus has gradually moved in the direction of increasing options and opportunities for computerized training. Laborers-AGC contracted EDS, a company that specializes in computer systems, program development, distance learning and databases, to guide the process of developing a strategic plan for Laborers-AGC's E-learning environment.

This extensive analysis included reviewing needs and possibilities for training and education under the DOE and EPA HWWTP. This strategic plan identified four different, yet connected components of a Laborers-AGC HWWTP “knowledge management” and E-learning environment. Included are:

1. Development of a web site (learning portal).
2. Development of a robust learning environment.
3. Modification and integration of existing databases (trainee tracking for Laborers-AGC and IBT, HW Refresher Survey database, employment history database, and course registration databases for IDP, DDP, and the secretaries/bookkeepers meeting).
4. Development of a pilot course for online delivery.

In addition, EDS will help Laborers-AGC identify the requirements for a system capable of addressing the anticipated needs in June 2001 and beyond. Implementation of the plan will begin with development of the learning portal and learning environment, since they will support the other tasks. The learning portal, named the Laborers Learning, Education and Resource Network (Laborers LEARN), will be a focused resource and knowledge gateway that will serve the needs of learners. It will address the information needs of DOE HWWTP participants, instructors, training directors, and other constituents. Information about Laborers-AGC, the DOE HWWTP, available courses, etc. will be available for all stakeholders. Links to other sites that provide information useful to hazardous waste workers (OSHA, DOE, EPA, etc.) will be included as will other informational items.

Laborers-AGC policy continues to require that instructors in the DOE HWWTP 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. Under the 1999 – 2000 NIEHS DOE Worker Education and Training Program year, Laborers-AGC conducted one Radiological Worker II Train-the-Trainer course. Laborers-AGC has conducted one Hoisting and Rigging Train-the-Trainer course in June 2000 and one HW New Instructor course in July 2000. In addition, several DOE HWWTP instructors are taking other courses that are relevant to environmental remediation but which are not funded under the NIEHS program. These include the OSHA 502 (OSHA 500 Refresher), the OSHA 500, and the Nuclear Power Plant Decommissioning Train-the-Trainers, and HW Instructor Refreshers (Instructor Development Program).

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. Some technical courses are also hands-on and focus on demonstration and practice. Instructors are required to take various courses over the course of five years. These required courses focus on teaching skills, techniques, and tools.

University of Medicine and Dentistry of New Jersey (UMDNJ)

As reported by UMDNJ, 80 courses were conducted through the DOE/NIEHS program during time period September 1, 1999 through August 31, 2000, with 913 workers trained. Contact hours totaled 8,904. As noted, 92% of the overall workplan has been achieved. Changes in training needs from DOE sites were anticipated to the best of the Center's ability, however, given the changeable nature of worker training, not all training objectives were fully achieved, while others were exceeded. Training accomplishment data have been summarized in chart format according to NIEHS specifications and submitted via electronic mail. All course data were also submitted through the NIEHS web-based data system.

A summary of DOE trainees' demographic characteristics as presented by UMDNJ:

1. The majority of trainees were male (84%), Caucasian (90%) and had some education beyond a high school diploma (79%). The largest age category was 36-45 and the primary language for almost all was English.
2. Work history data for DOE trainees includes: Thirty-seven percent of the trainees reported their primary job duty as RCRA/TSD work, while a large proportion (23%) reported "other". Open ended responses for "other" were reviewed and coded revealing a diversity of job duties. With regards to occupational categories, "Professional" (19%), "Technician" (7%) and "Officials/Managers" as well as "Operatives" (which were both 4%) were the most commonly reported. Lastly, the primary work setting for most was a DOE site (66%).
3. Training Minorities: a large proportion of the DOE trainees identified themselves as Caucasian. Sixty-three trainees identified themselves as minority, specifically, 21 (3%) as African Americans, 14 (2%) as Hispanics, 14 (2%) as Asians, and 14 (2%) as Native Americans.
4. Training provided to the DOE sites are not open enrollment; trainees are identified by the site and consequently are self selected. As such, UMDNJ and the University at Buffalo conduct no outreach to minorities for this program. However, anecdotal information obtained from Princeton Plasma Physics Laboratory, Brookhaven National Laboratory, and West Valley Laboratory indicate that the workforce identified for health and safety training predominately reflect their workforce.

The NJ/NY Hazardous Materials Worker Training Center (HMWTC) held a Center-wide Trainers' Conference on August 21, 2000. The conference showcased innovative teaching methodologies and provided an opportunity for instructors from all Center members to

interact with each other. The instructor support given to faculty in the UMDNJ program include training courses, professional development, newsletters, and other sources of information. All 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 site.

International Chemical Workers Union Council (ICWU) Center for Worker Health and Safety Education

In DOE Year 8, the ICWUC Center for Worker Health & Safety Education continued to deliver training initiated during the first seven years of the grant. This project is operated as a consortium in cooperation with the International Association of Machinists and Aerospace Workers (IAM). The total number of persons trained at Oak Ridge, TN, Hanford, WA, and Kansas City, MO all DOE sites as of May 31, 2000 is 948 persons at 47 sessions, or 11,036 person hours. The Center devoted 15 weeks to developing the DOE trainers in Cincinnati, assisting with hands-on training and practicing on site for an additional 840 person hours as of May 31, 2000. The Hanford trainers have incorporated Integrated Safety Management (ISM) into all training materials. Contractors at the other two sites have been slow to implement ISM into daily activities and slow to involve labor in ISM; Kansas City management has only recently developed computer based ISM training which the trainers are in the process of evaluating for effectiveness and quality. The IBEW local Coordinator at Hanford is one of the designated ISM site coordinators for the Hanford Atomic Trades and Labor Council and has assisted in three workshops in the current grant year to orient the Hanford workforce to ISM. We have continued to implement the participant evaluation method developed for the last five years and have worked closely with DOE to develop tests that are consistent with DOE regulations and orders.

The training and development of DOE trainers continued to be a central objective of this program during Grant Year 08. The Director of Trainer Development position was filled during the current grant year by the previous Nuclear Coordinator. He had previously been the Nuclear Coordinator since the inception of the DOE grant and has a first hand knowledge of the DOE program and role of its trainers. In the current grant year, ICWU held the Second Annual DOE Trainers Exchange in Oak Ridge which was attended by 18 trainers. In order to maximize the number of trainers who could attend and minimize travel costs, they scheduled all Trainers Exchanges at an active DOE site (the previous Trainers Exchange took place at the HAMMER facility). Regretfully the number of Oak Ridge trainers who could attend was limited by production needs. At this meeting the trainers from each site were able to demonstrate the latest modules that are being presented at each site and discuss what programs they wanted to develop for the future. This Director 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 their own speed while ensuring consistency and quality in program delivery. In addition, he worked intensively with the trainers while they assisted with the Cincinnati sessions.

