

April 8, 1999

***FY 1998 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.

The Worker Training Program was originally authorized for five years (FY 87-91) by Congress with the passage of Section 126 of the Superfund Amendments and Reauthorization Act of 1986 (SARA). The program is administered by NIEHS through an interagency agreement with EPA. During October 1990, Congress reauthorized the Superfund program for an additional three years (FY 92-94), which included an authorization of \$20 million per year for the NIEHS Worker Training Program. For FY 96, Congress provided \$18.5 million for the NIEHS Worker Training Program. EPA separately transferred \$2 million to support the continuation of an initiative for pilot project to train minority young adults for careers in the environmental restoration industry.

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. An initial needs assessment conducted that year in an effort to better understand the training needs of workers across the DOE nuclear weapons complex estimated that between 10,000 and 60,000 workers at DOE facilities would require initial training. Five years after the start of

training in 1994, large-scale environmental cleanup is underway throughout the DOE complex and more than 70,000¹ presences have been logged in NIEHS awardee HAZMAT training classes.

Across the DOE complex, approximately 1.2 million contact hours of hazardous materials training were delivered by the NIEHS awardees between 1994 and 1998. During this period, dozens of different courses were offered by nine awardees to workers at sites throughout the DOE complex. The courses can be classified in eight general categories: Site Worker, Site Worker Refresher, RCRA/Industrial, Emergency Response, Radiation, Lead Abatement, Asbestos Abatement, and Other. During the four years covered, the largest category of training was Site Worker Refresher, which accounted for 48 percent of course attendees between 1994 and 1998. The second largest category was Site Worker, which accounted for nearly 11,000 course participants and almost half of all contact hours of training provided between 1994 and 1998. The next largest category was RCRA/Industrial, followed by Asbestos Abatement, Radiation, Emergency Response, and Lead Abatement.

While the NIEHS awardees have provided training at more than thirty DOE sites, half of the trainees worked at two of the largest sites, Hanford and Oak Ridge, where more than 36,000 course participants received over half a million contact hours of training. At the Hanford and Oak Ridge sites, nearly 20,000 course participants (53 percent of those trained between 1994 and 1998) received nearly 160,000 contact hours of Site Worker Refresher Training, and close to 10,000 participated in RCRA/Industrial training.

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 FY 1998 Program Highlights

During FY 98, (September 1, 1997 – August 31, 1998) major program accomplishments of the DOE/NIEHS Worker Training Program include:

2.1 Continuation of the peer-reviewed DOE Worker Training awards

2.2

2.3 After the completion of the third 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, 1997. 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, 1997 for each of the programs supported with DOE Environmental Management resources.

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

¹ The total of 71,700 presences logged is probably higher than the number of workers who actually participated in courses because some individuals attend more than one class and many participants in basic training take part in refresher courses the following year.

2.3.1 Laborers-AGC Education and Training Fund

Laborers-AGC DOE Training: BRIEF SUMMARY OF ACCOMPLISHMENTS

During the 1997-98 Department of Energy (DOE) Hazardous Waste Worker Training Program (HWWTP) year, the Laborers-AGC Education and Training Fund (Laborers-AGC) conducted 270 course presentations with 2,950 participants representing approximately 71,336 contact training hours of training. It is anticipated that Laborers-AGC total training for 1997/98 under the DOE program will be 148 weeks, which will fall just short of the goal of 151 training weeks proposed in our letter to NIEHS on March 13, 1998, but will exceed the number proposed at the outset of the training year.

Training was provided by seven training centers and two mobile units. The seven fixed sites trained workers who would be needed for environmental remediation work at nearby DOE facilities, including Hanford, NTS, Rocky Flats, Los Alamos, Sandia, Oak Ridge, the St. Louis airport site, and Savannah River. Some refresher training was conducted for laborers who may work at FUSRAP sites, but now that jurisdiction for these sites is under the Army Corps of Engineers, training for these sites will be conducted under the EPA HWWTP. The Virginia/North Carolina Mobile Unit conducted training for DOE headquarters personnel, and the Iowa Mobile Unit responded to needs that the fixed sites could not meet. In most instances, the Iowa Mobile Unit provided Asbestos Worker or Refresher training for Los Alamos and Sandia DOE facilities.

This year, courses offered under the DOE HWWTP included the following: the 80-hour Hazardous Waste (HW) Worker, 8-hour HW Worker Refresher, 24-hour Radiological Worker II, 8-hour Radiological Worker II Refresher, 40-hour Asbestos Abatement Worker, 8-hour Asbestos Abatement Worker Refresher, 40-hour Asbestos Abatement Supervisor, 8-hour Asbestos Abatement Supervisor Refresher, and the 32-hour Permit-Required Confined Space Entry Worker. In addition to these standard courses, several new short courses were provided to workers who would be starting jobs at the Oak Ridge DOE facility. The prime contractor there, BNFL, requested training in the following short courses:

¥	Hearing Conservation	¥	Lockout-Tagout
¥	Hazardous Waste Characterization	¥	Lead Awareness
¥	Fall Protection	¥	Fire Watch
¥	Hazard Communication		

IBT DOE Training: BRIEF SUMMARY OF ACCOMPLISHMENTS

To increase the effectiveness and quality of the HWWTP, the International Brotherhood of Teamsters (IBT) program developed a pre-test/post-test and a protocol for donning and doffing self-contained breathing apparatus (SCBA) and air purifying respirators (APR). The data acquired from the pre-test/post-test will be utilized by program management to evaluate the overall effectiveness of the program. The SCBA and APR donning and doffing protocol will increase the trainee's retention rate by providing more effective methods for teaching trainees the proper procedures for donning and doffing the equipment.

The program revised all the manuals to include:

1. Changes in the regulations and procedures governing the removal of hazardous waste and the transportation of hazardous materials.
2. Additional graphics to assist trainees in understanding complex topics.
3. Clearly stated learning objectives and review questions.

Further, the format for the 8-hour HW Refresher manual was changed to loose-leaf to permit instructors to include topics in the course that fulfill the specific training needs of the students.

To expand the DOE curriculum to meet the training demand, the program has begun the development of four new courses:

1. 8-hour Respiratory Protection
2. 32-hour Lead Abatement
3. 32-hour Asbestos Abatement
4. Transportation of Radiological Waste

These course are in the developmental stages, and will be fully implemented in the 1998-1999 program year.

As originally proposed, the program has completed the final phase of the Student Tracking and Reporting System (STARS) database and the Financial Tracking database. To further enhance the existing STARS data base, the program has begun the development of the Marketing data base. The Marketing data base will interface with STARS and contain information that will be utilized by the field coordinator and marketing manager to:

1. Establish training schedules to meet the needs of remediation contractors
2. Facilitate the employment of trainees on hazardous waste sites, Superfund sites, and remediation sites

The program conducted two Instructor Development Programs (IDP) in the 1997-1998 program year. To maintain their Radiological Control Worker II certifications, instructors participated in a Radiological Control Worker II course, sponsored by Lawrence Livermore National Laboratories. The course consisted of lectures and dress-out activities. Instructors also participated in site visits to the NOVA Laser Fusion Facility and the construction site for the National Ignition Facility.

A second IDP was held from July 27, 1998 through August 1, 1998, at the Nevada Test Site. The instructors will participate in site visits to the Nevada Test Site, the Nevada Test Site Hazardous Materials Spills Center, and Yucca Mountain Storage Facility for Low Level Radioactive Waste. Employees of DOE and Bechtel/Nevada will give the instructors guided tours of the sites. Further, the protocol for donning and doffing SCBAs and APRs will be pilot-tested during this IDP. Trainees for the pilot testing will be drawn from Teamsters Local Union 631 (Las Vegas, Nevada).

As initially proposed, the program conducted a joint venture Instructor Development Program in conjunction with the Laborers-AGC, an Advisory Board meeting, and a site audit of one training center.

1. TRAINING ACCOMPLISHMENTS--Laborers-AGC

The DOE HWWTP courses are offered at the following regional training centers.

- | | |
|--------------------|-------------------|
| 1. Albuquerque, NM | 5. Las Vegas, NV |
| 2. Augusta, GA | 6. Middletown, OH |
| 3. Belton, MO | 7. Oak Ridge, TN |
| 4. Brighton, CO | 8. Pasco, WA |
| 5. Buffalo, NY | 9. Pasco, WA |

Courses conducted at the Buffalo, NY training facility were for FUSRAP sites. Now that these sites are under the jurisdiction of the Army Corps of Engineers, training will no longer be continued under the DOE program. Similarly, the training at Belton, MO was done for a specific DOE site near the St. Louis

airport. Training will only be continued there when a definite need for extra trained workers has been established,

In addition, Laborers-AGC provides DOE courses at other locations through the use of the Iowa Mobile Unit and the Virginia/North Carolina Mobile Unit. DOE Headquarters personnel are served by the mobile units.

A total of 197 presentations with 2,105 participants have been held to date under the DOE HWWTP. A total of 48,296 contact training hours were provided during this program year. Training data for the program year is graphically depicted and is provided in Appendix 4. These graphs show which sites have conducted the most training and allow easy comparisons among the sites.

Additional tables give the anticipated training to be provided under the program from June 1, 1997 to August 31, 1998. We expect to conduct another 44 presentations and to train approximately 528 workers. With this additional training, Laborers-AGC will conduct approximately 148 weeks of training, meeting the goal that was established prior to the beginning of the 1997/98 training year, but falling just short of the projected goals in our letter to NIEHS on March 13, 1998.

The total number of training weeks is expected to be lower in 1998 than in 1997, however, the number of participants trained has increased from last year. This increase is due, in part, to larger classes. Laborers-AGC has set a minimum class size for all DOE courses. If the size of the class is too small, training will be pro-rated. If a refresher course does not have the minimum number of participants, the course will not be reimbursed at all. Another key reason that participant levels are up from last year is that the environmental remediation work at Oak Ridge finally started. Hundreds of Laborers are required to man the Oak Ridge projects. As was stated in the past, unexpected changes, or even anticipated changes can change training needs over night. This fact demonstrates why it is difficult, if not impossible to plan for short or long term DOE training.

Although the number of people trained is greater than last year, Laborers-AGC continues to experience difficulties at some of the DOE facilities. Many DOE contractors are still reluctant to use the NIEHS grantee training. They, and DOE site managers, change the training requirements regularly, especially when a contractor changes or new DOE manager is appointed. Others question the validity of Laborers-AGC training and may require already trained workers to retake courses that they have not approved.

Trainee Characteristics

About 60 percent of the trainees are between the ages of 25 and 44. This is the same percentage reported last year. The percentage of trainees in the 18-24 category declined by 3 percent and the 25-34 age group increased by 2 percent. Although these are minor shifts, more mature workers may be seeking jobs in the environmental field.

Information on DOE trainee race changed significantly during the first half of the 1997/98 program year. The Caucasian category rose from 48 percent last year to 68 percent this year. This 20 percent increase cannot be fully explained. We do know that the largest growth area under the DOE program has been the training for the Oak Ridge clean-up activities. Many of the people trained were already employees of BNFL, so their minority figures may be having an effect of the data. Similarly, if the Oak Ridge area has a small percentage of minorities then training will reflect that fact. This is a question that Laborers-AGC will attempt to answer before the final report.

DOE Training Trends

On the whole, anticipated training needs for DOE facilities have not been as great as anticipated. However, this year, long awaited remediation contracts for the Oak Ridge site were finally awarded to

BNFL (British Nuclear Fuels Limited). Training for work at Oak Ridge has risen dramatically and those who are trained are getting cleanup jobs. On the other hand, work slowdowns at Rocky Flats and policy changes at Savannah River have cut into jobs and training has diminished below what was projected. A graphic depiction of total participants trained across the training sites is provided in Appendix 4.

Because of the way DOE site remediation jobs progress, no one has been able to accurately predict which projects will begin during any given year. Therefore, it has been most difficult to develop a training plan that maintains its relevance throughout an entire year. Contacts with DOE contractors and business managers at LIUNA locals as well as job site tracking has enabled Laborers-AGC to make reasonable decisions regarding training needs. In the next year, jobs are expected to increase at Oak Ridge, Rocky Flats, and the Nevada Test Site. Other training will remain at about the levels they were in the 1998 program year. One possible exception is Savannah River. If certification issues are cleared up, training for laborers could increase significantly.

DOE HWWTP 1993-1997 Training Overview

Table 3 shows the number of students trained in the DOE HWWTP from the start of the program in September 1, 1993, to August 31, 1997. As is depicted, the number of workers trained has increased significantly from year 1 to year 2 of the program. In year 3, training numbers declined, but in year 4, they increased. In year 5 (current year) DOE training numbers are expected to show an increase again. The increase will have been a result of the large need for training at the Oak Ridge DOE facility. Numbers for year 5 (September 1997 through August 1998, will not be reported until the year end.

TABLE 3
DOE HWWTP --YEARS 1 TO 4
NUMBERS TRAINED

Course	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Totals		
HW Worker		374	575	326	308	1,583	
HW Worker Refresher	427	598	626	722	2,373		
HW Operations		51	23	-	-	74	
HW Supervisor		3	3	-	-	6	
HW Supervisor Refresher		7	14	19	28	64	
Rad Worker II		270	410	240	195	1,115	
Rad Worker II Refresher		-	-	46	30	76	
Asbestos Abate Worker		545	497	359	379	1,780	
AA Worker Refresher		84	222	418	378	1,102	
AA Supervisor			32	20	12	11	75
AA Supervisor Refresher		-	8	51	49	108	
Lead Abatement Worker		-	90	49	55	194	
Lead Abate Worker Ref		-	-	29	36	65	
Lead Abatement Supervisor		-	6	8	1	15	
Lead Abate Sup Refresher					5	5	
Confined Space				13	13		
Totals		1,793	2,466	2,183	2,210	8,648	

Training Costs

Table 4 shows the actual expenditures per year under the DOE HWWTP and costs per person and per contact hour.

TABLE 4
DOE HWWTP - TRAINING COSTS BREAKDOWN

Year	Expenditures	Trainees	Costs/Person	Contact Hours	Cost/Contact Hour	
Year 1	2,388,518		1,929	1,238	67,673	35.29
Year 2	2,254,977		2,522	894	91,435	24.66
Year 3	1,648,714		2,188	754	58,552	28.16
Year 4	1,575,181		2,220	709	60,192	26.17
Totals/ Averages	\$7,867,390		8,859	\$888	277,852	\$28.31

* All years have funds for the IBT removed from the totals.

During the first four years of the program, 8,859 workers have been trained. The average cost per person since the inception of the DOE HWWTP is \$888 with \$28.31 per contact hour being expended. Training and training costs have remained about the same during the past two years. Recently there has been a slight decrease in costs per person and costs per hour of training. This trend may continue into Year 6 because the high number of larger classes at Oak Ridge will keep costs per person down. Year 5 expenditures and training numbers are not included because training is incomplete.

1. TRAINING ACCOMPLISHMENTS - IBT

The International Brotherhood of Teamsters (IBT) DOE HWWTP provided training through its two training centers:

1. Northern California Teamsters Apprentice Training and Education Trust Fund located in Rancho Murieta, California.
2. Central/Southern Region Training Center located at Teamsters Local Union 89 in Louisville, Kentucky.