International Union of Operating Engineers (IUOE)

Successful culmination of the five-year grant During FY 2000, through May 31st, the Operating Engineers National Hazmat Program (OENHP) provided training to 1,726 attendees under the DOE program at various DOE locations, particularly Oak Ridge, Idaho National Engineering and Environmental Laboratory, and Hanford. The number of workers trained in DOE-related courses delivered include: 291 40-Hr Basic Superfund Site Worker, 1,330 8-Hr Site Worker Refresher, 30 8-Hr Site Supervisor Basic, 61 24-Hr RCRA TSD Site Worker, and 14 24-Hr Emergency Response Basic Operation This training was delivered directly by a small cadre of highly qualified instructors, primarily from the headquarters of the Operating Engineers National Hazmat Program in Beckley, West Virginia.

The IUOE Oak Ridge office has played a key role in supporting the DOE workforce transition from a Management and Operating (M&O) Contractor System to the current Management and Integration (M&I) approach. The increased role of subcontractors and decreased budgets in the Oak Ridge area bolster the need for quality training at a competitive price. The OENHP has provided both. Through continuing interaction with contractor training coordinators and personnel, the OENHP Oak Ridge Office is positioned to meet the safety and health training needs of local workers. Personnel trained at the Oak Ridge Office are generally associated with DOE programs being conducted at the Y-12 Nuclear Plant, Oak Ridge National Laboratory (ORNL), and East Tennessee Technology Park (ETTP, Formerly K-25). Lockheed Martin (Y-12), UT-Batelle (ORNL) and Bechtel Jacobs (ETTP) are the M&I Contractors at the sites who regularly send personnel through OENHP training classes. The OENHP also trained students representing more than 50 subcontractors in the Oak Ridge area and beyond.

The direct training method by IUOE allows for much more consistent results and is more attuned to the complex technical issues facing DOE. Seasoned, more technically qualified instructors provide the kind of training needed by workers facing the enormous challenges of cleaning up the nuclear weapons complex. The OENHP has continued to produce quality training materials. During FY 2000, IUOE consolidated over 200 PowerPoint presentations on a CD-ROM that was provided to all of our instructors. The CDs were produced in-house with the enhanced production capabilities that OENHP has built over the last five years. The OENHP has focused on using technology to improve the quality of our training by increasing the technical knowledge of our instructors. Through supplemental awards from NIEHS, the program has produced several computer-based courses aimed at technical issues that have proved difficult for our peer-trainers. Using DOE supplemental funds, the program is near completion on developing a web-based course on radiological protection. IUOE has consistently used their state-of-the-art computer classroom at the International Environmental Technology and Training Center (IETTC) in Beckley, West Virginia to hone their instructors skills.

The Radiological Protection web-based training (WBT) course curriculum was completed by IUOE in April 2000. The subject matter expert was Mike Henderson, a Health Physicist with significant experience at Oak Ridge. IntraTek provided the computer support and is continuing to develop the host infrastructure using Web CT software. This Web CT software was chosen over the software mentioned in the original proposal.

Center to Protect Workers' Rights

The Construction Consortium for Hazardous Waste Worker Training (CCHWT), under the leadership of the Center to Protect Workers' Rights (CPWR), includes the Asbestos Workers, Carpenters, Ironworkers, Painters, The Alice Hamilton Occupational Health Center, Sheet-metal Workers, Boilermakers, and the Plasterers and Cement Masons. During 1999 CPWR succeeded in doubling the size of the consortium's target audience by added three international unions: the Electrical Workers, the Plumbers & Pipefitters, and the Bricklayers. The Center to Protect Workers' Rights has completed its first full year as the coordinating organization for the Construction Consortium for Hazardous Waste Worker Training (CCHWT) and as a direct deliverer of training. The CPWR completed 343 classes, which reached 5,039 workers across the complex for 61,756 hours of classroom time.

The CPWR Training and Education Department conducts quarterly reviews of consortium training accomplishments to help each provider to keep their training plan in line with the changing needs of their target audience. This process has, in most cases, been successful and has allowed available funds to be more efficiently and effectively allocated. Each of the CCHWT members met or exceeded their planned training numbers, with the exception of the Cement Masons. The Cement Masons delivered three of their four planned classes, delivering 88 hours of training and failing to deliver only one 8-hour refresher class. An added class delivered by the Cement Masons was an OSHA 500 class attended by representatives of the consortium unions at Hanford, Washington. This course provided the requisite trainer preparation for teaching the OSHA 10 class. This trainer cadre is now available to instruct new-hire building trades people as they begin work on the waste vitrification project. The Asbestos Workers had the highest achievement against plan rate, delivering 140% of their planned classes by May 31, 2000.

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

PACE provided all requested Hazwoper required training at the seven DOE sites where they have members and also conducted two requested classes at Los Alamos National Laboratories. PACE held their annual technical meeting for their worker-trainers where progress on Self-sufficiency was made by their Research Evaluation Project (SREP) PACE produced a new workbook for their annual 8-hour refresher course, which was piloted, revised and distributed for use at all sites, and development of a worker-trainer-oriented web-site was initiated.

PACE evaluated the effectiveness of their training along five different dimensions: 1) site-specific training needs; 2) trainer performance; 3) trainee participation in and completion of learning activities; 4) impact on work practices and engineering standards; and, 5) changes or attempted changes in safety systems flaws. In order to gather useful information in these areas, they used a variety of instruments and approaches. The site-assigned Occupational Safety and Health Education Coordinators (OSHECs) play a pivotal role in conducting these assessments and follow-up on the results. Their interaction with site contractors has provided a continuous working relationship that helps meet the needs of both workers and contractors. A web-site is being developed to assist in the collection and dissemination of this information. Local union officers and site contractor representatives are consulted to assist in identifying site-specific training needs. PACE also conducted a regular informal survey of their local unions to determine what they think are the most important safety and health issues they are facing. Courses have been adapted in response to these identified needs. In addition, PACE used an attendance form in each of the classes to help identify the job classification, previous safety and health training, and demographic characteristics of each trainee. The information on this form enabled PACE to compare the perceived training needs as described by union officers and staff with the actual needs as reported by the trainees.

All DOE OSHECs attended the annual technical meeting in South Carolina in October where they received technical training in Systems of Safety, Small Group Activity reinforcement and introduction to SREP. This instructor support totaled 24 hours. The goals of PACE instructor support as well as of our training as a whole is the promotion of health and safety protection on the shop floor. All educational work is geared toward helping to make the actual workplace safer and healthier. Over the past year PACE has focused on two kinds of skills that they believe help worker-trainers better promote this kind of protection and change. The first is the development of a clearer analytical understanding of how change occurs. The second is the development of a clearer understanding of how to measure success in training. PACE's goal still continues to be one of constantly upgrading the quality of training. For a worker-centered program this involves both improving the curriculum and improving the skills of the worker trainers.

International Association of Fire Fighters (IAFF)

The IAFF/DOE program has two aims:

- To determine the specific needs of fire service personnel in and around DOE facilities, conduct appropriate training, and evaluate the results of training.
- To ensure institutional competency after project completion by training qualified instructors at each location to continue hazardous materials training beyond the completion of the IAFF/DOE Cooperative Agreement.

Of the five DOE sites studied by IAFF with the poorest training for emergency responders, five were chosen for IAFF training (Hanford, Savannah River, Oak Ridge, Rocky Flats, and Lawrence Livermore). For each year of this Cooperative Agreement, the IAFF proposed training a total of 100 emergency response personnel at five DOE sites. By delivering a series of training programs, an untrained fire fighter, upon completion, could effectively respond to radiation incidents using selected offensive as well as defensive tactics. Instructor Training would also enable IAFF/DOE trainees to educate other response personnel at DOE sites in basic, defensive emergency response operations after the IAFF training project. IAFF completed 24 Emergency Response (ER) courses reaching 653 ER workers around DOE sites for a total of 15,820 classroom hours.

Over one-half of the DOE community trainees were certified by their employers as Haz Mat Operations competent and an additional 22% maintained Haz Mat certifications in Confined Space response. Only one-third (38%) of the trainees reported that they received medical exams at least annually, as required under federal law for emergency responders. Thankfully, only 2% of the trainees received their medical examinations as a result of exposure to hazardous materials while on the job. There has been an increase of pre-incident planning over previous years. The vast majority of trainees (78%) were involved in preplanning target hazardous material sites in their response area. Almost half of those involved in preplanning do so more than twice a year. Unfortunately, only half of those trained (56%) are ever involved in emergency response practice drills at target sites in their response area. Likewise, fewer than 5% of the IAFF/DOE students ever had the opportunity to practice emergency response to a site in the DOE nuclear weapons complex.

2.2 Program Update for FY 1999 DOE-Supported Worker Training Activities

Integrated Safety Management (ISM)

The Department of Energy, in DOE P 450.5, has committed itself and its contractors to technically sound, safe, and cost-effective operations supported by solid management systems that ensure protection of the public, the worker, and the environment. To accomplish this DOE places a high value on the Department's line managers and contractors working together to identify and resolve ES&H concerns. Based on Defense Nuclear Facilities Safety Board recommendations, DOE's Integrated Safety Management program has had a significant impact across the complex in the department's efforts to make worker safety a seamless part of the way business is conducted. Secretary Richardson issued a requirement that all sites be ISM compliant by September 2000.

In this regard, NIEHS provided a supplemental award to the IUOE to develop an ISM module. ISM is a new model for the Department of Energy that is causing positive and lasting changes across the complex. The OENHP was awarded supplemental funds to develop a training program to help workers on the complex participate in hazard assessments. As the Department has indicated in its Safety Management System Policy, DOE P 450.4, "Direct involvement of workers during the development and implementation of safety management systems is essential for their success." Worker participation is absolutely critical to achieving this goal but it is the most difficult element of integrated safety management. The training plan submitted to NIEHS called for a needs assessment to be conducted of the target audience to determine their level of understanding of hazard assessment procedures. The IUOE completed the ISM assessment.

Advanced Training Technologies (ATT) Supplements

NIEHS has awarded competitive supplements to encourage applications that pilot the use of advanced training technologies. The pilots focus on either improvements to the overall training infrastructure or on areas of content that might be delivered using advanced technology. NIEHS awardees created pilots to target improvements in the training infrastructure. These improvements included areas such as improving the overall ATT knowledge level of training developers, involving worker trainers or course instructors in technology-based course development, baselining the status of hardware and software across the health and safety training community, as well as researching and implementing a media selection model for use across an awardee, or group of awardees' health and safety training community.

Delivery pilots of health and safety content focus on new, technology-based methods for delivering training that improve learning, reduce costs, and can be demonstrated as effective for the specific content for a defined target population. These technologies include but are not limited to web-based, computer-based, tele-video, virtual reality, and combinations of technology.

2.3 NIEHS Y2K Supplemental Training Awards

As the Nation approached the turn of the Century, increasing attention was devoted to matters associated with the "Year 2000 Computer Technology Problem," otherwise known as the Y2K problem. Of particular concern were commercial and industrial activities involving hazardous and toxic materials. The first two Hazardous Waste sectors, waste site operations and RCRA/TSD facilities were among those activities of particular concern owing to the nature of these operations. Emergency response activities were of even more concern, as the emergency response personnel, whether on-site or off-site, will be required to respond to any emergency arising from Y2K induced incidents which constitute an emergency.

NIEHS supported supplemental applications to provide additional resources to awardees for the purposes of responding to near-term training requests arising as a consequence of the Y2K problem. Such training included special supplemental training involving new training objectives associated, for example, with manual process operations; focused refresher training; and Y2K problem awareness training. In addition, supplemental funds were used to meet needs directly associated with responding to Y2K training issues such as travel to local, state, or regional meetings for contingency planning. Supplemental grants were provided in order to avoid major impact on the awardees core program particularly in view of the near-term emerging need. This could include training facilities, attendance at Y2K pertinent local/State/Regional planning meetings, consultants to aid in training needs assessments, or training product development.

Y2K supplemental awards included the following DOE-related accomplishments:

International Chemical Workers Union Council (ICWUC)

Starting in September 1, 1999, the ICWUC was awarded a supplemental grant to prepare workers and their facilities for the potential effects of the Y2K problem in plants handling or producing Highly Hazardous Chemicals. The key industrial area identified was possible system failures due to embedded chips (microprocessors) which are used in millions of applications throughout modern facilities. Although there had been extensive publicity and efforts before September 1, 1999 to address the potential failure of data processing systems, little attention had been given to embedded microprocessors which control operations, information sent from processes (temperature, pressure, concentration, flow, etc.) to the integrated control system and microprocessors in vehicles, monitoring equipment and other emergency response equipment. The Center's training concentrated on the means to investigate and determine the need for correction of hazards, modification of response and operation plans, possible actions that can be taken to find, correct and prevent Y2K related releases, sources of information, recommendations for changes in the Emergency Response Plans and HAZMAT team training/preparation/equipment and, initiate efforts towards greater inherent process safety. The target population of this Y2K awareness training included workers, supervisors, management, union officials, local emergency responders and others.

ICWU conducted research with participants and staff to develop a training module, which has subsequently been incorporated into all of our training delivery during the past year.

International Association of Firefighters (IAFF)

This past year, the IAFF Y2K emergency responder program helped the site peak at nearly 127,086 hits in the month of December, 1999 (corrected data as reported by 4Web Services, Inc.). This growth of hits can be directly attributed to extensive curricula development efforts, success with new ATT's, and the NIEHS Y2K Supplemental Training project. Over the past year IAFF has averaged 80,000 hits per month. This average represents a three-fold increase over their first month in operation.

2.4 Continued Operation and Support for a National Clearinghouse on Hazardous Waste Worker Training

During the past year, NIEHS re-competed the contract for WETP station support and awarded a new 5-year contract to OD Systems, a women-owned company based in Alexandria, VA with a long history of experience in administering government support contracts.