Training accomplishments for the period of September 1, 1997 through June 1, 1998 are discussed here. Training accomplishments for the period of June 1, 1998 through August 31, 1998 will be provided in the Year End Report.

For the period of September 1, 1997 through June 1, 1998, the DOE HWWTP:

1. Certified 71 workers in the 48-hour HW Worker Training Course.
2. Certified 467 workers in the 8-hour HW Refresher Course.
3. Certified 88 workers in the 24-hour Radiological Control Worker II Course.
4. Certified 185 workers in the 4-hour Transportation Awareness Course that was incorporated into the 48-hour HW Worker Training Course and the 8-hour HW Refresher Course.

The DOE HWWTP accomplished 120% of the proposed training goal for the 8-hour HW Refresher Course; 100% of the proposed training goal for the 24-hour Radiological Control Worker II Course; and, 49% of the proposed training goal for the 48-hour HW Worker Training Course. The program did not implement the 8-hour Respiratory Protection Course in GY98, pending a needs assessment at the DOE Sites. (Appendix 5 provides a summary of IBT training accomplishments by training center and by course.)

In June 1998, the DOE HWWTP executed training contracts with the Eastern Region Training Center and the Southern California Training Center. The Eastern Region Training Center will provide DOE training to workers who are employed, or have the potential for employment at Brookhaven National Labs. The Southern California Training Center will provide DOE training for workers who are employed, or have the potential for employment, at the Santa Susanna DOE Site. Training accomplishments for these two training centers will be reported in the year end report.

2. TRAINING EFFECTIVENESS--Laborers-AGC

Trainee Application

The DOE HWWTP now uses two standardized application forms instead of the single generic form that has been used in the past. The old application has been revised to correct basic items such as date and program code. Questions on trainee characteristics (age, race, and gender), current employment, and certification are still included. Laborers-AGC can also get information on the effectiveness of the course materials and instructor capabilities by calculating the percentage of trainees that passed the course and were certified. In the 1997/98 DOE HWWTP year, 94 percent of the trainees taking the environmental courses successfully completed their training.

In October 1997, a new refresher application was developed and distributed to training funds for use with all environmental refresher courses that are conducted under the DOE HWWTP. This application is designed to not only get information on trainee characteristics, but also to obtain information on where trained workers have been employed and the type of work they have done since their training. In particular, trainees are asked to note any environmental cleanup work that they have done.

A second part to the refresher application has been piloted at several sites. Trainees are asked if they have seen or been part of any action that required the use of health and safety protection skills in their jobs. Workers are questioned about their willingness to approach site managers about situations that they felt would jeopardize their health and the health of other workers. Trainees are also asked to give examples of how the hazardous waste worker training has benefited them at work, at home, or on their free time.

Much of the information that is included in the second part of the refresher application will be used to generate class discussions on workplace hazards, personal protective equipment, and workers' rights. Instructors will help trainees learn through their own experiences and the experiences of others. Trainees will have the opportunity to discuss the decisions made by the worker or the supervisor and to determine what actions could have made the job safer.

During July and August 1998, instructors from each of the training sites that participate in the NIEHS HWWTPs will attend a two-day train-the-trainer on how to moderate the discussions on real workplace situations. Instructors will learn how to initiate discussions, as well as, lead trainees in thinking through problem situations and making informed decisions about solving safety problems. Identifying problems, selecting appropriate safety precautions, and bringing the problem to the attention of the supervisor are important skills that environmental workers must have to protect themselves and their fellow workers.

Medical Review

Each site also requires trainees to complete a blood pressure screening, pulmonary function test, and medical questionnaire. The trainee's medical information is then reviewed by the site's medical professional who will provide a written opinion on whether the employee has any medical condition that would place the employee at increased risk from class activities or wearing PPE. Participants are

approved or denied training as set forth in the medical protocol (revised in 1997). Although the medical screening cannot be used for work clearance, trainees do get an idea of whether they would pass a full physical exam and can refuse work that requires medical clearance. This can reduce time and costs for the employer.

The Laborers Health and Safety Fund of North America (LHSFNA) maintains physical custody of the trainee medical records. The LHSFNA inputs the information contained in the medical questionnaires and medical forms into a database and generates a preliminary report on the base line health information of the trainees. Additional reports on the information contained on the questionnaire can be generated as needed for statistical analysis and programmatic decision-making. As of now, no medical information will be included in the TRAC database. This maintains the confidentiality of the trainees' records.

Training Records

In addition to the trainee applications and medical questionnaires, other records and information are gathered on the participants during the HW Worker and HW Operations courses. For the hands-on portion of the course, records include:

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
6. Final written exam

These records are used to monitor a trainee's performance and to document completion of the tasks.

In addition, trainees are given standard operating procedures (SOPs) 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.

Trainees are also evaluated during the classroom portions of the course. At the conclusion of the 80-hour and 45-hour courses, all students take a written exam. The trainee must score a 70% grade or better to be eligible for certification. (They must score an 80% or higher on the Radiological Worker II exam.) The HW Worker exam format, process, and questions are currently being revised. Test questions will be put into a test bank of approximately 300-400 items that will be chosen randomly on tests that are re-constructed every six months. In addition, this written test will be administered differently. It will take place in three parts over the course of the 80-hour training period, with each portion counting as a percentage of the total examination score. Test questions are directly linked to the course work. In order to make the testing information more realistic, and to help some trainees overcome possible learning issues, the new test questions use a great deal of visual information.

Training Program Evaluation

Laborers-AGC's program evaluation efforts include:

1. Monitoring courses and instructors.
2. Reviewing course materials (including manuals, audiovisual materials) for technical accuracy and for ease in reading.

3. Relevancy of information and training to the trainees' jobs and impact of the training on their behavior at work and at home.

Monitoring

Class and site monitoring continued as they have in prior years. Laborers-AGC program staff periodically monitor sites, especially if a site is conducting a class for the first time or if a problem at the site has been identified through other monitoring or QA/QC activities.

In addition to Laborers-AGC staff visits, sites are monitored by master trainers and other professionals. For the first time, Laborers-AGC will use retired training fund directors to monitor HW Worker classes. (So far, three training directors are willing and able to monitor the HW training.) Their experiences in the field and as training directors (overseers) provides a unique evaluation perspective. Laborers-AGC contracts with a law firm to conduct monitoring of the legal rights section of the hazardous waste worker training. Laborers-AGC also uses the services of a professional who has overseen several Superfund remedial actions. He visits several sites to observe the hands-on training, particularly field simulation activities. Finally, Laborers-AGC contracts with the LHSFNA to observe the medical effects portion of the HW worker courses.

After any evaluation, the monitor discusses concerns with the site director and offers suggestions for improvement. Each monitor submits a report to Laborers-AGC upon completion of a course or site evaluation. If action needs to be taken, the concerns are discussed with the site director and recorded in writing to the site director.

Letters and reports from course monitors are kept on file at both the site and at Laborers-AGC headquarters. Laborers-AGC staff review the reports and address any issues of concern with the site's training director.

Laborers-AGC Staff Monitoring Activities

Monitoring activities consist of site visits to verify training effectiveness and to ensure compliance with Laborers-AGC program elements and with applicable industry standards and requirements. During the 1997/98 program year, one site monitoring visit to Oak Ridge, TN was conducted. This visit specifically focused on the Radiological Worker II course.

Monitoring that is conducted by outside evaluators is summarized below:

The Laborers Health and Safety Fund of North America

The Laborers Health and Safety Fund of North America (LHSFNA) periodically monitors the health effects portion of the HW Worker or the HW Operations courses. At most training facilities, a medical professional presents the health effects curriculum and conducts the medical screening for trainees. The LHSFNA provides the oversight, policy, and guidance for these functions. LHSFNA staff also provide assistance to the health professional during their first HW Worker course.

During the past year, the LHSFNA monitored the following DOE training sites:

- ¥ Oak Ridge, TN
- ¥ Albuquerque, NM
- ¥ Brighton, CO

Initial class delivery and new medical professional training was conducted at the Oak Ridge site.

In their oversight role, LHSFNA also conducts a secondary review of the completed medical questionnaires and blood pressure and spirometry reports that are submitted by the medical professionals. Rigorous review of provided medical information helps ensure that trainees do not have physical conditions that may restrict use of PPE.

Clean Sites, Inc.

A representative from Clean Sites, Inc., Stuart T. Allen, routinely reviews the mock sites and practical exercises during HW Worker courses at various training facilities. Mr. Allen observes trainees conducting clean-up activities while they are wearing PPE. Trainees typically use remediation and sampling equipment that may be used on an actual hazardous waste site.

During the 1997/98 program year, Stu Allen conducted three monitoring visits under the DOE HWWTP, with one more site visit planned for the Pasco, WA site during the summer. Visited sites are as follows:

- ¥ Augusta, GA
- ¥ Brighton, CO
- ¥ Oak Ridge, TN

Mr. Allen also helped revise the final exam for the HW Worker course, provided current information on environmental remediation to instructors, and attended the Laborers-AGC HW Advisory Board meeting.

Connerton and Ray

The law firm of Connerton and Ray provides expertise in legal regulations governing hazardous waste site cleanup, treatment storage and disposal, and worker health and safety. Michael Barrett, a lawyer with Connerton and Ray, monitors presentations of the legal rights section of the HW Worker course. He also provides legal assistance on matters related to training activities at the sites. He also serves as recording secretary for the HWWTP Advisory Board meetings.

Course Materials

Laborers-AGC dedicates significant staff time to development and review of course materials. To support this function, program specialists keep updated on environmental remediation techniques, technologies, and regulations. This knowledge is used in the continual process of updating course materials. Some of the courses that are currently under review and modification include the Permit-Required Confined Space, the HW Refresher and a new 24-Hour Limited Access Worker course. In addition, course exams, practical exercises, audio-visual aids (including Powerpoint presentations) and other course materials are also reviewed regularly.

In addition to Laborers-AGC staff, outside professionals help develop material and peer review materials for accuracy, completeness, and relevancy. Instructors from various training funds also work with Laborers-AGC to form curriculum committees. These committees review new courses and updated material. Their input is especially relevant because they see things from a vantage point obtained from years of instructing.

To get a good overall review of a course and its material, all users' input must be included. The key instrument currently in use for the HWWTP is the instructor/course evaluation form.

Instructor/Course Evaluations

At the end of every HW Worker and HW Operations course, trainees complete an instructor/course evaluation. Currently these forms are being sent to Laborers-AGC for review and compilation. Ellen Warhit, a subgrantee to Laborers-AGC, was contracted to summarize the data from these evaluations.

Using a random sampling of 10 student evaluations from each training site, mean scores were calculated for each site by each course section for the following variables:

¥	Course content	¥	Instructor preparation
¥	Instructor presentation	¥	Visual aids
¥	Text materials	¥	Discussion session
¥	Quality of training facility/site	¥	Handout materials
¥	Value of field work or assignments	¥	Technical value
¥	Overall opinion of the course		

On a scale of 1 to 5, every training site rated an average of 3.68 or higher for all selected variables for every course section on the student evaluations. Most scores were above 4.00. While these scores are still above average, the overall ratings are lower than they were last year. One possible reason for this is the introduction of the newly revised HW Worker manual last year. Instructors may have been less confident with the material, thereby weakening their presentations.

The course handouts tended to receive lower scores among the sites when compared with values for other variables. Visual aids also received lower scores more frequently than the other variables. Laborers-AGC is aware that some updating of the visual aids and handouts is needed. Laborers-AGC has already begun revising the HW Worker course visuals and intends to develop Powerpoint presentations for instructor use.

This is the final year that the current Instructor/Course Evaluation Form will be used. A new form has been developed, which is simpler to use and is designed for computer scanning and analysis. A pilot of the form will take place this summer with a modified version of the form that does not require computer readability. Instructors at several training sites will give the form to trainees in an 80-Hour HW Worker class. The instructors can observe the students' reactions to the form and note if all questions were seriously considered or if the trainees selected all of one category to complete the form as soon as possible.

The pilot forms will be sent to Laborers-AGC and reviewed by an education specialist and program staff. Any necessary modifications will be made, and then the form will be reformatted to make it computer scannable. A copy of the pilot form is provided in Appendix 9.

Impact of Training on Work Habits

As mentioned in the Trainee Applications section of this report, a new HW Refresher course application was developed and has been used for about six months. Several sites are using the second sheet of this form, which provides information on the use of the HW Worker Training on the job, incidents that were prevented or better handled because of the training, and what areas of training the worker has been able to apply to the job and home life.

Trainee Comments-Skills Used on the Job

1. All decon, PPE, respirators, health and safety, different types of filters.
2. Decon line, respirator, confined space entry, fall protection, lock-out/tag-out.
3. Confined space, air monitoring, carbon monoxide, carbon dioxide, etc. Monitor my own heat stress.
4. Working with flammable gas.

5. I have become proficient in the use of proper PPE and job specific abatement materials, such as surfactants and encapsulants.
6. Conduct inspections of hazardous waste facilities, nuclear facilities, and industrial facilities.
7. Used PPE to decon materials in radiological zones. Used MSDS to identify chemicals used in work.
8. Removing hazardous waste from tanks to safe location for remediation.
9. Spill clean up. Decontamination steps. Necessary PPE. Breathing procedures.
10. HazMat refresher manual is a great tool and source of information.

Trainee Comments-Potential Safety Incidents at Work Prevented Because of Hazardous Waste Training

1. Recognized unusual substance in the ground. Brought it to boss' attention. Testing showed it was benzene. Referred to MSDS.
2. Proper decon prevented taking toxins home to family.
3. Having somebody on top when in a manhole.
4. Smell of something. Respirators weren't adequate. Refused to enter confined space.
4. Full air was needed. Air monitor went off. Got everyone out.
5. I separated acetylene and oxygen tanks to prevent any possible incident. They were stored side by side.
6. there have been countless scenarios when training has paid off.
7. Insisted on proper amount of time between breaks in confined space.
8. Explosion in tunnel in East Lansing, MI.
9. Discovering a hidden chemical hazard when performing regular remediation tasks.
10. Cleaning of a hydrazine spill.
11. Going to Level B protection in an unknown situation (possible chemicals).
12. If the area was hot, I made sure I had the right PPE.
13. Did not cross a line that had high levels of radioactive material that was not marked.
14. Coke, gas explosions, carbon dioxide poisoning.
15. Hole watch. Because my airline blew off, and hole watch retracted me.
16. Prevented two different chemicals from being placed in one drum, which might have caused a chemical reaction.
17. Found a drum while digging.
18. Helped prevent a tank from ripping apart.
19. Heat exhaustion.
20. Blowing out the manhole to reduce the gases to a level to gain entry.
21. I stopped a person from opening a bulging drum, setting up proper decon.
22. As a steward I was able to instruct the crew on contamination and avoidance, fire safety, and use of proper protection for chemical use.
23. Helped evacuate work area when hazardous atmosphere was present and avoided contamination using proper PPE.
24. Experienced heat stress and was able to recognize the symptoms. On numerous occasions while monitoring I was able to prevent a potential disaster or death.
25. Found asbestos (friable) on a HazMat site and notified supervisor.