Technology continued to play a leading role in most of the work carried out by the Clearinghouse during contract year 2000, its fifth year of activity on behalf of the NIEHS awardees and the WETP. On-line registration via the Web site, as well as a centralized database of contact names, helped to streamline organization of the October awardees meeting. New links were made between the Clearinghouse Web Page and several hundred health and safety Internet sites. In addition, NIEHS documents and reports were posted on the Web -- including workshop and awardee reports, the Y2K Handbook, and data to aid trainees in tracking. The on-line version of the curricula catalogue, introduced in November 1998, facilitated inquiry management and the order fulfillment process for awardee curricula. It has been updated continuously during the year, whenever new curricula are received.

Throughout the past year, the new on-line version of the Weekly Newsbrief continued to generate time and cost efficiencies because many readers now access the publication on-line, the mailing list has been streamlined, yielding savings in photocopying, postage, and handling costs. On-line Power-Point presentations were added to the web -- for Y2K and 10 year accomplishments.

2.5 Third Annual NIEHS National Trainers Exchange – April 10-11, 2000

The third NIEHS National Trainers Exchange was held at the Maritime Institute in Baltimore, Maryland on April 10-11, 2000. The Exchange presented a great opportunity for trainers to explore new hazmat-related information and learn about participatory training methods. Over 175 people attended the Trainers Exchange from across the country. An initial session entitled, "*NIEHS Worker Training Program After 13 Years: Where We've Been, Where We're*

Going, and What Role Do We Play In The Development of a Successful Future,” was presented by NIEHS staff members, set the tone for topics to be explored by the trainers.

The purpose of the Trainers Exchange was to bring together trainers from across the nation and from many different backgrounds so that they may exchange information on training techniques, new topics in hazardous waste training, and the challenges faced by trainers, among other issues. Nearly 200 trainers from across the country representing dozens of organizations participated. Response to this Trainers Exchange was so overwhelming that registration had to be closed weeks before the event. Participants attended numerous presentations and workshops that displayed the latest developments in the delivery of training to select worker audiences. A summary of the Trainers Exchange and a compilation of the materials presented will be made available through the Clearinghouse web page in the near future.

The various workshops provided an opportunity to gain knowledge and skills in one particular aspect of developing an action-based training program. In a Forum Theater format, problems were shown in an unsolved form to a group; the group participants were invited to suggest and act out solutions. This participatory training method gives participants an opportunity to practice and analyze a variety of strategies or tactics available for tackling relevant work related problems.

Roundtable discussions focused on the unique role that worker-trainers could play in facilitating collective action to address workplace health and safety issues. Trainers discussed the various ways that worker-trainers can facilitate action, both during and after training. Trainers also looked at the skills and institutional support that worker-trainers need in order to succeed and also at the obstacles that they face.

2.6 Technical Workshops on Lessons Learned in Advanced Training Technology in Safety and Health

“Worker Training and the Internet: A Resource and a Training Medium,” was the initial technical workshop held during April 1999 in Denver, Colorado to explore Advanced Training Technology (ATT). Both computer-based training and on-line distance learning have become invaluable resources for hazardous waste and emergency response training information. Worker access to the Internet has provided quick information on locations of hazardous waste sites, types of chemical hazards, methods of accident and exposure prevention, details about choosing and using personal protective equipment, suggestions about monitoring and surveillance, and a myriad of other topics of critical importance to worker safety and health. Many of these Internet resources are linked to the NIEHS Clearinghouse Web Page. This technical workshop and companion research paper survey resources are currently available on-line to aid in hazardous materials training and will examine efforts to evaluate the effectiveness of these training methods and resources.

2.7 ATT Pilots Lessons Learned Workshop – May 2000

The 1999 ATT Workshop Report served as the basis for the subsequent WETP competitive supplemental grants awarded to several of the grantees for the purpose of pilot applications of ATT. A “Lessons Learned Workshop on Advanced Training Technology in Health and Safety” was held on May 2, 2000 for the purpose of examining the progress, problems, issues, and lessons learned to date among the ATT supplemental awardees. Final Summary Reports from these awardees were submitted to WETP as part of the Annual Progress Reports in early July 2000.

ATT supplemental awardee organizations participating in the “Lessons Learned” workshop were: United Auto Workers (UAW), George Meany Center, Hazardous Materials Training Research Institute (HMTRI), International Union Operating Engineers (IUOE), and the International Association of Fire Fighters (IAFF) (Y2K supplemental awardee-Internet focused). The Laborers-AGC, although not an ATT supplemental awardee, also attended because they have devoted significant efforts in the ATT arena over the past few years. Representatives from the Idaho National Environmental and Engineering Laboratory (INEEL) Center for Performance Improvement, consultants to NIEHS WETP, also participated, presented, and discussed results of their recent survey of the ATT supplemental grantees. The purpose of this report was to present highlights of the progress achieved by the participating organizations, identify the lessons learned to date in the ATT pilots as expressed by the participants, provide the views of the INEEL consultants on the ATT pilot projects, and summarize the issues discussed by the workshop participants during the open forum session that concluded the workshop.

The Lessons Learned report (<http://www.wetp.org/att/att.shtml>) is intended to provide a “mid-course” snap-shot of the WETP ATT pilot projects and to articulate individual factors of potential importance to the future advancement of ATT by the WETP. Information presented in the ATT supplemental awardees Summary Reports in early July and from the WETP INEEL consultants are a source of information as well.

2.8 ATT Capacity Building Workshop – October 2000

The culmination of the ATT Lesson Learned process was the conduct of an ATT workshop during the WETP Awardee Meeting held on October 16-18, 2000. The ATT Workshop was held on the afternoon of October 17th and the morning of October 18th.

Unlike previous WETP technical workshops, there was no “strawman” developed for this workshop. The two previously issued WETP-ATT Workshop reports and the recently issued WETP Guidance served to frame the basis for the workshop. The ATT self-assessment evaluations, conducted by the INEEL consultants, served as the basis for the breakout session organization. Another purpose of the workshop was to validate and construct the foundation for the “Support Program” activity established in the “Guidance,” this somewhat different approach was seen as an effective mechanism. Two “worksheets” “Barriers Analysis” and “Outcomes, Criteria and ATT Alternatives” further served to facilitate the breakout groups interactions and discussions.

The workshop provided a basis to focus on the following main objectives:

- Develop a more comprehensive understanding of the “self assessment survey” by each individual awardee organization.
- Provide an environment to discuss ATT in more detail with other awardees with differing levels of ATT experience and share details about the selection, application, benefits, difficulties, support requirements, barriers, and merits of ATT.
- Provide a basis upon which to both assess the appropriateness of the WETP ATT Guidance and the implementation of the “support program.”

2.9 Partnership with DOE INEEL on Advanced Training Technology Development

A Work for Others (WFO) agreement based on the Efficiency in Government Act has been established between the Department of Energy, Idaho Operations Office, its site contractor Bechtel BWXT, LLC and the National Institute of Environmental Health Sciences (NIEHS) to provide technical support to the NIEHS Advanced Training Technology Implementation initiative. A summary of the activities during the past year is included as an Appendix 6 reviewing the work with Bechtel staff in Idaho.

2.10 Program Update for FY 2000 (September 1, 2000-August 31, 2001)

Request for Applications (RFA) Development Process and New 5 Year Awards

After substantive meetings with a number of DOE program staff during the past year and evaluation of past program accomplishments, NIEHS released the next formal program announcement for the WETP requesting applications to support training activities over the next five-year period (FY 2000-2004). The DOE Request for Applications (RFA ES 99-010) included the DOE supported program. A notice of availability was published in the NIH Guide to Grants and Contracts on Friday, August 28, 1999 announcing that NIEHS would be accepting new applications with a receipt date of November 19, 1999 and would be planning to fund 7 to 10 new cooperative agreements over the five-year period, subject to the annual availability of funding. The formal program announcement describe the hazardous waste worker training program and its specific objectives, delineated grant application procedures, defined characteristics of the programs to be funded and established review criteria and procedures.

The DOE Request for Applications (RFA ES 99-010) referenced authorized funding availability in the program component of \$8.5 million.

NIEHS significantly expanded the proposed target populations for OSHA-required training. This OSHA-required training includes workers involved in waste site investigations and assessments, transportation, generation of hazardous waste, and groups facing potential health risks that are similar to cleanup workers and emergency responders. The NIEHS announcement specifically stated that proposed training activities and curricula will be

required to meet OSHA regulations. The announcement for DOE related awards also required specific attention to DOE target populations and employment opportunities.

The NIEHS requested that potential grant applicants demonstrate the following: the ability to describe, access and train identified target populations; to assemble an experienced program staff with adequate technical expertise to work under a qualified training director and to provide appropriate training facilities and equipment for implementing a multi-year worker training program. The NIEHS also required that grant applicants submit a detailed training plan with numerical goals and objectives, as well as develop an independent board of advisors with appropriate training and expertise to evaluate and oversee the proposed worker training program. Each applicant also will be required to develop a proposed training program quality control and evaluation plan. Consortium arrangements were encouraged to minimize duplication of efforts, to provide wide geographic coverage, and to reduce administrative costs. Applicants for DOE awards were required to present site specific and DOE related program activities.

2.11 New Awards to Support DOE Worker Training Activities

By the November 19, 1999 deadline, the NIEHS Division of Extramural Research and Training (DERT) had received eight completed applications for DOE worker training cooperative agreements. Eight applicants responding to the DOE training program requested over \$14.5 million in initial year support.

The eight DOE applications were then forwarded to members of the Special Emphasis Panels (SEP). A Special Emphasis Panel for the NIEHS WETP RFA was convened on February 22-24, 2000 for EPA. Of the eight responses to RFA ES-99-010 (DOE), three were considered in the outstanding range, three were considered in the excellent range, one was ranked as very good and one was ranked as good by the panel. Priority scores ranged from 128 through 264.

Based on the work of the SEP's in reviewing the eight applications, all were recommended for further consideration, although some components in some applications were not recommended for further consideration. Priorities for funding are based on the rankings by the SEP's as designated by the criteria in the Request for Applications for assessing program merit and relevance. The proposed funding plan for support of worker training activities has been developed based on the criteria established by the PHS Grants Administration Manual in Part 118 at 118.3(c).

The National Environmental Health Sciences Advisory Council (NAEHSC) held a formal review of the WETP RFA process during its meeting in May 2000. The Council members found the program to be tackling important environmental health issues and voted to approve the formal peer review process.

Eight million, two hundred thousand dollars of the FY 2000 funds were allocated to continue support for the DOE/NIEHS Worker Education and Training Program to train hazardous waste workers and emergency responders.

See Appendix 7 for a detailed list of new awards. Budget adjustments in the proposed funding plan are based on the training needs of high-risk populations, national geographic coverage in training availability and the published program priorities for training support. Consideration has also been given to previous funding patterns, awardees' efforts to generated program income for independently continuing their programs, and the carryover of unexpended funds from prior years. A description of the new programs is included as Appendix 8.

3.0 Conclusion

NIEHS awardees now have almost eight full years of training experience at the DOE complex. More than 102,000 workers have been trained in a wide range of hazwoper and related courses. In many of the sites, this training has become institutionalized as a routine part of the workforce training program. As sites continue to expand their attention to environmental remediation, and as more and more sites move from the planning and characterization to the actual cleanup activities, the need for worker training remains constant.

The evaluations of this training program have been uniformly high and the worker acceptance and confidence in this training also remains high. Some of the challenges for the next few years include the need to accommodate the changing structure of the contract relationships [and the changing contractors] between DOE and the prime contractors as well as between the prime contractors and the many new tiers of sub-contractor activity. Addressing the increased attention to advanced training technologies and their impact on this very focused hands on training activity is also a challenge to be met.

APPENDIX 1: TRAINING PARAMETERS

FINAL SEVEN YEAR SUMMARY: DOEWIEHS WORKER EDUCATION AND TRAINING PROGRAM								
TRAINING PARAMETERS ¹	1994	1995	1996	1997	1998	1999	2000	TOTAL
Number of Awardees	8	8	8	7	7	7	7	
Courses Completed	476	1,086	1,193	1,270	979	922	1,150	7,076
Workers Trained	7,107	13,566	18,642	18,394	15,048	14,049	15,813	102,619
Contact Hours	184,604	249,704	290,939	244,212	217,666	202,997	217,039	1,607,161
Dollars Awarded	\$11,887,000	\$9,891,526	\$9,719,474	\$8,935,000	\$7,996,000	\$8,436,000	\$7,423,500	\$64,288,500
Cost Per Contact Hours	\$64.39	\$39.61	\$33.41	\$36.59	\$36.74	\$41.56	\$34.20	\$40.00

¹Data based on program years of training which begin on September 1, 1993 through August 31, 1994; September 1, 1994 through August 31, 1995; September 1, 1995 through August 31, 1996; September 1, 1996 through August 31, 1997; September 1, 1997 through August 31, 1998; September 1, 1998 through August 31, 1999; September 1, 1999 through August 31, 2000.

APPENDIX 2: FY 1999 FUNDING

DOE/NIEHS WORKER EDUCATION AND TRAINING AWARDS FOR BUDGET PERIOD 09/01/1999-08/31/2000 FY 1999 FUNDS	
AWARDEE	DOE 9/1999 AWARD
International Chemical Workers Union Council	\$950,000
International Association of Fire Fighters	\$450,000
Laborers-AGC Education and Training	\$1,511,500
Paper, Allied-Industrial, Chemical and Energy Worker International Union	\$921,500
University of Medicine & Dentistry of New Jersey	\$350,000
International Union of Operating Engineers	\$1,382,500
Center to Protect Workers' Rights	\$1,854,000
TOTAL	\$7,423,500

APPENDIX 3: TOTAL TRAINING BY NIEHS AWARDEE

EPA/NIEHS WORKER EDUCATION AND TRAINING TOTAL TRAINING FOR BUDGET PERIOD 09/01/99-08/31/00			
AWARDEE	COURSES COMPLETED	WORKERS TRAINED	CONTACT HOURS
International Chemical Workers Union Council	116	1,336	16,860
International Association of Fire Fighters	29	653	15,820
Laborers-AGC Education and Training	316	3,432	60,523
Oil, Chemical & Atomic Workers	139	2,192	21,848
University of Medicine & Dentistry of New Jersey	80	913	8,904
International Union of Operating Engineers	127	2,248	31,328
Center to Protect Workers' Rights	343	5,039	61,756
TOTAL	1,150	15,813	217,039