Trainee Comments-Areas of Training Applied to Job or Home

1. Able to confidentially enter confined space areas knowing I've taken all safety precautions.
2. Removing lead paint prior to removing I-beams during demolition. Wearing PPE during cutting with torches.
3. PPE, always being alert for slips, trips and falls or any malfunctioning electrical hazards, building contaminants.
4. PPE, ventilation, MSDS.
5. Use MSDS, hazard ID, first aid.
6. Recognize potential hazards.

7. Safety, working with others, communication.
8. Daily work in a hazardous environment-most areas of HW Worker are applied continuously.
9. I'm able to read and understand the posted warning signs at Fernald.
10. Decon procedures, excavation, drum testing.
11. Decon, PPE, air monitoring.
12. PPE, hazard recognition, HazCom, material handling, all aspects of the job.
13. Knowledge of proper use and application of PPE. All training used commonly in daily situations.
14. All of my skills and training have been used on a daily basis for the past 3 years.
15. Emergency management.

The training has also been beneficial for contractors who hire trained workers. The continuing need for workers with environmental remediation skills is very apparent. Selected comments from two DOE contractors include the following:

BNLF, regarding Oak Ridge remediations - "We would like to applaud your efforts in the administration of scheduling training for our company. Your dedication to customer service is evident by the quality of training that your group provides, and locations that are conducive to learning."

KWI, Construction, Inc. (regarding Savannah River remediations) - "...it was at that time that I shared with you the importance of the RWT (Radiological Worker Training) . . . and asbestos training that you give to our employees. These types of training help to ensure the safety of our employees. . . . Should this not be such an advantage to us, our employees would not be able to perform their duties sagely and in areas where work is offered them."

Roy F. Weston , Inc. (Weston) (regarding Oak Ridge remediations) - "Roy F. Weston was tasked with removing over 25,000 cubic yards of mercury and low level radioactive contaminated soil from the flood-plain of East Fork Poplar Creek last summer. Thanks to the diligent observance of safety procedures, WESTON was able to complete the project with zero lost time recordable incidents. Considering that the laborers cleared over 15 acres of heavily forested area using chain saws, and were present during many hazardous operations".

2. TRAINING EFFECTIVENESS--IBT

Trainee Characteristics

The program utilizes a Student Demographic Form to obtain information on the demographic characteristics of the trainees. The form is distributed to trainees at the beginning of each course. The instructors encourage the trainees to complete the form, but advise them it is voluntary and that the information will remain confidential and be used for government reporting purposes only.

These charts represent trainees who participated in the 48-hour HW Worker Training Course and the 8-hour HW Refresher Course for the period of September 1, 1997 through June 1, 1998.

Minority Training

Northern California Training Center

In program year 1996-1997 the Northern California Training Center implemented an outreach plan to target Native Americans for participation in DOE Worker Training. Many DOE sites are adjacent to, or located on, Native American reservations. Federal law, and many state laws, require the remediation contractors to hire their workforce directly from the tribes that live on, or are in close geographical proximity to, the targeted DOE sites.

To market the program to Native Americans, the Northern California Training Center participated in the Tribal Employment Rights Council (TERO) Conference. As a consequence, the training center conducted training for seven Native Americans who represented the Shoshone-Bannock Tribe, the White Mesa Utes, and the Navajo Nation.

The Northern California Training Center has also established an on-going relationship with the California Private Industry Council and the Sacramento Employment Training Alliance to provide training for disadvantaged inner city residents.

Trainee Performance Data

Testing

All courses require trainees to take a written, final examination. A minimum score of 70% is required to pass the courses. In the rare instances where a trainee fails to pass the final examination, the instructor will spend additional time with him/her reviewing course materials. When the trainee is comfortable with the material, he/she will retake the final examination. If a trainee fails the final examination due to poor reading skills, the instructor will administer the test orally.

The 4-hour Transportation Awareness Course has a 20-question multiple choice examination. The examination is a learning tool and not graded. The test is reviewed with the trainees at the conclusion of the course so the instructor is confident that they fully understood the materials.

Pre-Test/Post-Test

The program contracted with FOF Communications to develop a pre-test/post-test for utilization in the 48-hour HW Worker Training Course and the 8-hour HW Refresher Course. The pre-test/post-test will improve the program's ability to evaluate the effectiveness of the training program.

The development of the Pre-Test/Post-Test consists of four major tasks.

1. Develop test question database - The core of the pre-test/post-test is a database which will contain approximately 200 test questions corresponding to the major learning objectives of the 48-hour HW Worker Training Course and the 8-hour HW Refresher Course. The pre-test/post-test data base was established by having the instructors evaluate and rank questions drawn from several different HW Worker Training Course examinations. A total of 112 questions were selected by the instructors for inclusion in the database. These questions were subject to further review and evaluation by FOF and the program's industrial hygienist. Where necessary, the selected questions were modified or new questions were developed that correspond to the Learning Objectives of the DOE Curriculum.
2. Develop scan-entry answer sheets - FOF will develop a universal one-page scannable test answer sheet, which will be incorporated into the Student Tracking and Reporting System (STARS) data base. The tests will be machine scored; the results entered into the database; and the data downloaded to the program office. Program management will use the pre-test/post-test database to generate reports that will assist in the evaluation of the program.
3. Design scanner and data base program - The program has contracted with the information systems specialist who designed and implemented STARS, to develop the pre-test/post-test database. Two interrelated computer programs are required to link the test questions database and the scan-entry answer sheet. One program will enable the responses to be scanned from the answer sheets and compiled into a database. The other program will compile the questions into answer sheets and test question booklets.
4. Conduct pilot evaluation of pre-test/post-test - The program pilot-tested the pre-test/post-test in June 1998. The results of the pilot test will be evaluated to: (1) determine the effectiveness of the test booklets and answer sheets, (2) determine the reliability and validity of the test questions, and (3) compare and report on the pre and post training results among trainees participating in the pilot test.

Hands-On, Practical, and Table Top Exercises

One of the main components of the DOE Curriculum is the utilization of hands-on and table top activities to demonstrate difficult concepts to the trainees.

Confined Space Monitoring Exercise

The program's instructors attended the OSHA 500 and OSHA 510 Courses, "Safety Standards for the Construction Industry." Exercises obtained from the courses have been incorporated into the DOE Worker Training Curriculum. One such exercise is confined space monitoring, which demonstrates to trainees the need to monitor all areas of a confined space.

The exercise utilizes a combustible gas monitor, butane lighter fuel, and a five-gallon water bottle. Prior to the exercise, the instructor will place a small quantity of butane in an open bottle. The instructor tells trainees that the bottle represents a confined space, and they use a combustible gas monitor to take a reading of the gases in the top area of the bottle. (The butane will have settled in the bottom of the bottle.) After obtaining a negative reading from the combustible gas monitor, the instructor drops a lit match into the bottle. The butane ignites and a flame vents out of the top of the bottle. Appropriate precautions are taken during the exercise to ensure the safety of the instructors and trainees.

Other hands-on and tabletop exercises include air-purifying respirators, radiation monitor inspection and use, self-contained breathing apparatus, donning and doffing, monitoring with colormetric tubes, drum staging, and decontamination procedures.

Protocol for Donning and Doffing Self-Contained Breathing Apparatus and Air Purifying Respirators

FOF Communications conducted the GY96-97 Outcome Survey of the DOE HWWTP to determine the effectiveness and quality of the training. A finding of the Outcome Survey was that the hands-on and dress-out activities utilized by the program for self-contained breathing apparatus (SCBA) and air purifying respirators (APRs) were not as effective as expected with respect to trainee retention rates for donning and doffing procedures. In an effort to address this issue, the training program revised the protocol and check-list for the SCBA and APR dress-out.

FOF Communications is working with the program's industrial hygienist to: (1) revise the APR and SCBA donning/doffing check-list, (2) develop a written protocol for hands-on testing of APR and SCBA donning/doffing by trainees, and (3) produce a written report of the results of the pilot testing of the new protocol. The following is a summary of the five major steps that will be performed by FOF in developing the SCBA and APR protocol:

1. Develop a list of critical steps for tasks and sub-tasks involved in APR and SCBA donning and doffing.
2. Develop a check-list and hands-on simulation which demonstrate the critical steps of APR and SCBA donning and doffing.
3. Demonstrate the SCBA and APR donning/doffing protocol for instructors in June, 1998; where merited, FOF will revise the protocol based on instructor comments.
4. Pilot-test the SCBA and APR protocol with instructors and trainees in July 1998.
5. Analyze data and prepare a written report on the effectiveness of the new protocol.

The program demonstrated the new APR and SCBA protocol in a 4-hour session at the 1998 Instructor Development Program (IDP). The session introduced the program's instructors to the practical considerations of hands-on evaluation methods for trainee dress-out in APRs and SCBAs, and prepared them for an instructor calibration, which will be conducted in July 1998. The instructors also discussed the reasons and concepts behind the utilization of hands-on and dress-out activities.

Problems such as time, personnel requirements, subjectivity, reliability, and the methods and reasons for instructor calibration were addressed.

To demonstrate the need for instructor calibration and standardized checklists, three instructors donned and doffed APRs and SCBAs; the remaining instructors scored them utilizing the checklists. NOTE: The consultant privately requested two of the instructors to intentionally make mistakes while donning and doffing the SCBAs and APRs. The evaluations were tallied and presented to the class. The difference in ratings, the reasons(s) for the differences in the ratings, and solutions to correct the discrepancies were discussed.

The program proposes to implement the revised SCBA and APR donning/doffing protocol in the next program year (September 1, 1998 through August 31, 1999).

Training Effectiveness

In October 1998 representatives of the Hanford DOE Facility reviewed IBT's 8-hour HW Refresher course. In December, 1998, IBT received a letter from the reviewer who reported "...that there were significant changes to the Teamsters 8-hour HW Operations and Emergency Response Training...The most significant change is the incorporation of the Department of Energy Systematic Approach to Training (SAT) methodology. The HAMMER October Conduct of Training Classroom Evaluation concluded that all OSHA and DOE objectives were met...the quality of the course delivery rated very high."

The students who attended the training were required to evaluate the course. The evaluation criteria was as follows:

1. Appropriateness of the course to safety needs
2. How the course covered the topics
3. Amount of hands-on training
4. Overall satisfaction with course content
5. Knowledge, skill, experience of instructor
6. Instructor skill in making information clear
7. Depth of coverage of important topics
8. Use of audio-visual presentations
9. Quality of audio-visual presentations
10. Up-to-date materials
11. Overall satisfaction with course presentation
12. Classroom quality
13. Facility comfort and amenities
14. Appropriateness of props
15. Adequacy of PPE
16. Facility safety
17. Overall satisfaction with the HAMMER facility

The survey was distributed to 757 trainees, of which 591 trainees completed the survey. The majority of the trainees were "Very Satisfied" with the quality and effectiveness of the training.

Literacy Issues

All instructors receive training in identifying trainees who may be having difficulty comprehending course materials. If a trainee is experiencing difficulty, the instructor will verbally tutor him/her in the course materials.

The program has also revised the 8-hour HW Refresher Manual and the 48-hour HW Worker Training Manual to delete unnecessary sections and rewrite sections that were either unclear or confusing. Additional graphics were added to the manuals to assist the trainee in understanding complex concepts through visual imagery.

The program has also developed new hands-on testing protocols which will increase the emphasis placed on testing the trainees practical applications of the knowledge learned in the classroom.

3. CURRICULA UPDATES - LABORERS-AGC

All completed manuals have been sent to the National Clearinghouse under separate cover as requested by NIEHS. The following is a brief description of new courses and revisions planned for existing courses.

24-Hour Hazardous Waste Limited Access Worker

This new course is similar in content to the 45-Hour HW Operations Training, but it is structured to meet the needs of a different audience. It satisfies the training requirements of 29 CFR 1910.120 for those workers who will be on site only occasionally to perform specific, limited tasks and/or workers who are unlikely to be exposed over permissible exposure limits and published exposure levels. This course will also satisfy the training requirements for those workers who are regularly on site but work in areas that have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing.

Hazardous Waste Worker Manual

Groundwater Remediation

Feedback from instructors and student evaluations indicated a need to clarify and simplify the groundwater section of the HW Worker Manual. The revised section combines soil and groundwater information and categorizes remediation technologies into the following three groups:

- ¥ Technologies that destroy or alter contaminants
- ¥ Technologies that extract or separate the contaminants
- ¥ Technologies that immobilize the contaminants

The new section will be provided to all HW Worker instructors at the upcoming HW Worker Instructor Refreshers.

Respiratory Protection

A digital version of the respiratory protection curriculum has been created and will incorporate the revised standard (CFR 1910.134) that will be effective on October 5, 1998. All HW Worker course instructors have been provided with the changes to this section.

Toxic Trivia Computer Game

The Toxic Trivia computer game, developed for and demonstrated at the NIEHS Trainers Exchange in Los Angeles, has been requested by a number of grantees and NIEHS staff. The final review is in progress and the game's database of questions is under development. Some basic reformatting will

also make the game easier to use. Laborers-AGC expects the game to be available for both Mac and Windows environments by August 30, 1998.

Training Technologies

The following sections of the HW Worker Manual have been transferred into the Powerpoint format:

- ¥ Hazard Recognition
- ¥ Personal Protective Equipment
- ¥ Air Monitoring
- ¥ Hazard Communication
- ¥ Groundwater Remediation (under development)

Hazardous Waste Refresher Manual

Laborers-AGC in the process of revising the HW Worker Refresher manual to reflect changes made in the 80-Hour HW Worker manual last year. The major changes are as follows:

1. Section 1, Hazard Recognition, has been reorganized to include OSHA terminology.
2. The Health Effects, Workplace Monitoring, Groundwater Remediation, Material Handling, and Respiratory Protection sections are being rewritten.
3. New worker and refresher exams have been issued to sites for review, comment, and pilot testing.

3. CURRICULA UPDATES - IBT

The DOE HWWTP forwards copies of all curriculum to the National Clearinghouse. As of June 1, 1998, the National Clearinghouse has on file the following IBT curricula:

1. HW Worker Training Manual (Spanish and English)
2. 8-hour HW Refresher Manual (Spanish and English)
3. 4-hour Hazardous Materials Transportation Awareness Manual
4. 16-hour Emergency Response Manual
5. Radiological Control Worker II Manual

48 Hour Hazardous Waste Worker Training Manual and 8-Hour Hazardous Waste Refresher Manual

In GY98, the program revised the 48-hour HW Worker Training Manual and the 8-hour HW Refresher Manual. The revisions to the manuals include:

1. Changes in regulations and procedures governing the removal of hazardous waste and hazardous materials
2. Additional graphics to assist trainees in understanding complex topics
3. Clearly stated learning objectives and review questions

Further, the manual was edited to remove unnecessary text, and provide clearer written explanations of complex topics.

The format for the 8-hour HW Refresher Manual was changed to loose-leaf, rather than bound. There are 20 separate modules in the 8-hour HW Refresher Course Manual, which fulfill the requirements for refresher training as contained in 29 CFR 1910.120 (e) (8). The core modules for the 8-hour HW Refresher Course are:

1. Site Safety Personnel

2. Site Hazards
3. Personal Protective Equipment
4. Engineering Controls and Equipment
5. Medical Surveillance and Health Effects
6. Decontamination Procedures
7. Emergency Response Plans
8. Confined Space Entry Procedures
9. Spill Containment

With the revised format of the manual, instructors may select additional modules to fulfill the specific training needs of the trainees, based on their work and requirements of the remediation contractors.