APPENDIX 4: TARGET POPULATIONS

DOE/NIEHS TARGET POPULATIONS 09/01/1999 – 08/31/2000						
TARGET POPULATIONS	COURSES COMPLETED	% COURSES COMPLETED	# WORKERS TRAINED	% WORKERS TRAINED	# CONTACT HOURS	% CONTACT HOURS
CERCLA Cleanup ¹	549	48%	8,970	57%	116,297	54%
RCRA/Industrial	91	8%	1,199	8%	14,988	7%
Emergency Response	88	8%	915	6%	19,572	9%
Radiation	38	3%	350	2%	9,696	4%
Lead Abatement	12	1%	187	1%	3,368	2%
Asbestos Abatement	168	15%	2,106	13%	40,856	19%
Other	204	18%	2,086	13%	12,262	6%
TOTALS	1,150	100%	15,813	100%	217,039	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 09/01/1999-08/31/2000						
SITE	COURSES COMPLETED		WORKERS TRAINED		CONTACT HOURS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Argonne National Laboratory	14	1%	419	3%	9,722	4%
Brookhaven National Laboratory	28	2%	382	2%	4,836	2%
Fernald Environmental Management Project	9	1%	96	1%	1,204	1%
Hanford	402	35%	5,847	37%	54,914	25%
Idaho National Engineering Laboratory	87	8%	1,442	9%	12,904	6%
Kansas City Plant	8	1%	70	0%	896	0%
Lawrence Berkeley National Laboratory	1	0%	8	0%	320	0%
Lawrence Livermore National Laboratory	33	3%	724	5%	15,256	7%
Los Alamos National Laboratory	23	2%	361	2%	6,808	3%
Mound Plant	14	1%	223	1%	3,632	2%
Nevada Test Site	44	4%	433	3%	9,512	4%
Oak Ridge Field Office	251	22%	3,134	20%	54,423	25%
Paducah Gaseous Diffusion Plant	30	3%	429	3%	6,488	3%
Pinellas Plant	2	0%	15	0%	120	0%
Portsmouth Gaseous Diffusion Plant	26	2%	313	2%	5,624	3%
Princeton Plasma Physics Laboratory	21	2%	55	0%	484	0%
Rocky Flats Office	24	2%	205	1%	3,848	2%
Savannah River Site	59	5%	573	4%	10,736	5%
Waste Isolation Pilot Plant	1	0%	8	0%	32	0%
Weldon Spring Site Remedial Action Project	12	1%	233	1%	3,244	1%
West Valley Demonstration Project	38	3%	539	3%	5,192	2%
Amchitka Island Test	1	0%	10	0%	400	0%
Ashtabula	6	1%	80	1%	2,280	1%
Barker Brothers	2	0%	41	0%	328	0%
Bettis Plant	1	0%	11	0%	352	0%
Other1	13	1%	162	1%	3,484	2%
TOTAL	1,150	100%	15,813	100%	217,039	100%

¹ Includes: Department of Energy – Headquarters and others

APPENDIX 6: DOE INEEL
ANNUAL REPORT ON NIEHS PARTNERSHIP

Overview

A Work for Others (WFO) agreement based on the Efficiency in Government Act has been established between the Department of Energy, Idaho Operations Office, its site contractor Bechtel BWXT, LLC and the National Institute of Environmental Health Sciences (NIEHS) to provide technical support to the NIEHS Advanced Training Technology Implementation initiative. This work commenced in March of 2000 and is outlined in the Description of Work of Agreement No. Y-1-ES-0011-01.

Because the WETP annual grantee's workshop was held on October 17-19, 2000 and because preparation and help in conducting parts of this workshop were integral tasks to this first year's work, the period being reported in this first annual report is March 7-October 19th, 2000. Next year's annual report will cover October 20th, 2000 through September 30, 2001.

Summary of Tasks and Activities

The five tasks specified in the statement of work and the activities conducted to accomplish them are summarized below: (Note: As many of the tasks are closely related to each other, a given accomplishment may be reported under several tasks.)

1. Assess NIEHS's administrative and advanced training technology (ATT) infrastructure and capabilities.

Accomplished in FY 2000:

- Demonstrated various program infrastructure software packages created by CPI for other agencies and being maintained by CPI. Began requirements definition to adapt these tools to WETP use.
- Created an online ColdFusion-based self-assessment instrument to assist Grantee's in evaluating their infrastructure needs relative to potential uses of ATT. Provided technical support to the input of their information to the database.
- Reported and presented findings from self-assessment to the entire ATT Workshop planning team.
- Summarized results into a Slide presentation for the opening session of the ATT Workshop included in the WETP Grantee's annual meeting. This meeting was held Oct 18-19th at the NIEHS HQ building in Research Triangle Park, North Carolina.

- Based on the findings, created the outlines and scripts for the four simultaneous ATT Workshop Sessions at Grantee's annual meeting (held Oct 18-19th at the NIEHS HQ building in Research Triangle Park, North Carolina).
- Facilitated two of the four interactive sessions where Grantees further identified outcomes and success criteria, ATT options, and initial evaluations of the appropriateness and feasibility of those options. Provided feedback as requested.
- Created and delivered to the Clearinghouse for distribution, reports for each Grantee based on their input (providing them the online screens to which they were responding).

2. Develop specific applications of ATT models, simulations and visualizations that could be used to support HAZWOPER.

Accomplished in FY2000:

- Provided technical assistance to the George Meany Center's First Responders Program. Constructed a Macromedia Flash "card sort" procedure trainer that was incorporated into their online course.
- Assisted in conducting the WETP ATT Workshop Sessions aimed at helping Grantees identify appropriate and feasible ATT applications.

3. Assist in the development of strategic plans and policy documents that will enable strategic implementation of ATT.

Accomplished in FY2000:

- (See item 5 below) Participated with WETP team in the ATT lessons learned meeting held in May, 2000. Provided a "celebration" report, highlighting the positive lessons learned by the Grantees receiving ATT pilot supplemental funding. Reviewed the complete report.
- Contributed to development and review of the ATT Guidance document. Consulted with WETP staff in framing possible directions and approaches including types of technical assistance.
- (As described in item 1 above) Developed online self-assessment tool as means for conducting preliminary needs analysis and as basis for determining program next steps.
- **4. Pilot a model approach for developing and delivering health and safety training at a DOE site that includes participation of site contractor, unions, and educational institutions.**

Accomplished in FY2000:

- Participated in discussions of INEEL local pilots with WETP team during onsite visit to INEEL in July. Discussions included labor representative and Site Construction Training program management. Efforts funded by INEEL have been underway in the area of Construction Worker Training for several years including an extensive online training/required reading system that was just fielded. The details of this system were thoroughly presented and discussed.

5. Assess the effectiveness of initial ATT pilots, assist in extraction of lessons learned and share products with other grantee programs.

Accomplished in FY2000:

- Attended the lessons learned meeting and made a "Celebration" presentation, provided review comments, and created the self-assessment tool incorporating the most valuable lessons learned from the pilots.

Helped develop and conduct the ATT Workshop Sessions that helped highlight and re-enforce many of the lessons learned and extend these to other Grantees.

APPENDIX 7: FY 2000 FUNDING

DOE/NIEHS WORKER EDUCATION AND TRAINING AWARDS FOR BUDGET PERIOD 09/01/2000-08/31/2001 FY 2000 FUNDS	
AWARDEE	DOE 9/2000 AWARD
International Chemical Workers Union Council	\$450,000
International Association of Fire Fighters	\$600,000
Laborers-AGC Education and Training	\$2,850,000
Paper, Allied-Industrial, Chemical and Energy Worker International Union	\$1,100,000
University of Medicine & Dentistry of New Jersey	\$500,000
International Union of Operating Engineers	\$1,150,000
Center to Protect Workers' Rights	\$1,350,000
HMTRI Kirkwood Community College	\$200,000
TOTAL	\$8,200,000

APPENDIX 8: DESCRIPTION OF THE
NEW NIEHS/DOE NUCLEAR WEAPONS COMPLEX AWARDEES

Laborers-AGC Education and Training Fund

Laborers-AGC Education and Training Fund is applying for the Hazardous Materials Worker Health and Safety Training Program for the Department of Energy (DOE) Nuclear Weapons Complex, to conduct a DOE worker training program. In partnership with the International Brotherhood of Teamsters (IBT), Laborers-AGC's DOE Worker Education and Training Program (WETP) will train workers who are or have the potential to be employed on demolition, decommission, and decontamination projects at DOE sites. The DOE WETP will provide workers with the skills and knowledge to work safely in the hazardous environments found on DOE sites and will instill a continual awareness of health and safety in all job aspects. In addition, the program will promote continuous learning, integration of safety programs, and involvement of the worker in health and safety decisions. Training includes hazardous waste worker training (exceeding Occupational Safety and Health Administration [OSHA] and DOE requirements); DOE-approved radiological worker training; and other health and safety, job skills, and environmental remediation training needed to address required and requested job-specific tasks. Training will incorporate hands-on simulated exercises, classroom instruction, and advanced training technologies.

Laborers-AGC will use eight regional training sites and two mobile units to provide training for approximately 12,500 trainees (300,000 contact hours) over five years. IBT will use four training sites to provide training for approximately 11,433 trainees (210,970 contact hours). Continuation of existing DOE training programs at both organizations will ensure immediate program initiation and will reduce training costs. This nationwide program targets laborers, teamsters, and other construction craft workers, as well as DOE personnel and DOE contractor employees.

The Hazardous Materials Training and Research Institute (HMTRI)

The Hazardous Materials Training and Research Institute (HMTRI), submits this application for funding on behalf of the Community and College Consortium for Health and Safety Training serving Department of Energy (DOE) environmental restoration and waste management sites across the United States. The intent of CCCHST-DOE is to provide convenient, consistent, and cost-effective, NIEHS approved worker training to DOE facilities, contractors, subcontractors, visiting scientists and public officials serving these facilities who are not otherwise prepared by organized labor. The primary mode of delivery will be through local Environmental Safety and Health Advanced Technology (AT) Learning Laboratories to be established at colleges and universities located near DOE sites. The AT Learning Laboratories will be supported by HMTRI curriculum and technical assistance. HMTRI, a current NIEHS awardee, will convert existing hazardous materials curriculum to an open-entry, open-exit format to be licensed by Learning Labs and electronically delivered to students. The Learning Labs will complement curriculum with required hands-on training and instructor support. The goal is to train 10,000 workers, technicians, and supervisors annually 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 through Occupational Safety and Health Administration (OSHA) 29CFR 1910.20 and related training. CCCHST-DOE Learning Laboratories will be located at the following educational institutions, Aiken Technical College at the Savannah River Site, SC; Amarillo College at the Pantex Plant, TX; Community College of Southern Nevada at the

Nevada Test Site, NV; Metropolitan Community Colleges at the Kansas City Plant, MO; and the University of Tennessee at the Oak Ridge National Laboratories, Y-12 and K-25 Plants, TN.

Over a five-year period, CCCHST-DOE will collectively enroll 30,000 students in 240,000 contact hours of hazardous materials training, providing over 30,000 8-hour units of study.

The Center to Protect Workers' Rights (CPWR)

The long-term objective of the construction consortium is to ensure that crafts workers who are called upon to work at DOE nuclear sites have the skills, knowledge and confidence they need to protect their health and safety, and that of their co-workers, their families, their communities, and the environment. Construction consortium members perform a vast array of maintenance, construction, and decommissioning tasks throughout the nuclear complex.

The Center to Protect Workers' Rights (CPWR) leads and coordinates the construction consortium, which has recently grown to include eleven international/national union members with the addition of the Electrical Workers, Plumbers and Pipefitters, and Bricklayers. The consortium has been providing training at DOE sites for six years. In the first year of this grant, the consortium will deliver 159 hazardous waste classes to 2,907 students and 196 hazardous waste refresher classes to 3,113 students. Respiratory protection, Occupational Safety and Health Administration (OSHA) 10, scaffold user, confined space, lead worker, asbestos worker, and other classes will also be offered to meet worker and contractor needs. Although contractor training facilities, such as the world-class HAMMER training center, are the consortium's primary training sites, a nationwide network of over 1,700 spacious and well equipped training centers is available. With highly skilled national and local peer-trainers; containerized, craft-specific and up-to-date training equipment; and a centralized training support organization; the consortium can respond rapidly and effectively to requests for training from anywhere within the DOE nuclear complex.

Consortium training is highly participatory, peer-led, and trade specific. Safety and health information is presented within a real-world context that readily transfers to the trainees' workplace environment. Problem solving exercises will help trainees master the skills they need to facilitate health-related changes in their workplace. Master trainers and program managers will work with training and evaluation experts to develop and improve training exercises, as well as classroom and web-based presentations. Training development is coordinated with DOE and contractor training and safety staffs, and is responsive to their needs and those of the consortium's members. Extensive trainer, and master trainer, preparation and enhancement programs, coordinated by CPWR, will prepare a cadre of certified master trainers who can ensure the quality of their organizations' training well beyond the completion of this grant.

The New Jersey/New York Hazardous Materials Worker Training Center

The New Jersey/New York Hazardous Materials Worker Training Center, a NIEHS awardee since 1987, is requesting funds for the DOE program area. The major objective of the Center is to prevent and reduce disability, morbidity and mortality due to potential risk during hazardous waste operations and emergency response via effective health and safety training. Additionally, this Center aims to improve the systematic collection, analysis and dissemination of data to increase the understanding of health status among various populations, especially minorities, in Federal Region II.