Instructors are also free to add site specific materials to the manuals. These additions may include site maps; confined space regulations; examples of hazardous events that occurred on a particular site; lessons learned; and, a list of remediation contractors, DOE Sites, and/or key contacts for employment on the site.

4-Hour Hazardous Materials Transportation Awareness Manual

The program developed A Supplement to the Hazardous Materials Transportation Manual. The supplement contains materials on all relevant changes to Department of Transportation (DOT) regulations, through January 1998.

The program is developing a corresponding twenty-question examination which includes the new DOT regulations.

Radiological Control Worker II

Based on instructor comments, the industrial hygienist made the following revisions to the Radiological Control Worker II Manual:

1. Added an explanation of annual limit of intake (ALI)
2. Added an explanation of derived air concentrate (DAC)
3. Added the DOE Consolidated Learning Objectives
4. Corrected typographical and formatting errors

Lead Abatement Course and Asbestos Abatement Course

The program has contracted with the Alice Hamilton Occupational Health Center (AHOHC) to develop a 32-hour Lead Abatement Course and a 32-hour Asbestos Abatement Course. AHOHC will utilize the "EPA Model Asbestos Worker Training Manual" and the "Residential Lead-Based Paint Abatement Manual" as a base for the IBT's curriculum. AHOHC developed this curriculum for the Environmental Protection Agency (EPA), and it is nationally recognized as the model curriculum for Lead and Asbestos Abatement Courses. They have received approval of the Asbestos Abatement Curriculum in 15 states; and, approval for the Lead Abatement Curriculum in seven states. AHOHC, with the assistance of IBT Program Staff, will tailor the existing curriculum so it is appropriate to the types of jobs Teamsters and affiliated crafts would actually perform on a lead abatement or asbestos abatement job.

The Lead Abatement Course will comply with the requirements of the OSHA Lead Standard for the Construction Industry (29 CFR 1926.62), and the requirements of the Department of Energy (DOE) Order 440.1, "Worker Protection Management for DOE Federal and Contract Employees."

The 32-hour Lead Abatement Course will comply with the requirements of the OSHA Asbestos Standard for the Construction Industry (29. CFR 1926.1101), and the Department of Energy Order 440.1, "Worker Protection Management for DOE Federal and Contractor Employees."

The Alice Hamilton Occupational Health Center will:

1. Conduct a follow-up to the IBT's needs assessment to ensure the curriculum is appropriate to the type of work Teamsters and affiliated crafts would actually perform on a lead abatement and/or asbestos abatement job.
2. Develop student manuals, lesson plans, and tests for the Lead Abatement and Asbestos Abatement Courses.
3. Develop appropriate hands-on and dress-out activities for the courses.
4. Assist in planning, developing, and teaching a Train-the-Trainer Program which is scheduled for August 1998.
5. assist program management in selecting and purchasing training equipment and supplies that are appropriate to the courses.
6. Assist the program in developing simulated lead and asbestos abatement sites, which will be utilized in the hands-on and dress-out portions of the course.
7. Obtain certification of the Lead and Asbestos Curriculum in two states.

Respiratory Training Course

Trainees who participate in the 48-hour HW Worker Training Course receive Respiratory Protection Training. However, it became apparent to Hanford DOE that many site workers only wore respiratory protection intermittently. Consequently, the workers forgot the proper procedures for donning and doffing an APR and/or SCBA, and were wearing them in an unsafe manner. Further, the 8-hour HW Refresher course does not provide workers with adequate "refresher" training on donning and doffing an APR or SCBA.

In an effort to maintain and/or upgrade the workers knowledge of Respiratory Protection, the Hanford DOE Site initiated the development of a Minimum Criteria Document for Respiratory Training, and spearheaded the development of an 8-hour Respiratory Protection Course. During GY98, the IBT's DOE HWWTP, in cooperation with other grantees, participated in: (1) the development of a Minimum Criteria Document for Respiratory Protection Training, and (2) the development of a Respiratory Protection Refresher Course for the Hanford DOE Site.

The program plans to adapt the Respiratory Protection Course to other DOE sites during Program Year 99.

4. ADVISORY BOARD ACTIVITIES - LABORERS-AGC

The eight current members of the Advisory Board are:

- ¥ John Finklea, MD, Chairman of the Advisory Board Center for Disease Control
- ¥ Chuck Barnes, Vice President and Northwest Regional Manager, Laborers' International Union of North America (LIUNA), Seattle, WA
- ¥ Glenn Paulson, Ph.D., Consultant, Chicago, IL
- ¥ John LeConche, Administrator, New England Laborers' Training Academy
- ¥ John E. Gibbons, Consultant, El Granada, CA

- ¥ Brian McQuade, Executive Director
Laborers' National Health and Safety Fund of North America
- ¥ Stuart T. Allen, Consultant, Clean Sites, Inc.

¥ Christopher P. Engquist, Executive Director, Laborers-Employers Cooperation and Education Trust
¥ James M. Warren, Executive Director
Laborers-AGC Education and Training Fund

The HW/DOE Advisory Board is a group of highly qualified individuals with the educational requirements and experience to offer advice and consultation to the EPA and DOE HWWTP and the MWTP. Their involvement enhances the quality of the training programs and enables Laborers-AGC staff to quickly reach sources of information that may otherwise be unavailable or inaccessible.

During the 1997/98 program year, Laborers-AGC's HW Advisory Board held one meeting on May 7 and 8, 1998.

May 7-8, 1998 Advisory Board Meeting

The May 1998 meeting of the Laborers-AGC Advisory Board was held at the National Airport Hilton Crystal City in Arlington, Virginia. Items discussed at the Advisory Board meeting included:

1. Laborers-AGC's year-end reports for the 1997/98 EPA and DOE HWWTPs and the MWTP. A similar update was provided by the International Brotherhood of Teamsters.
2. Laborers-AGC's new Director Development Program.
3. Minority worker training and brownfields.
4. Laborers-AGC TRAC database and the HW Waste Refresher database.
5. Training evaluations-instructor and course evaluations
6. DOE audit for Oak Ridge, Savannah River, Rocky Flats, and Hanford
7. Spirometers
8. HW Worker and Refresher cards and job tracking
9. UXO training
10. Naval ship scrapping

Some of the topics that received more attention are briefly discussed below.

During the current program year, Laborers-AGC initiated a new training program, the Director Development Program. The program is designed to provide professional training to training fund directors and administrators by providing short management courses. In addition to courses, discussion groups are held on issues relevant to training programs. The directors also participate in team building exercises. Feedback from one participant's survey was very positive.

A discussion on the growth of minority worker programs presented some new opportunities for Laborers-AGC affiliated training funds. Laborers-AGC is currently involved in two MWTPs funded by EPA through NIEHS. They are currently located at the Cuyahoga Community College in Ohio and in San Francisco. Next year, only the San Francisco training program will continue. Laborers-AGC will be adding training programs in New Haven, Connecticut and in Philadelphia, Pennsylvania. Finally, Laborers-AGC is looking into the possibility of working on the Brownfields Showcase Communities by providing the needed training for local involvement in the clean-up and building process.

A presentation on the two new databases resulted in a discussion on various ways to obtain information on jobs. Means to track workers to ascertain their involvement in environmental remediation work are, at best, time intensive, and at worst, impossible. Currently Laborers-AGC is obtaining trainee information from HW Worker course applications and employment information during refresher classes. For a limited number of DOE sites, Laborers-AGC has worked with the training funds and the LIUNA locals to get specific job information on individuals trained in the 1995/96 program year. A discussion on "smart cards" ensued. A smart card looks and works much like a credit card. Information on the individual's training and work experience would be stored on an integrated

microprocessor chip located within the card. This information could then be accessible to the Locals to match job requirements with training.

The Advisory Board reviewed the new instructor and course evaluations. At their suggestion, these evaluations will be pilot tested before they are finalized as computer scannable forms. This pilot is being conducted throughout the summer at the Oak Ridge, TN; Savannah River, GA; Pomfret Center, CT; and Kingston, WA training centers, as well as with the Iowa Mobile Units.

The Advisory Board also discussed new training and job opportunities in unexploded ordnance (UXO) and naval ship scrapping. As DOD sites come through the remediation pipeline, expertise in identifying and removing any unexploded ordnance becomes critical to ensuring the safety of workers and the community. As of now, there are too few sweepers (people who identify the location of the UXO) and technicians (those who identify the type of ordnance and determine how it is to be removed or destroyed) available to address the need. LIUNA has added UXO worker representation within the North Florida Employees Local 630. Laborers-AGC will work with this local to develop UXO curriculum for sweepers and to identify and train a small work force to meet the new demand for UXO trained workers at DOD facilities.

John Gibbons gave a brief presentation on naval ship scrapping. Efforts to dismantle old Navy ships have resulted in a controversy over how to handle the hazardous waste from the ships and as a byproduct of the scrapping efforts. Accusations of sending hazardous waste to foreign countries stopped clean-up and recycling activities by overseas companies. The issue is now before Congress and will likely put the ship scrapping in with other hazardous waste remediation projects. The Board decided to follow the issue and to consider what training would be needed for workers engaged in ship scrapping.

4. ADVISORY BOARD ACTIVITIES - IBT

On May 19, 1998, the International Brotherhood of Teamsters conducted the annual EPA and DOE HWWTPs Advisory Board Meeting. The following individuals attended the Advisory Board Meeting:

Members of the Advisory Board

- ¥ Dr. Donald Dawson, Chairman
- ¥ Dr. Murray Cohen, President, Consultants in Disease and Injury Control

Invited Guests

- ¥ Mr. Larry McDonald, Director, IBT Building and Construction Trades Division
- ¥ Mr. Bill Diltz, Director, IBT Education Department
- ¥ Dr. Deborah Wilson, Chief, Occupational Safety and Health Branch, National Institute of Health
- ¥ Mr. Charlie Barrett, Industrial Hygienist, Occupational Health Foundation
- ¥ Mr. Dave Mallino, Connerton and Ray
- ¥ Mr. Larry Spriggs, Soft-Con Enterprises
- ¥ Mr. Steven Lelewar, Principal Scientist, Bechtel-Nevada
- ¥ Dr. Jack Finklea, Chairman, Laborers-AGC Advisory Board

Training Center Staff

- ¥ Mr. Steve Smith, Lead Instructor, N. California Teamsters Training Center
- ¥ Mr. Troy Ohlhausen, Instructor, N. California Teamsters Training Center

Program Staff

- ¥ Mr. LaMont Byrd, Director, Safety and Health Department
- ¥ Ms. Chee Chang, Program Manager, NIEHS HWWTP
- ¥ Ms. Melissa Bakula, EPA Assistant Program Manager, NIEHS HWWTP
- ¥ Mr. Geoffrey Quinn, DOE Field Coordinator, NIEHS HWWTP
- ¥ Mr. Terry Bumpers, Marketing Manager, NIEHS HWWTP

Mr. William Bergfeld, Director-Programs, Laborers-AGC and Mr. Ken Allen, National Field Coordinator, Laborers-AGC, were invited to the Advisory Board Meeting. However, due to scheduling conflicts, they were unable to attend.

Presentations were given on the accomplishments of the EPA and DOE HWWTPs in the 1997-1998 Program Year, the future of the Superfund, the results of the site audit conducted by the Occupational Health Foundation, outreach activities and trainee tracking; curriculum development; instructor development, presentation enhancement; training equipment, the STARS data base, the Marketing Data base, the Teamsters National Training Committee, and Instructor Development Programs (IDP).

The Advisory Committee recommended that:

1. The program develop a medical monitoring protocol to determine the long-term health effects of employment on a hazardous waste site.
2. The program develops and implements a coordinated marketing plan, emphasizing the insurance benefits contractors will receive if their workforce has participated in the EPA and DOE HWWTP.

5. TRAINEE FOLLOW-UP - LABORERS-AGC

Trainee Tracking-TRAC (Training Records and Classes) Data Base

For the 1997/1998 program year, Laborers-AGC requested raw data directly from the sites and entered all of the training data into an Excel spreadsheet, as was done last year. This helps ensure the consistency and accuracy of the data for the 1997/98 program year. Laborers-AGC inputs data from the trainee applications, including information required by NIEHS. However, the training spreadsheets are a temporary option for summarizing annual training data. In following years, training information will be stored on the new Laborers-AGC TRAC database.

All Laborers-AGC affiliated training funds will be connected to a network that will allow them to input information (such as grant-funded training) and to retrieve information (such as summaries of new training technologies that are being tested at other training facilities). The TRAC data base will include information gathered from trainees when they attend courses at Laborers-AGC affiliated training funds. When a Laborer takes a course, the training fund will input personal information into the database. Courses taken at a later date will be entered simply by pulling up the worker's existing record and adding new class information.

There are several advantages to using an organization wide database. One obvious advantage is that Laborers-AGC and the training funds can get up-to-date information about classes conducted under the NIEHS programs. In addition, Laborers-AGC, the training funds, and local business managers will be able to identify workers with the necessary qualifications for specific jobs. When trainees attend their annual HW Refresher, they will be asked to provide employment data, including job type, contractor, job location, and duration of their job.

Training funds may also input data that is relevant to their operation but not required by Laborers-AGC. This private information can be locked out from all other data base users. For example, a training fund may keep its apprenticeship information on the database, including training records and pay rates. This

can be locked so that no one else can access it. Some of the information in the database will be secured so that only specified people can modify the data.

Currently, Laborers-AGC is conducting TRAC data base workshops to train administrative personnel from each training facility. After all sites have at least one staff member trained on the new data base, historical training information will be incorporated into TRAC, then new information will be entered directly. There will be an overlap with the old spreadsheet and the new TRAC to ensure a smooth transition and to maintain a back-up system if there is a problem with TRAC. Through the Laborers-AGC network, sites will be able to access non-confidential information from Laborers-AGC and other training facilities. All NIEHS participating sites should be on the network and running TRAC by September 1998, for use in the new program year. Remaining sites, (many of which conduct HW Refresher courses) will be operational by the end of December 1998.

Secretaries and bookkeepers from the DOE HWWTP sites will have the opportunity to use TRAC before they attend the secretaries/bookkeepers meeting in early August. At the meeting, training fund staff will review the data base capabilities and discuss problems that they may have encountered during June and July

Hazardous Waste Refresher Data Base

Information from the new HW Refresher applications is currently being entered into a small database, separate from TRAC, so that job/employment entries can be summarized for reporting purposes. When the larger, organization-wide TRAC database is operating smoothly, the refresher data will be incorporated into it. Although the use of refresher participants to obtain data yields valuable and current employment data, a significant number of workers will be missed. Some may have taken their refresher course with another provider, or may not have recently been on an environmental remediation job and have let their certification expire.

Although the refresher database is still under development, some information is available. A total of 2,563 records (trainees) have been entered. These represent most of the trainees that took the HW Refresher during the 1997/98 program year. However, there are several sites that started to use the refresher application later than expected, and some sites where different versions of refresher applications are still in use. Laborers-AGC has contacted all sites regarding the importance of using the new refresher application and will reiterate this information at the HW Instructor Refresher courses that will take place this summer.

Refresher trainees reported a total of 3,560 jobs. Note that because most trainees have worked on several jobs since they took the HW Worker course, there are more jobs than trainees. At present, DOE and EPA HWWTP trained workers are both entered into the data base and are identified as to which grant program they have been trained under. Although this information is recorded, Laborers-AGC has more work to do on the database before we can get separate reports on DOE training.

Of the 3,560 jobs reported, 1,853 (52%) have been categorized as environmental. However, two of the job categories, Supervisor/Professional and Other Craft are primarily, if not exclusively, made up of environmental jobs. Supervisors often mention incidents that identify their work as environmental, and most of the workers that Laborers-AGC trains from other building crafts are being trained for a specific environmental job and require training immediately. Therefore, a more accurate enumeration of environmental jobs listed by refresher trainees would be 2,028 or 79%.

Similarly, many of the jobs listed as General Laborer could be on a hazardous waste site. Even though a job is listed as general laborer, cleanup, pipeline, confined space, excavation, etc., it does not necessarily mean that the job is not an environmental remediation job. For example, several trainees at a refresher course in Idaho listed their job as Laborer. Yet these people were working at the Bunker

Hill (hazardous waste) site in Smeltonville, ID for the Morrison Construction Co. Therefore, the number of environmental jobs is most likely underestimated.

The following table presents jobs listed by type.

TABLE 5
JOBS LISTED BY TYPE

Group	Category	Work Type	# of Jobs
Environmental	Environ. Laborer	Asbestos	566
Environmental	Environ. Laborer	Haz. Waste	1,021
Environmental	Abatement	Lead	157
Environmental	Radiation Worker	Rad. Worker	109
Super/Professional	Supervisor/Professional	Sup./Pro.	139
Other Union	Other Craft	Other Craft	36
General Laborer	General Laborer	Laborer	1,513
Other Jobs	Other	Other	19
TOTAL			3560

Of all the jobs specifically categorized as environmental, the following percentages of work type are:

¥	Hazardous waste	55% of Environmental Jobs
¥	Asbestos abatement	31% of Environmental Jobs
¥	Lead abatement	8% of Environmental Jobs
¥	Radiation worker	6% of Environmental Jobs

Demand for Trainees, Placement, and Feedback

Cooperation Trust Tracking System (CCTS)

Laborers-AGC, LECET, and Laborers-AGC's national field coordinator continue to review the demand for certified hazardous waste remediation laborers. Information on environmental jobs that have been bid, the location and low bidder for the job, the value of the job, and whether the job is union or non-union are included into the Cooperation Trust Tracking System. This information provides an indication of how many people are working on large environmental remediation jobs throughout the country.

By cross-referencing the environmental jobs included in the CCTS with a listing of Superfund sites, Laborers-AGC was able to estimate the number of Superfund sites requiring trained laborers and the number of laborers needed. This information is extrapolated from the dollar amount expended on the site. (Note that most DOE sites are included within the Superfund National Priorities List of hazardous waste sites.)

During the 1998 program year, approximately \$965 million was expended to signatory union contractors working on the final National Priorities List (NPL) (Superfund) projects. Total dollar amounts for contracts are not usually expended in the year that they are awarded. Expenditures for these clean-up contracts may be spent over several years. These Superfund projects employed 5,795 craft workers. Trained Laborers made up 50% of that work force or 2,895 laborers.

Dollar amounts on Superfund projects are generally multi-year projects, and the Laborers-AGC tracking reflects that. For example, a \$1.2 billion award was given to Foster Wheeler Environmental Corporation for the environmental remediation of the Rocky Mountain Arsenal near Denver, Colorado in December of 1997. Our tracking reflects only \$30 million in program year 1998 for this project.

However, we expect \$100 million per year will be expended over the next 12 years and our tracking system will show the subcontractor award that is actually expended on this project. Conversely over \$2 billion was awarded from 1995 to 1997 on total environmental restoration contracts (TERC) and remedial action contracts (RAC). A portion of that money was expended in fiscal year 1998, creating a need for training environmental workers that would be employed on these sites. At this time, we are only capable of matching final NPL sites with our CCTS tracking system. We are not tracking CERCLA, RCRA, Brownfields, or state lead sites. We are working with Ruth Ruttenburg and Associates and others to improve our tracking ability.

5. TRAINEE-FOLLOW UP - IBT

Trainee Employment

The following is a summary of trainees who participated in the DOE HWWTP, and as a result of the training have acquired employment on DOE sites.

Central/Southern Region Training Center

During the 1997-1998 Program Year, the Central/Southern Region Training Center provided DOE Worker Training in the Southern, Central, and Mid-Western United States. Table 6 contains a summary of trainees who, as a result of their training, were employed on DOE Sites.

TABLE 6
TRAINEES EMPLOYED ON DOE SITES

DOE SITE NUMBER OF TRAINEES EMPLOYED ON SITE Paducah Gaseous Diffusion Plant 53 Savannah River Site 89 Times Beach 30 Weldon Springs 92 TOTAL: 264

Northern California Training Center

During the 1997-1998 Program Year, the Northern California Training Center provided DOE worker training in the Pacific Northwest and Western United States. Table 7 contains a summary of trainees who, as a result of their training, were employed on DOE sites.

TABLE 7
TRAINEES EMPLOYED ON DOE SITES

DOE SITE NUMBER OF TRAINEES EMPLOYED ON THE SITE INEEL 32 Monticello Mill Tailings Site 30 Hanford DOE 206 Fort Hall Public Works 10 Lawrence Livermore Labs 16 TOTAL: 294

Student Tracking and Reporting System (STARS) Database the program has completed the final phase of the development and implementation of the Student Tracking and Reporting System (STARS) data base. The main database for STARS has been installed at the program office. a training center specific database, which partially replicates the database resident in the program office, has been installed at the four training centers. Both the program office and training center personnel have received training on STARS. The synchronization and downloading capabilities of STARS are fully functional, which permits the program office to download trainee data directly from the training centers databases.

Marketing Data Base

Soft-Con Enterprises has begun the development of a marketing database utilizing the MapInfo Geographic Development Application. The information systems specialist has met with the IBT's Building Material and Construction Trade Division and the DOE field coordinator to discuss the requirements of the database. In addition, he has also met with Mr. Ken Allen, national field coordinator

for Laborers-AGC, to review and evaluate their data base to determine which elements may be incorporated into the IBT's marketing database.

The marketing database will contain:

1. The names and locations of remediation contractors
2. Types of contaminants found on a particular hazardous waste or Superfund site
3. Total costs of the remediation projects
4. The percentage of workers on a remediation project that will be involved in the transportation of hazardous materials and hazardous waste
5. The core skills required of the workers on the remediation sites

The marketing database will interface with the existing STARS trainee database to generate rosters of qualified workers who reside within a one hundred mile radius of a particular site. The field coordinator and marketing manager will use these lists to establish training schedules, and facilitate the employment of the program's trainees on DOE sites.

6. INSTRUCTOR SUPPORT - LABORERS-AGC

Train-the-Trainers

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

Under the 1997/98 NIEHS program year, Laborers-AGC conducted one HW New Instructor Train-the-Trainer. Seventeen instructors attended the course, including seven IBT instructors. In August, Laborers-AGC will conduct a Radiological Worker II Train-the-Trainer and the annual Radiological Worker II Instructor Refresher in August 1998.

In addition to the train-the-trainers listed above, Laborers-AGC will conduct four regional HW Instructor Refresher courses. At these sessions, instructors will learn techniques for initiating group discussions on site incidents that required the HW training. Instructors will learn how to keep the comments focused, obtain complete and reliable examples, get workers to clearly identify the problem and discuss possible actions that could be taken in a similar situation.

These discussion sessions will be incorporated into the HW Worker Refresher course. In addition to helping trainees learn to identify and resolve problem situations, the exercise will also provide excellent information on the effectiveness of the training provided by Laborers-AGC. The HW Instructor Refresher courses will be held in July and August, 1998. Instructors will be asked to use the activity and related form (the second page of the Refresher course application) in all of their HW Worker Refresher courses beginning September 1, 1998.

Table 8 lists the course, number of participants, course length, and contact hours for the instructor courses listed above.

TABLE 8
INSTRUCTOR PRESENTATIONS

Course/Start Date	# of Participants	Course Length	Contact Hours
HAZ.I (11/17/97)	10	40 hours	400

RAD.I (8/23/98)	7*	40 hours	280	*
RAD.IR (8/29/98)	11*	32 hours	352	*
TOTALS	36		1,032	

*Projected

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. In addition, course laboratories are scheduled for evenings and must be attended by those taking the course. Evening workshops are also offered. Some are required and some are optional.

This year's IDP was held from June 6-12, 1998, at the DoubleTree Conference Center, St. Louis, MO. A total of 56 courses were offered in either 4- or 8-hour modules. Courses are varied, ranging from Dealing with Alcohol and Drugs in the Workplace to Identifying and Dealing with Learning Disabilities, and Planning Information and Skill Lessons. All EPA and DOE HWWTP instructors must attend this training or he/she will not be recertified to teach.

This year, as in the past, instructors from the IBT attended the IDP. Thirty Teamsters attended a variety of courses that Laborers-AGC and IBT identified as appropriate for both organizations. Approximately 20 DOE training program instructors attended the IDP.

Related Instructional Activities

In October 1997, Laborers-AGC held its first Directors Development Program (DDP). The DDP was designed to provide learning opportunities for training fund directors and administrators. Information on the DDP is provided in Appendix 27. The directors' courses were shorter than the IDP courses and geared toward managerial and professional development. Courses were a combination of formal instruction, hands-on activities, case work, and discussions. Directors were encouraged to bring materials and experiences that could be used directly in the training sessions. The main idea was to have interactive instruction rather than presentations from university professors or consultants. Courses offered are:

- ¥ Listening and Responding
- ¥ Offering Effective Presentations
- ¥ Recruitment, Retention, Marketing, and Media Relations
- ¥ Data Base Management
- ¥ Budgets and Financial Management

The DDP was very successful and the participants support making the program an annual event.

Laborers-AGC also realizes that the training funds can not operate smoothly without the work that is conducted by secretaries and bookkeepers. Each year Laborers-AGC holds a Secretaries/Bookkeepers meeting for the NIEHS HWWTP and DOE training sites. Like the DDP, the Secretaries and Bookkeepers 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. All policies, including financial, operational, and reporting, are reviewed and

discussed at the meeting. At the October 1997 meeting, the secretaries and bookkeepers had the opportunity to learn and try the new computer database. They also heard a presentation on the development and growth of Laborers-AGC. The next Secretaries/Bookkeepers meeting will be in August 1998.

6. INSTRUCTOR SUPPORT - IBT

Joint Venture Instructor Development

On June 6-12, 1998, IBT and Laborers-AGC instructors attended the annual Instructor Development (IDP) Program in St. Louis, Missouri. IBT instructors participated in courses with instructors from Laborers-AGC.

On June 7, 1998, IBT instructors participated in a workshop on "Protocols for APR and SCBA Dress-Out." The industrial hygienist and a consultant from FOF Communications presented the revised protocol and checklists for APR and SCBA dress-out to the instructors for review and evaluation.

Training Directors/Bookkeepers

In conjunction with the IDP, the program held the annual Training Directors and Bookkeepers/Secretaries Meeting on June 6, 1998. The program manager and the director of the Safety and Health Department met with the training directors and their representatives to discuss training accomplishments, outreach activities, and trainee tracking, as well as to establish training plans for the upcoming program year. (Exhibit 5 provides materials from the meeting.)

The program's administrative and grants management staff met with the Bookkeepers/Secretaries and Instructors to update them on revisions to the Administrative Procedures Manual, financial reporting requirements, and the trainee data base.

Mr. Larry Spriggs, Soft-Con Enterprises gave a presentation on STARS and the Marketing databases. Mr. Rod Wolford, FOF Communications, gave a presentation on the pre-test/post-test.

Radiological Control Worker II Instructor Refresher

To maintain their Radiological Control Worker II certification, the program's instructors participated in a Radiological Control Worker II Course sponsored by the U.S. Department of Energy, Lawrence Livermore National Laboratory (LLNL). The course was held from May 5 to May 7, 1998 and consisted of: (1) classroom lecture, (2) hands-on and dress-out activities, and (3) site visits to the NOVA Laser Fusion Facility and the construction site for the National Ignition Facility.

In order to successfully complete the course, the DOE required the program's instructors to develop and give presentations on assigned topics in the Radiological Control Worker II Manual.

The Radiological Control Worker II course refreshed the instructors on the following topics:

1. Rad Worker II curriculum (radionuclides, background radiation, health effects, radiation and contamination controls, PPE, dose limits, and radiation area posting)
2. DOE regulations
3. Lessons learned
4. Dress-out procedures and hands-on activities
5. Teaching techniques for the classroom
6. Rad Worker II computer based training
7. Hands-on activities

8. Radiation monitoring equipment
9. Testing procedures

During the course, a representative of DOE/LLNL conducted a workshop on monitoring equipment. The monitors utilized by Lawrence Livermore National Laboratory, as well as by the Teamsters DOE HWWTP, were demonstrated. After the review of the monitoring equipment, instructors participated in a hands-on activity at a simulated LLNL lab which required them to properly use:

1. Monitors to detect simulated hazards
2. A glove box to dispose of contaminated gloves
3. A step off pad to control contamination

All instructors successfully completed the course and received their Radiation Control Worker II certifications.

DOE Instructor Development

The program has scheduled a DOE Instructor Development Program for July 27, 1998 through August 1, 1998, at the Nevada Test Site and Teamsters Local Union 631 (Las Vegas, Nevada). The two main components of the IDP will be: (1) site visits, and »2) pilot testing of the APR and SCBA Protocol.

The instructors will participate in a site visit to the Nevada Test Site, the Nevada Test Site Hazardous Materials Spills Center, and Yucca Mountain. Employees of DOE and Bechtel/Nevada will give the instructors guided tours of the sites.

Mr. Rod Wolford, FOF Communications, Bruce Millies, industrial hygienist, and the program's instructors will pilot test the protocol for APR and SCBA Dress-out. Using the revised APR and SCBA protocol, the program's instructors will dress-out and evaluate members of Teamsters Local Union 631 as they don and doff SCBAs and/or APRs. The effectiveness of the protocol will be evaluated by Mr. Wolford, and where merited the protocol will be revised to reflect instructor comments and suggestions.

Quality Assurance/Quality Control

To ensure that the quality and consistency of the training program are maintained, the program:

1. Requests trainees to evaluate the course curriculum, instructor ability, hands-on activities, training resources, and equipment.
2. Contracts with the Occupational Health Foundation to conduct a site audit of one Training Center.
3. Uses instructor feedback to evaluate the effectiveness of the existing program and to pilot-test new curriculum and/or training activities.

Trainees are asked to complete a course and instructor evaluation at the conclusion of each course. These evaluation forms are forwarded to the program office where they are reviewed by program management. If a deficiency in a particular training center is noted, a plan to correct it will be developed and implemented by the program staff. In some cases, the industrial hygienist will visit a training center to work with the instructors in a subject area where they may be having difficulty.

An industrial hygienist from the Occupational Health Foundation will conduct a site audit of a training center. The consultant will utilize the audit instrument that is based on the NIEHS Minimum Criteria Document. The industrial hygienist will review and evaluate instructor ability; use of training resources; and dress-out activities and procedures. The industrial hygienist will issue a written report of his/her findings, and changes may be made to the program to reflect the industrial hygienist's findings.

Site Audit of the Central/Southern Region Training

An industrial hygienist from the Occupational Health Foundation audited a 48-hour HW Worker Training course taught by the instructors from the Central/Southern Region Training Center. The audit was conducted from February 25 to February 27, 1998.

The strengths of the program, as noted in the auditor's report are as follows:

1. The classroom facilities were good.
2. The instructors were knowledgeable about the course materials.
3. The instructors divided the modules between themselves, and gave each other support.
4. At the beginning of each day of class, the instructors reviewed the previous day's material.
5. There was good interaction between the trainees and the instructors.
6. The instructors utilized a laptop computer with Powerpoint, a VCR, and an overhead projector to present training resources.
7. An adequate amount of training equipment was available for demonstration purposes and for use in the dress-out activities.

During the dress-out activities the auditor noted:

1. The instructors placed a strong emphasis on teamwork among the trainees.
2. The instructors emphasized to the trainees the importance of being aware at all times of their partner's location and physical condition.
3. The instructors emphasized that while working on a hazardous waste site, the trainees must be aware of the conditions around them, and know how and when to safely evacuate a contaminated zone.
4. The instructors monitored and recorded the trainees pulse rates when they engaged in dress-out activities; those trainees who had an elevated pulse rate did not dress-out in the next level of PPE.
5. The instructors required trainees to take their own pulse rates after they completed the personal protective equipment activity.

The Site Audit Report contained two recommendations to improve the overall training program. The auditor noted that it was difficult to simulate a hazardous waste site in a parking lot. He suggested that the instructors contact the local fire academy, or other such organization, and arrange to utilize their outdoor activity areas for dress-out.

Secondly, the auditor noted that the program does not utilize an occupational safety and health professional to screen and monitor the trainees during dress-out activities. He suggested that the program contract with an Occupational Health Clinic to provide a nurse or physician to monitor the trainees during dress-out activities. (See Appendix 21 for a copy of the Audit Report.)

To ensure the safety of trainees, the program requires that all trainees submit proof of a recent DOT Physical Examination, prior to registering for the HW Worker Training Course. If a trainee does not possess valid proof of a recent physical examination, he/she will not be permitted to participate in the course.

Hanford Site Audit

The Hanford/Hammer DOE Site, in conjunction with Fluor-Daniel, conducts routine audits of the training courses provided by the IBT for workers on the Hanford DOE Site. On May 14, 1998 the IBT received a letter from Mr. Bill G. Robinson, Conduct of Training, HAMMER, which evaluated the quality of the 8-hour HW Refresher Course.

Mr. Robinson's letter addressed recent changes made to the curriculum of the 8-hour HW Refresher Course. "...The most significant change is the addition of craft-specific hands-on training that was recently added. The HAMMER "May Conduct of Training Classroom Evaluation" focused on the addition of the craft-specific, hands-on training....the evaluation concluded that the exercise was well thought out, supported several of the course learning objectives, and aided to the overall learning environment for the workers. The Student Evaluations from the month of May showed the addition of hands-on training to be a great success." (A copy of the Hanford Hammer letter is provided in Appendix 15.)

Financial Tracking Data Base

In GY98 the program contracted with Technical Engineering and Applications Management, Inc. (TEAM) to develop a Financial Tracking database. The database was completed in April, 1998, and is utilized by the grants management staff to track federal funds.

The Financial Tracking database has the capabilities to:

1. Track training center expenditures by personnel costs, student fees, mobile unit expenses, instructor travel, and miscellaneous.
2. Track program budgets.
3. Provide a mechanism to manage cash flow and expenditures by creating, formatting, and printing separate obligation and expenditure reports for the DOE Program, the HWWTP, and the EPA No-Cost Extension Fund.
4. Maintain a log of invoices received by the program office.

In May, 1998, TEAM began work to expand the existing Financial Tracking database to include a Vendor File Tracking System. The Vendor File Tracking System will assist the grants management staff in tracking the status of all requisitions, purchase orders, and invoices through the payment process. (See Exhibit 6 for materials regarding the functions and capabilities of the Financial Tracking data base.)

7. SUMMARY OF RELATED INFORMATION/ACTIVITIES-LABORERS-AGC

Staff

The principal investigator for the EPA, DOE, and MWTP HWWTP is James M. Warren, who has participated in the HWWTP since its inception. William Bergfeld continues to be involved as Laborers-AGC's Director-Programs. Gene Gasbarro, Director of Administration of Laborers-AGC, provides administrative oversight on how the NIEHS programs relate to the organization as a whole.

Other key Laborers-AGC staff contributing to the program are Cynthia Herleikson, Administrative Manager; Donna McDaniel, Program Coordinator; Michael Glassic, Program Coordinator; Gary Gustafson, Program Specialist; Joshua Kapelner, Financial Manager; and Ken Allen, National Field Coordinator. Appendix 22 provides a list of the staff who participate in the NIEHS programs along with their job descriptions.

New Training Technologies

Over the past few years, Laborers-AGC investigated various computer-based technologies for use in the classroom. Some of the options currently being considered and/or being pilot tested include:

- ¥ Offering the classroom portions of refresher courses by computer so that trainee recertification can be expedited if the worker is unable to attend a scheduled refresher course.
- ¥ Providing computer scannable forms for evaluations and exams.

- ¥ Developing trainee review sections and short quizzes for student use after classroom sessions end for the day.
- ¥ Developing Powerpoint presentations for all sections of the HW Worker course.
- ¥ Consolidating each trainee's training and certification record on a computerized "smart card" for easy job placement.
- ¥ Networking training fund computers within their own site and with Laborers-AGC and other training funds.

Currently, the Northwest Laborers-Employers Training Trust Fund has a computerized Radiological Worker II Refresher course. This enables trainees to review information at their own pace. Other computerized activities are under development and/or being pilot tested, including computerized evaluation forms and Powerpoint presentations. In addition, Laborers-AGC will be providing every site under the HWWTP with an LCD projector, multimedia computer, presentation software, and multimedia authoring tools to facilitate the change to Powerpoint.

Finally, Laborers-AGC is developing a proposal for the South Central Laborers Training and Apprenticeship Fund located in Livonia, LA. This training fund has been the beneficiary of a gift of 20 computers. With these computers, Laborers-AGC recommends the creation of a computer network, development of data tracking and reporting capabilities, and creation of customized training modules. The success of this project will help determine which technologies should be available to all the HWWTP training sites.

Subgrantees and Consultants

Laborers-AGC has in place written and signed inter-organizational agreements that require compliance with all federal regulations and policies for all the following subgrantees: the Laborers' Health and Safety Fund of North America (LHSFNA), Clean Sites, Inc. (CSI), Connerton and Ray, and Dr. Eric Rice.

Laborers' Health and Safety Fund of North America (LHSFNA)

The LHSFNA trains and monitors medical professionals who are hired by the training facilities to conduct pretraining medical screening and to present the health effects portion of the HW Worker course. Medical professionals are checked for quality assurance purposes on a continuing basis by LHSFNA's certified occupational health nurse. These evaluations were discussed in the Training Effectiveness Section of this report.

The LHSFNA also helps develop curriculum, conducts research, teaches instructors, and coordinates the annual Medical Professionals Conference. The LHSFNA report is provided as Appendix 8.

During the 1997/98 program year, the LHSFNA developed several courses or course material that can be used during the HW Worker course, or in some cases, as a stand-alone short course. LHSFNA developed a Hearing Conservation course that is being pilot tested at the Oak Ridge training facility. This course is expected to be available by the end of August.

The LHSFNA is also developing a HW Characterization course that deals with the various types of waste and how to safely sample and handle them. This course is also slated to be available in August.

LHSFNA staff also participated as master trainers at the Instructor Development Program. They taught Respirator Selection and Respirator Fit Testing courses.

Due to scheduling difficulties, the 1997 Medical Professionals Conference was held in October 1997. Some agenda items were:

- ¥ Demonstration and training on Burdick spirometers

- ¥ Presentation of the back injury prevention program
- ¥ Instructional skills presentation

The 1998 Medical Professionals Conference will be held this August in Miami. Tentative agenda items include:

- ¥ Workplace accidents at hazardous waste sites
- ¥ Spirometry clinic
- ¥ Demonstration of a portion of the Health Effects section of the HW Worker course
- ¥ Reports from medical professional volunteer committees

This year, a new spirometer was tested to see if it met the needs of medical professionals at training sites. The Burdick spirometer was selected as equipment that will be provided to all training sites. New spirometers were needed to replace old unreliable machines and to simplify pulmonary testing and test interpretation. All sites should now have a Burdick spirometer for use in conducting medical screening.

The LHSFNA develops and monitors the medical clearance protocol used by medical professionals who conduct screening for HW Worker training. Periodically, these protocols are reviewed to reflect changes in the NIEHS HWWTPs. This year, the policies and procedures manual was updated to include use of the Burdick spirometer. This new procedures manual will be provided to medical professionals at the upcoming medical conference in August, 1998.

Connerton and Ray

Michael Barrett, an attorney from Connerton and Ray, acts as a master trainer for the legal rights portion of the new instructor classes and for pilot presentations. He also monitors the legal rights portion of the HW Worker course at Laborers-AGC training facilities. Mr. Barrett and Ms. Connerton provide legal guidance on issues that affect training and the conduct of training by Laborers-AGC affiliated sites.

Dr. Eric Rice

Dr. Eric Rice, an adult education expert, is a master trainer for the EPA and DOE HWWTP. Dr. Rice also develops and teaches courses at the annual IDP and serves on the HWWTP Curriculum Development Committee.

During the past year, Dr. Rice worked with Laborers-AGC on the HW Worker course examination, and helped revise and pilot test a new instructor and course evaluation form. Dr. Rice worked with Laborers-AGC staff to develop the HW Refresher Application. Both the evaluation and the application forms will be out of the pilot phase before the end of the current program year and will be used at all HWWTP sites in September 1998.

Clean Sites, Inc.

Clean Sites, Inc. provides expertise on hazardous waste remediation techniques. Staff member Stuart Allen assists Laborers-AGC with the development of model hazardous waste sites for conducting hands-on training activities. Mr. Allen conducts QA/QC visits to observe the hands-on training and provide training sites with ideas for improvement. Clean Sites' monitoring activities are discussed in the Training Effectiveness section of this report.

Internal Audits

Early in the NIEHS 1998 program year, Laborers-AGC hired an internal auditor to help ensure that training sites are managed properly with respect to the program and Laborers-AGC policies. Since his hire, Mr. Steve Kapisak has reviewed auditor reports, developed monitoring protocol and developed agreed upon visited procedures for sites that are not required to have an A-133 audit. Mr. Kapisak also developed a site audit plan that was immediately implemented. By the end of the current program year, Mr. Kapisak will have conducted audits of the following DOE sites:

1. Las Vegas, NV
2. Brighton, CO
3. Albuquerque, NM

The site audits include the following information or activities:

1. Review class reimbursement forms.
2. Identify fixed assets and compare accuracy of site records with Laborers-AGC's records.
3. Review recent A-133 audit and conduct agreed-upon procedures for sound fiscal and administrative management.
4. Obtain the completed internal control checklist and review for potential control weaknesses.
5. Document the site review and develop recommendations.

An example of a site audit report is provided in Exhibit 7.

Strategic Planning

At the LIUNA national convention in September 1996, Laborers-AGC was directed under LIUNA Resolution Number 5, to "develop a... strategic plan of operation for laborers' training that will serve as a vision for the next five years." For the past six months, Laborers-AGC has worked with LIUNA members and officials, training directors, and contractors to develop this strategic plan. Information and input was obtained through several focus groups, a needs assessment survey, workshops, while the planning process was accomplished through the strategic planning executive committee and its subcommittees. Approximately 1,000 individuals contributed in some way to the development of the 1997 Strategic Plan.

Seven critical initiatives are addressed by the 1997 Strategic Plan:

1. Communication, Coordination, and Cooperation
2. Curriculum Development and Delivery
3. Funding and Financial Management
4. Lifelong Learning
5. Marketing, Recruitment, and Retention
6. Skill Standards
7. Total Quality Management

Action items for each initiative serve to guide Laborers-AGC's progress over the next five years as it strives to fulfill its mission "to improve the quality of life for LIUNA members and expand the competitive position of union employers."

2.3.2 University of Medicine and Dentistry of New Jersey

DOE TRAINING ACCOMPLISHMENTS

Numbers presented in this report include actual training from 9/1/97-5/31/98 as well as projected training from 6/1/98-8/31/98. Table 1 details training activities for the current year and includes: course name and corresponding hours, number of course offerings, number of workers trained, number of contact hours and DOE sites. As reported, 120 courses were conducted during this time period with 1238 workers trained. Contact hours totaled 12,682. Training accomplishment data have been summarized in chart format according to NIEHS specifications and submitted via electronic mail.

Table 2 presents a list of courses originally projected in the workplan for 1997-98, as well as courses requested mid year from DOE sites. As indicated above, training totals for the year ("Trained") include data as of May 31, 1998 as well as projected training for the remainder of this time period. These totals are compared with the initial workplan for the year ("Projected"). As noted, over 138% of the overall workplan has been achieved. Changes in training need 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. Additionally, three courses were requested by DOE sites which were outside of the Center's scope of work. The Center responded to the need for these courses: 08-Hour Haz Mat DOT (1 trainee), 40-Hour Site Worker (1 trainee) and 08 hour Refresher (3 trainees) demonstrating our commitment to meet the needs of our target population held in our regularly scheduled courses.

TABLE 1: DOE TRAINING ACTIVITY BY AGENCY AND COURSE 1997-98*

Agency	# of Courses	# of Trainees	Contact Hrs	DOE Site
UMDNJ				
40-Hr Site Invest	1	1	40	PPPL
08-Hr Refresher	4	93	744	BNL
08-Hr Refresher	5	10	80	FUSRAP
08-Hr Refresher	7	9	72	PPPL
08-Hr Confined Space Ref	3	17	136	PPPL
21-Hr Confined Space	1	2	42	PPPL
08-Hr Haz Mat Tech Ref	3	15	120	PPPL
08-Hr Em Resp Ref	4	43	344	BNL
08-Hr Asb Cont Ref	1	1	8	PPPL
04-Hr Asbestos Awareness	2	58	232	BNL
04-Hr Asbestos O & M Ref	2	32	128	BNL
UNIV AT BUFFALO				
24-Hr RCRA-TSD	7	46	1104	WV
08-Hr RCRA Refresher	37	545	4360	WV
08-Hr Operational	3	8	64	WV
08-Hr Rad Wrker I	3	15	120	FUSRAP
08-Hr Rad Wrker I	11	50	400	WV
16-Hr Rad Wrker II	13	179	2864	FUSRAP
16-Hr Rad Wrker II	13	114	1824	WV
TOTAL	120	1,238	12,682	

*Based on reported training to May 31 and projected training June 1-August 31, 1998

TABLE 2: DOE TRAINEES AND CONTACT HOURS AS PERCENTAGE OF
WORKPLAN: 1997-98*

<u>Agency</u>	<u>Trained Trainees</u>	<u>Projected Hours</u>	<u>Projected Trainees</u>	<u>Percent Hours</u>	<u>Complete</u>
UMDNJ					
40-Hr Site Invest	1	40	5	200	20%
08-Hr Supervisor	0	0	5	40	0%
08-Hr Refresher	112	896	75	600	149%
08-Hr Operations	0	0	15	120	0%
08-Hr Confined Space Ref	17	136	30	240	57%
21-Hr Confined Space	2	42	12	252	17%
08-Hr Confined Space Rescue	0	0	12	96	0%
08-Hr Haz Mat Tech Ref	15	120	40	320	38%
08-Hr Em Resp Ref	43	344	60	480	72%
04-Hr AHERA Inspector Ref	0	0	5	20	0%
08-Hr Abs Control Sup Ref	1	8	15	120	7%
04-Hr Asbestos Awareness	58	232	25	100	232%
04-Hr Asbestos O & M Ref	32	128	20	80	160%
UNIV AT BUFFALO					
24-Hr RCRA-TSD	46	1104	30	720	153%
08-Hr RCRA Refresher	545	4360	490	3920	111%
08-Hr Operational	8	64	10	80	80%
08-Hr Rad Wrker I	65	520	10	80	650%
16-Hr Rad Wrker II	293	4688	40	640	733%
TOTAL	1,238	12,682	899	8,108	138%

* Based on reported training to May 31 and projected training June 1-August 31, 1998

2. DOE TRAINING EFFECTIVENESS

As detailed in the Center's competing application, the Center collects registration (i.e. trainee characteristics) and evaluation data on scannable forms which are processed via an optical mark reader. As such, data input and management are computerized, facilitating timely program tracking, reporting and analysis.

Trainee Characteristics

A summary of DOE trainees' demographic characteristics is presented in Table 3. The majority of trainees were male (85%), Caucasian (83%) and had some education beyond a high school diploma (80%). The largest age category was 36-45 and the primary language for almost all was English.

TABLE 3: MAJOR DEMOGRAPHIC CHARACTERISTICS FOR DOE TRAINEES: 1997-98

<u>Characteristics</u>	<u>Trainees (n=909)</u>
Gender	
Male	85%
Female	15%
Ethnicity	
Caucasian	83%
Afr-Amer	5%
Hispanic	2%
Asian	1%
Native American	3%
Other/Unknown	6%
Education	
Some high school	3%
High school grad	18%
Some college	26%
College. grad	31%
Some grad school	7%
Graduate degree	13%
Other/Unknown	3%
Age	
17-25	4%
26-35	29%
36-45	38%
46-55	20%
56+	7%

Unknown	2%
Primary Language	
English	96%
Spanish	1%
Other/Unknown	3%

Table 4 details work history data for DOE trainees. Thirty-eight percent of the trainees reported their primary job duty as RCRA/TSD work, while a large proportion (39%) reported “other”. Open ended responses for “other” were reviewed and coded revealing a diversity of job duties. With regards to occupational categories, "Professionals" (23%) and "Laborer" (18%) were the most commonly reported. Lastly, the primary work setting for most was a DOE site (87%).

Training Minorities

As reflected in Table 3, a large proportion of the DOE trainees identified themselves as Caucasian. Ninety-eight trainees identified themselves as minority, specifically, 43 (5%) as African Americans, 18 (2%) as Hispanics, 11 (1%) as Asians, and 26 (3%) as Native Americans. 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.

TABLE 4: PRIMARY JOB DUTY, OCCUPATIONAL CATEGORY AND WORK SETTING FOR DOE TRAINEES: 1997-98

Job Duty	<u>Trainees</u> (n=909)	Percent
Waste Site Clean-up	81	9%
Waste Site Investigator	15	2%
Waste Transportation	5	1%
RCRA/TSD	349	38%
Other	354	39%
Missing/Unknown	105	12%
Occupational Category		
Officials and Managers	38	4%
Professionals	210	23%
Technician	143	16%

Craftworker (skilled)	71	8%
Operative (semi-skilled)	65	7%
Laborer (unskilled)	163	18%
Service worker	14	1%
Other	147	16%
Unknown	58	6%
Work Setting		
Private Industry	4	0%
Public Sector	89	10%
DOE Site	786	87%
Missing/Unknown	30	3%

Trainee Performance

NIEHS guidelines call for proficiency measures of trainees using demonstration and/or written items. We administer 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.

Training Effectiveness

Trainees complete course evaluations with 4-point ratings (1=poor, 4=excellent) to evaluate trainers, facilities, activities, materials, equipment and the course overall. Trainees are also asked to categorize how well course objectives were met and how appropriate the level of technical instruction was. Mean outcomes from items are summarized in Table 5. As reported, ratings ranged from 3.3 ("facilities and equipment") to 3.8 ("instructors' knowledge of topics"); the Overall Rating is 3.6. Ninety-six percent of trainees responding stated the course objectives were completely met and 97% believed the level of technical instruction they received was on target (Table 6).

TABLE 5: MEAN OUTCOMES OF SELECT STUDENT EVALUATION ITEMS
FOR DOE TRAINEES: 1997-1998

<u>Item</u>	<u>Rating*</u>	<u>N</u>
Instructors' preparation	3.7	872
Instructors' knowledge of topics	3.8	872
Instructors' communication skills	3.8	873
Overall instructors' rating	3.8	858
Hands-on activities †	3.6	412
Facilities and equipment	3.3	825

Quality of printed material	3.4	868
Coverage of state regulations	3.4	781
Coverage of federal regulations	3.5	856
OVERALL RATING	3.6	806

* 1= poor, 2=average, 3=good, 4=excellent

† Courses greater than 8 hours in duration

While data regarding student satisfaction with training are valuable, the best measure of training effectiveness comes from worksite experience. Due to practical and administrative constraints, work site observation of worker practices is not feasible. Consequently, we have implemented an impact assessment survey that is administered to Refresher course trainees; these trainees received their previous training from UMDNJ and the University at Buffalo. Respondents indicated whether they or their co-workers addressed 12 workplace issues since training. Each issue was addressed by at least half of the respondents (Table 7). A large proportion have addressed issues concerning MSDSs and other information on chemicals (85%), labeling of chemical containers (79%) and personal protective equipment (79%). These data are suggestive that training does facilitate safe work practices. It should be noted that a negative response (i.e., "No) does not mean an issue has not been addressed at the workplace, simply that the training was not a catalyst for the workplace change.

TABLE 6: MEETING OF COURSE OBJECTIVES AND APPROPRIATENESS OF TECHNICAL INSTRUCTION FOR DOE TRAINEES: 1997-1998

Item	<u>Respondents</u>	<u>Percent</u>
Meeting of course objectives		
Not met	1	0%
Partially met	31	4%
Completely met	726	96%
Appropriateness of technical instruction		
Too simplistic	11	1%
On target	711	97%
Too sophisticated	14	2%

TABLE 7: ISSUES ADDRESSED AT WORKPLACE SINCE TRAINING BY DOE TRAINEES (N=563)

<u>Issue</u>	<u>Yes</u>	<u>No</u>
Availability of MSDS and other info on chemicals	85%	15%
Labeling of chemical containers	79%	11%

Proper personal protective equipment available	79%	21%
Proper personal protective equipment training	76%	24%
Development of site safety and health plans	70%	30%
Proper procedures for decon	64%	36%
Availability of air monitoring instrument	62%	38%
Confined space training	63%	37%
Enrollment in medical surveillance program	63%	37%
Fit testing for respirators	62%	38%
Training in use of respirators	62%	38%
Adequate supply of respirators available	59%	41%

Twenty percent of the trainees indicated that they had changed their workplace practices since their last training. When asked for details, the majority responded that there is a “heightened awareness of safety issues.” Additionally, more than two thirds (70%) of them indicated that they were more likely to approach their supervisor regarding a health and safety issue as a result of the training. This data is suggestive that training is effective in empowering workers to advocate for their workplace rights. Lastly, 91 trainees have reported that they had been involved in incidents which they believed would have resulted in illness or injury had they not received the training.

Literacy Issues

UMDNJ and the University at Buffalo have not encountered literacy problems in the target populations trained at the DOE sites. The target population is fairly well educated; only 1% of trainees has less than a high school education. Regardless, the training staff is experienced in identifying and addressing literacy problems as has been detailed in previous progress reports. Assistance for trainees' literacy needs is readily provided. Various effective training methods are utilized which allows for trainees to learn in their own manner; these methods include lecture, small group activities, and hands-on training. UMDNJ and the University at Buffalo offer students the option of an oral exam if they cannot read or if they are not comfortable with the English language. Instructors at the University at Buffalo and UMDNJ are familiar with "The Right to Understand: Linking Literacy to Health and Safety Training" produced by the Labor Occupational Health Program at UC Berkeley and incorporate its principles within their courses. The Center's flexibility to respond to special needs will continue to be a priority of the Center as its member agencies seek to meet the needs of their target populations.

3. CURRICULA UPDATES

UMDNJ

Significant curricula updates were initiated by UMDNJ. The 08-Hour Refresher course manual has been revised to create a more user-friendly manual. New case studies have been developed. This year, UMDNJ is using Grand Street Mercury as the site, replacing Nascolite Corporation. As discussed in previous applications, UMDNJ uses the case study approach for the Refresher training. In the course, students read EPA, New Jersey Departments of Environmental Protection and Health and Senior Services, Agency for Toxic Substances and Disease Registry, and local newspaper reports and are asked to identify the hazards, select the level of personal protective equipment, and prepare the remediation of the site. During appropriate times of the day, slides of the site are shown to offer more insight for the students.

The 40-Hour Initial course manual was also revised. The new manual is in the final stages of revision. New classroom exercises have been developed, as well as a new format, making the manual easier for the students to use. The new 40-Hour Initial manual will be used by the University of Buffalo.

The revised manuals will be forwarded to the NIEHS Clearinghouse when completed for inclusion in the curricula catalog.

University at Buffalo

As indicated above, the cooperative effort between UMDNJ and the University at Buffalo will result in curricula revision of the 40-Hour Initial course manual.

The Hazardous Waste Refresher manual was revised again this year as a joint effort between University at Buffalo and West Valley personnel (manual to be forwarded to the NIEHS Clearinghouse when complete). We will begin using it July, 1998. The basic material is covered, however, additional emphasis is placed on site-specific hazard recognition and identification and training in the use of the North American Emergency Response Guidebook and the ANSI format MSDS. The Hazard Recognition and Identification module is conducted as a practical exercise in which students are required to interact with the instructor in pointing out hazards on photos taken around the site. Lecture material on the NAERG and ANSI format MSDS's is supplemented by practical exercises requiring students to find information and make decisions based on that information.

4. ADVISORY BOARD ACTIVITIES

The Advisory Board is chaired by Glen Paulson, Ph.D.; members of the Board are listed in Exhibit 3 and include representation from unions, government, academia, and hazardous waste industry. As noted in the approved minutes from the May 1997 meeting (Exhibit 3), the Board members were very pleased with the progress that the Center is making; this was reconfirmed at the April 1998 Board Meeting. Meeting notes from the April 1998 meeting have not been included since they have not yet been approved by the Advisory Board during this application time. The Board of Advisors membership was reviewed and it was announced that there are no vacancies at this time, but that nominees for future members should be considered since some individuals are reaching the end of their terms.

Feedback from the Advisory Board included actions such as: summarizing the successes achieved by the Center during this past year; developing a computer-based testing model to enhance the Center's evaluation process; developing a working group to identify additional target groups and training initiatives. Also, the Board of Advisors suggested that the program on Emergency Response to Chemical and Biological Weapons course, developed by the NJSP, be a model available on a national basis.

The next meeting of the Advisory Board will take place in Spring 1999. Informal input will be received from members throughout the year; this would include correspondence and development of working groups.

5. TRAINEE FOLLOW-UP

Practical and administrative constraints make on-site tracking of trainees not feasible for the Center. However, the Center employs survey methods to obtain data from trainees once they complete the training. Information regarding the impact of training is detailed in Section 2, Training Effectiveness.

6. INSTRUCTOR SUPPORT

The Center Management Committee has had initial meetings to plan the bi-annual trainer exchange for instructors in the NJ/NY HMWTC. Based upon the comments from our first trainer exchange, there needs to be more time to exchange ideas and methods used by each member of the Center. The topics to be discussed include training methods, hands-on activities, and other interactive training techniques.

UMDNJ

The support given to instructors in UMDNJ's training courses includes professional development, continuing education programs, newsletters, and other sources of information. All of the 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 in order to operate effectively at their usual employment site. Several instructors are Certified Industrial Hygienists or Certified Safety Professionals, and need to obtain professional development credits to maintain their certification. The "Clearinghouse Newsbrief" is another source of information given to instructors. The news and information presented allows instructors to see what is current with other training centers and new in the hazardous materials industry.

Mr. Malool has attended and presented at several meetings, as well as prepared lectures for a graduate level course during the past year. Mr. Malool attended the Virginia State Hazardous Materials Emergency Responders Conference. He presented a session on Emergencies at Electrical Substations and PCB Exposure. Mr. Malool also attended the NIOSH Educational Resource Center Hazardous Materials Annual Meeting.

Mr. Rosen attended the NIOSH ERC Hazardous Materials Annual Meeting. The meeting presented updates on Superfund, and other topics of interest to health and safety training. Mr. Rosen also attended the American Public Health Association Annual Meeting, attending several sessions sponsored by the Occupational Safety and Health Section.

University at Buffalo

Funding considerations did not allow us to send instructors to other training courses. However, instructors are provided updated information (e.g. regulatory changes, technical information, etc.) continuously and make extensive use of the Internet for up to date information.

2.3.3 ICWU Center for Worker Health and Safety Education

DOE GRANT - TRAINING ACCOMPLISHMENTS FOR YEAR 6

In DOE Year 06, the ICWU Center for Worker Health & Safety Education continued to deliver training initiated during the first four years of the grant. This project is operated as a consortium in cooperation with the International Association of Machinists and Aerospace Workers (IAM) and the United Steelworkers of America (USWA).

The total number of persons trained at all DOE sites during the current grant year is expected to be 2,100 persons at 132 sessions (15,792 person hours). In addition, the Center will have devoted 19 "trainer-weeks" to develop the DOE trainers for an additional 662 person hours. These numbers are consistent with the revised budget submitted by the ICWU to NIEHS on November 10, 1997 subsequent to our reduced award. This budget and training plan stated that ... this award level will result in a reduction of approximately 50% in the number of classes/students served. (See Attachment N for the revised budget and training plan, which was approved by NIEHS). A comparison of the original DOE target population, our revised 1998 training projection and our total estimated site training numbers is given in Attachment M. Although we have exceeded our 1998 projections in 3 of the 5 sites, at no

sites does our projections meet the need for training at any site. We strongly believe that either workers are not being defined by the contractors as needing training or they are being trained through other vendors. Not included in these numbers are numerous weeks of training delivered under the EPA grant where we utilized the skills of the DOE trainers. Attachment J gives the detailed state by state breakout of all participants and a computer diskette is enclosed with the data as requested by NIEHS.

At four of our five active sites, quality training is being delivered at the same level as during the last grant. At one site (Rocky Flats) however, this has been at a reduced rate. The history of the DOE grant at each site has demonstrated significant fluctuations from year to year. Regretfully this has resulted this year in a significant reduction at a site that had contributed substantially to our overall total last year.

The primary reason for this reduction is the outsourcing of training by the Rocky Flats management. Despite a strong training program, curriculum, Center staff and trainers, at this point we have not been able to sustain the significant level of training delivered during the last grant year. We are hopeful we can reestablish the level of training which was previously conducted and well received but are obligated to inform you of this significant decrease.

Due to the substantial reduction in available grant funding (from \$1 million to \$650,000), we could not commit to the same amount of training knowing that we did not have the funds to actual deliver previous years training levels. At our Nuclear Advisory Committee meeting in October, the consensus of the site coordinators was that to commit to the same amount of training conducted in the previous year would likely do irreparable damage to our working relationships built over the life of the DOE grant. We, therefore, informed the site contractors of our decreased funding level and delivered training at a reduced level. In the second half of the current grant year we were able to shift funds to increase the training at Oak Ridge and Hanford. Therefore, the final numbers are expected to be greater than last year at Hanford and only slightly less than last year at Oak Ridge. We have a reasonable expectation that training at these sights will expand with additional respirator training at Hanford and refreshers at Oak Ridge.

We were able to deliver approximately the same amount of training at Amarillo and Kansas City as we did last year. In addition, specific reasons continue to exist at both of these sites: primarily layoffs, redefinition of training eligibility by the contractor, and the continuing decreased perceived need by the contractor to train the established work force in 40 hour initial programs. The ability of the trainers to deliver training is far greater than the amount scheduled by all contractors.

In summary, we currently are delivering the same amount of training at 4 of the five active sites. Our ability to deliver training to the much larger population that needs this hazardous materials training is contingent on two factors; the funds to pay trainers and the agreement with management to conduct the training with all other factors in place. If funding is not available, the record at Hanford and Oak Ridge is clear: the contractor will seek training vendors elsewhere. If Rocky Flats training returns to a significant percentage of that conducted during the previous grant year, we could only conduct these classes if we are funded above the requested level.

Vital to this program is the assistance of the other two Internationals in this grant, the International Association of Machinists and Aerospace Workers and the United Steelworkers of America, with their associated site coordinators and trainers. Although the Consortium has the support of the contractors at most sites, the contractors perceived needs for continued training has decreased. Without contractors being willing to release the workforce and require training, it is not possible to schedule classes. We remain committed to the original plan as outlined in the 1993 grant application. Our consortium has in place the experienced trainers, facilities and equipment to launch further expansion

and train workers identified as needing training if the Department of Energy and its associated contractors so desire.

The following sites have conducted programs during the current grant year: Oak Ridge, TN; Amarillo, TX; Hanford, WA, Rocky Flats, CO and Kansas City, MO. These sites have a core group of experienced on-site trainers who can competently present programs with only quality control from Cincinnati. We have conducted only limited training over the course of the grant at the other three sites targeted by the DOE grant (Albuquerque, NM (Sandia Labs), Fernald, OH and West Valley, NY) and are therefore reducing the funding request at these sites. A more detailed description of each site's achievements follows.

Workers at these sites are members of ICWU, USWA, IAM, or other locals affiliated with the respective Atomic Trades and Labor Councils as well as salaried personnel. The Center and its affiliated unions have built working relationships with their respective locals, Councils, contractors (both line management and training personnel) and DOE operations offices to sustain the continual delivery of quality hazardous materials training.

The key to this training has been the on site trainers from the shop floor who have completed our Chemical Emergency Response program followed by the train-the-trainer program. The vast majority have completed an apprentice type program under the guidance of the Director of Trainer Development. This consists of Trainer Refresher and Technical Skills sessions, co-facilitation with our educational staff and experienced trainers, and on site observation by Center staff. 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. We now have an experienced and seasoned group of 35 DOE trainers who have been conducting training on site from two to four years. Due to turnover, we did train one additional new DOE trainer.

Complementing the work of the Director of Trainer Development in implementing structural improvements in our trainer program, three other staff members continue to play key roles: the Nuclear Training Coordinator who has regular contact with each site's operation; the Education Director, who writes new material, revises the eight hour site refresher curriculum, updates modules and ensures quality control across the complex; and the Center Director who supervises and coordinates these staff. Besides the other educational staff at the Center, the other key staff are the ICWU, IAM and USWA Nuclear Liaisons who have the majority of regular contact with each site. Finally, the day to day contact with contractors has mostly been through the On Site Coordinators who coordinate all training, meet logistical needs and answer the majority of management questions. The Nuclear Advisory Committee is an annual meeting of all these staff to coordinate their activities and ensure that grant requirements are met.

It has been possible to deliver this level of training only with the full cooperation of each site contractor. Site management arranges for the final scheduling of all classes and ensures that participants are assigned as part of their job to attend training. The contractor and DOE office conduct extensive quality control on a regular basis. We are making every effort to answer all questions asked by the contractors and local DOE offices and meet their requirements but it is ultimately up to the on site contractor management to schedule participants to our classes. We hope that the clear pattern of success at these five sites will be achieved at the three remaining locations. Once we have the opportunity to present our program, we have been able to schedule an increasing number of classes. Some contractors have used these trainers to conduct other non-grant related training, an excellent indication of long term support and institutionalization of our program.

The Center is successfully meeting the new requirement at all DOE sites to yearly revise the refresher program at each site. The EPA program rarely taught an individual worker more than once, while all DOE sites have the same work force participating in annual refreshers. To meet the need of these participants, the Center has relied on those who are the primary deliverers of the program: the on site,

part time DOE trainers. These trainers have the most direct knowledge of the actual program, shop conditions, lessons learned at each site, direct knowledge of all previous year s refreshers and the types of questions and problems the DOE work force face. We have, therefore, relied on them to revise the program and develop new material. A Center staff person is assigned to facilitate this process and then works closely with the Education Director and the Director of Trainer Development.

Oak Ridge, Tennessee

This program has a four year history of training at a sustained high level. The site trainers are from ICWU Local 252 and IAM Local 480 with a full time Center staff member located on site. These courses have been led by the on site trainers for four years, with only oversight by instructors from the Center. Those trainers have taught one 40-hour CERCLA course, one 16 hour hands-on program, one 24-hour programs, one 8 hour CERCLA refresher and 17 eight hour Hazardous Waste refresher programs as of 5/31/98. 349 workers were trained in these sessions for a total of 3,120 person-hours. The additional programs currently scheduled before the end of the current grant year include 10 Hazardous Waste 8 hour refresher programs scheduled at Oak Ridge (for an expected additional 1,920 person-hours). This represents a yearly total of 4,928 expected person hours.

At this point, Lockheed Martin has determined that there are no additional groups of workers who need the 8 hour refresher or 40 hour initial training. OSHA has initiated a joint pilot project with DOE to investigate the transition to external regulation of health and safety activities. We will be discussing with the appropriate authorities how the determination of applicability of 1920.120 has been made and if there is a need for more workers who handle hazardous materials to be trained. We disagree with management s determination but continue to discuss this question. Ultimately, however, it is their decision to schedule classes and assign workers to attend.

This program previously was awarded the DOE Award of Excellence by the US Department of Energy. These trainers, as with most trainers at the DOE sites, have progressed to the point that the Center can rely on them to assist at other DOE sites and with the Cincinnati program. This site s activities operate as independently as possible with only periodic site visits by the Center's staff.

The Center has developed a strong working relationship with Lockheed Martin that has led to further requests for additional training. The institutionalization of this program is further demonstrated by the fact that the trainer who we developed with grant funds to conduct Rad Con II and other HAZWOPER training was hired by Lockheed Martin to be part of their salaried training staff.

The trainers at Oak Ridge, with the assistance of Center staff (including one staff site visit), have developed the third level of refresher training for this site during the current grant year. The experience and expertise of the site trainers was the key element in developing these more advanced refreshers due to the unique nature of this program (see Attachment C for a comparison of DOE to EPA training program characteristics).

Hanford, Washington

IAM Local 1951, in cooperation with IBEW Local 984, continue to deliver refresher programs. Through May 31 they conducted 20 one-day CERCLA refresher courses, 33 four hour respirator refresher courses and one 40 hour CERCLA course for 765 participants (5,180 person hours). These programs are conducted with the cooperation of the HAMMER facility, a nationally recognized and independently federally funded regional training facility. The 4 hour respirator refresher is being delivered through a curriculum we helped develop and accomplishes two basic objectives. One, it gives adequate time to a subject that had to be compressed within the curriculum of the refresher course, and two, it relieves the refresher course of an item that made it increasingly difficult to cover refresher topics adequately.

There are six additional 8-hour refresher programs (an estimated 960 person hours), a one-day respirator introduction class (88 person hours) and 9 four- hour respirator courses (396 person hours) scheduled for Hanford before the end of this grant year. We, therefore, expect to deliver a

total 6,624 person hours to 995 workers by the end of Year 6. The Center also relies on the expertise of the Hanford Radiation Technician trainers who are currently conducting training to develop radiation related training material.

The Center's staff conducted 32 hours of trainer development on site, 32 hours working with three trainers (12 trainer-days) in developing an updated refresher (hours not reported above) and a visit by the IAM DOE Liaison. In addition, one ICWU Center staff member participated in an on site review by DOE's Headquarters staff from the Offices of Environmental Restoration and Waste Management and Environmental Health and Safety staff of the HAMMER program and attended the opening of the HAMMER facility in September, 1997.

At this point, the contractors (through the HAMMER facility) have determined that there are no additional groups of workers who need the 8-hour refresher or 40 hour initial training. We will be discussing with the appropriate authorities how the determination of applicability of 1920.120 has been made and if there is a need for more workers who handle hazardous materials to be trained. We disagree with management's determination but continue to discuss this question. Ultimately, however, it is their decision to schedule classes and assign workers to attend.

Amarillo, Texas

In cooperation with the Amarillo Metal Trades Council, IAM Local 1255 delivered five 8-hour CERCLA refresher courses and twelve 8-hour awareness classes for 251 participants (2,008 person hours). The trainers at this site include two from IBEW local 602 and one from OPEIU local 306. At this point there no additional courses planned for the duration of the current grant year. These trainers have also conducted two 8-hour awareness courses for fourteen local fire fighters with responsibility for emergencies at the Pantex facility (an additional 112 person hours). We, therefore, have delivered 2,120 person hours of training by the end of Year 6. In addition, the IAM DOE Liaison made a site visit and a Center staff spent a week on site developing the updated refresher.

The Amarillo program was previously awarded the "Technical Service Citation Award" at the Pantex facility. The Pantex facility has previously estimated that our program will save the contractor approximately \$27,000 yearly. These trainers have been approved by the Texas Department of Agriculture to give eight hours of continuing education credits to pesticide applicators in pesticide handling. They also delivered 5 hours of awareness training to a five-state meeting of hairdressers (230 person hours). Although these programs were NOT funded by the DOE grant, they are excellent indications of the growth of the Center's field centers for future delivery of cost effective EPA training and cooperation between the two grants.

At this point, Mason Hanger, the contractor, has determined that there are no additional groups of workers who need the 8-hour refresher or 40 hour initial training. We will be discussing with the appropriate authorities how the determination of applicability of 1920.120 has been made and if there is a need for more workers who handle hazardous materials to be trained. We disagree with management's determination but continue to discuss this question. Ultimately, however, it is their decision to schedule classes and assign workers to attend.

Kansas City, Missouri

IAM Locals 314 and 990 continue to conduct refresher programs in year 6. They conducted five 8-hour CERCLA refresher programs to 77 participants (616 person hours). A Center staff and the IAM DOE Liaison spent one week on site developing the next level of refresher training which was subsequently delivered. Regretfully, the contractor determined that no workers needed the 40-hour initial course. A Center staff traveled to the site to develop an updated refresher with the trainers. The IAM liaison assisted with the delivery of training with one Center staff reviewing the program for quality control.

At this point, Allied Signal, the contractor, has determined that there are no additional groups of workers who need the 8-hour refresher or 40 hour initial training. They decreased the number of workers they determined to require refresher training this year. We will be discussing with the appropriate authorities how the determination of applicability of 1920.120 has been made and if there is a need for more workers who handle hazardous materials to be trained. We disagree with management's determination but continue to discuss this question. Ultimately, however, it is their decision to schedule classes and assign workers to attend.

Rocky Flats, Colorado

Despite the previous three years of successful training that was well received, in year 6 there has been a serious reduction in the amount of training requested by the contractor. During the first quarter of the current grant year, we delivered 7 CERCLA refreshers to 174 participants for a total of 1,392 person hours. As reported in last year's progress report, by the end of May, 1997 the training at Rocky Flats reached 1,275 participants (12,120 person hours). This site delivered 57% of our total training last year where it is expected to conduct 9% this year. We have hopes that this temporary setback will be reversed in the immediate future but this will ultimately be determined by the site contractor.

We are communicating with the Sandia Atomic Trades and Labor Council and Lockheed Martin, the contractor for Sandia Labs, Albuquerque, New Mexico. We are also in communication with FERMCo, the Fernald Atomic Trades and Labor Council and ICWU local 501 regarding future training activities at Fernald, Ohio. We have experienced trainers who will be able to initiate training when it is scheduled. We are also in communication with IAM Lodge 1180 regarding future training activities at the DOE site in West Valley, New York.

Cincinnati, Ohio

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. This is a similar process that succeeded in marketing the program under the EPA grant and is vital to the cooperation necessary under the DOE grant. The Cincinnati facility is the central facility for the advancement of trainers who are the primary deliverers of courses under the DOE grant. A more in depth discussion of this work is covered in Section 6 (Instructor Support and Trainer Development).

Six DOE trainers participated in a two-day Curriculum Symposium. We have two Technical Skills trainer sessions scheduled in June and August, 1998 (for a total of 14 additional trainer weeks). In addition, a limited number of DOE trainers traveled to Cincinnati to assist with programs under the leadership of the Director of Trainer Development for an additional 7 trainer-weeks. They conducted modules with the educational staff and practiced modules with other trainers with feedback from the Director of Trainer Development. It should be noted, however, that when experienced trainers train EPA participants, this is paid out of the EPA grant.

In addition, the staff attended three NIEHS sponsored meetings. Center staff attended the Technical Workshop on Trainer Development program at the George Meany Center in December, 1997, the Environmental Jobs Summit in March 1998 and a NIEHS/DOE grantees meeting in June at Oak Ridge.

2) TRAINING EFFECTIVENESS

A) Participant characteristics: Ethnic and job category distribution of participants are presented in Attachment E are included on the diskette which is forthcoming (these are the available statistics as of May 31, 1998 but does not include those to be trained between May 31 and August 31, 1998). The table below gives demographic data by sex, race, age and education without cross tabs by job category. A computer file with printed copy of the geographic distribution is being sent from Cincinnati under separate cover.

As DOE sites have come on line with training, the on site coordinator collects demographic information with forms similar to those used for EPA participants in Cincinnati. With the development of computer capabilities at all sites and the continued increase in the numbers of people trained, we expect data will be entered in a timely manner into a database at each site.

These data range within each variable from 1,009 to 1,210 of the 1,221 participants we have demographic forms for through May 31, 1998 (forms are not collected for respirator classes and on site trainer practice sessions are excluded).

Table 1
Demographic