Center members involved in this program are the University of Medicine and Dentistry of New Jersey and the University at Buffalo. Each training provider has long established relationships with the target audience which are specific to DOE sites in Federal Region II. Training at DOE sites, initiated in 1992, has included cross training in asbestos and lead, as well as hazardous waste courses. Both Center members are accredited by the New York State and City Departments of Health and the New Jersey Department of Health and Senior Services for asbestos and lead training. The sites to be targeted are Princeton Plasma Physics Laboratory, Princeton, NJ; Brookhaven National Laboratories, Upton, NY; and West Valley Demonstration Project, West Valley, NY. Training planned for Year 01 covers 115 health and safety courses reaching approximately 1127 workers at these DOE sites.

The International Chemical Workers Union (ICWU)

The International Chemical Workers Union (ICWU) is applying for a Hazardous Materials Worker Health and Safety Training for the DOE Nuclear Weapons Complex Cooperative Agreement. The long-term organizational goal of the ICWU Consortium is to institutionalize its model program within the member unions, Councils and through the support from the targeted Department of Energy (DOE) site management. The immediate educational goal of the program is to continue to deliver hazardous materials and chemical emergency response training (Occupational Safety and Health Administration final rule CFR 1910.120, paragraph e, p and q) to thousands of DOE workers who are daily exposed to a wide variety of hazardous substances. The long-term educational goal of the Consortium is to provide all students with the confidence, relevant tools and problem solving skills to identify inadequacies in their facilities' hazardous materials programs. The intent is to continue to examine and document successes in making these programmatic and institutional improvements.

The current ICWU Consortium members on this grant are the ICWU, the Greater Cincinnati Occupational Health Center, the International Association of Machinists and Aerospace Workers, and the University of Cincinnati.

It is the aim of this proposal to continue and expand the efforts of a multi-union consortium in training workers at six nuclear facilities in the dangers of hazardous materials and launch a Multi-Grantee Project with other existing NIEHS DOE grantees. The six facilities are: Hanford, Washington; Oak Ridge, Tennessee; Kansas City, Missouri; Amarillo, Texas; Fernald, Ohio; and Albuquerque, New Mexico. Through the use of site-based worker-trainers, with the support of the ICWU CWHSE staff, over 23,000 students will be trained in the five-year period at the six sites, as well as developing trainers in the Cincinnati Center. Workers at these sites are exposed to a variety of hazards, including radiation, heavy metals, solvents, acid gases, through their normal work, as well as due to releases and other incidents in these aging plants.

The International Association of Fire Fighters (IAFF)

The International Association of Fire Fighters (IAFF) is requesting support for a DOE Nuclear Weapons Complex Cooperative Agreement. Emergency personnel responding to incidents related to the DOE complex face health and safety challenges involving radioactive and other hazardous materials. Since 1994, an average of 2,200 responders has been injured at hazardous materials incidents annually. Many more suffer serious health effects from toxic exposure associated with fire fighting and emergency response system (EMS) response. The effective remedy to combat these

health effects is a flexible training program that emphasizes occupational safety and health and Occupational Safety and Health Administration (OSHA) defined responder training as a key to effective emergency response. The IAFF proposes to continue to implement such a proven training plan. This effort relies heavily on an efficient Train-the-Trainer approach. It offers three new course formats which can be customized to the specific hazards faced by a given target audience; uses a combination of the Internet, advanced training technologies and regional programs; and emphasizes Integrated Safety Management (ISM). The estimated 425 annual attendees leave the course with the knowledge and the tools needed to implement this program in local fire/rescue departments in and around ten specified DOE sites, as well as other regions upon request. The IAFF is the only national organization serving professional fire fighters and enjoys longstanding training partnerships and access with fire/rescue departments across the U.S. The training curricula are current, focused, and ready to be delivered. In addition, there is a 100-member professional fire fighter/paramedic instructor team trained in using facilitation techniques and problem-based learning to reinforce responder safety and health. It is a state-of-the-art program with a focused safety and health message provided by experienced, committed instructors.

The Operating Engineers National Hazmat Program (OENHP)

For the next five years, the Operating Engineers National Hazmat Program shall train approximately 13,635 students over the five-year cooperative agreement; annually refresh 24 master instructors and train five new instructors to maintain a viable cadre of peer instructors nationwide; annually refresh approximately 9,375 operating engineers and train 650 new students in the full Site Worker course to work at DOE hazardous waste sites; develop modules on the latest issues in safety and health, particularly deactivation and decommissioning issues for inclusion into refresher training; use refresher training as the primary vehicle for alerting target audiences working on DOE hazardous waste sites to the most recent developments; expand the use of advanced training technologies to instructors and students; develop strong, collaborative initiatives with Florida International University to recruit and train Hispanic workers near DOE sites; collaborate with the University of Kentucky to produce an effective evaluation program; integrate the lessons learned from the OENHP's unique Technology Assessment Program into the Hazardous Waste Operations and Emergency Response (HAZWOPER) training programs.

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

The Paper Allied-Industrial, Chemical, and Energy Workers International Union (PACE) is applying for the Worker Health and Safety Training for the DOE Nuclear Weapons Complex Cooperative Agreement to conduct a worker training program that will protect workers and community residents from exposure to hazardous materials, waste operations and incidents at facilities in the jurisdiction of the U.S. Department of Energy. By the end of the funded five-year period, more than 22,800 workers will receive 257,000 hours of training (Occupational Safety and Health Administration [OSHA] Standard, 29 CFR 1910.120, sections a and q) that will enable them to protect themselves during emergencies and to implement strategies to prevent potentially deadly accidents. PACE is the new union formed when the Oil, Chemical and Atomic Workers Union (OCAW) and the United Paperworkers International Union (UPIU) merged in 1999. Together, the two unions represent over 330,000 workers at some of the most dangerous industrial facilities in America. Nearly 6,000 work at DOE sites. To do this, PACE proposes the following goals:

Extensive and Intensive Training: During the first year of the proposed project, PACE intends to deliver 219 classes, reaching 3,958 workers with 46,480 contact hours of training. PACE will meet or exceed these training numbers in each of the succeeding four project years. The classes will consist of 40-hour general site worker training classes for hazardous waste site workers; 24-hour awareness classes for treatment storage and disposal (TSD) site workers and; the annual eight-hour refresher training required for all site workers to maintain their certification. Each year, worker-trainers will receive 40-hours of technical training.

New Initiatives: PACE proposes four new initiatives: 1) following the DOE call for Integrated Safety Management System (ISMS) programs, three ISMS programs will be established over the next five years, and three new ISMS training modules will be created for all courses; 2) the Self-sufficiency Research and Evaluation Project (SREP) initiative will be built. It uses worker-led, team-based processes to design and carry out evaluation plans; 3) 15 community/labor workshops will be conducted over five years; 4) there will be full participation in the Multi-Grantee Trainer, Curriculum and Evaluation Initiative that brings together four grantees - PACE, the ICWUC Consortium, the Operating Engineers, and the Center to Protect Worker Rights.

The program will work with a national network of support that includes: the Labor Institute for support to develop trainers, produce materials and provide guidance for the new initiatives, the University of Massachusetts at Lowell for technical assistance, the New Perspectives Consulting Group for evaluation support; and an advisory board with both management and scientific subcommittees.

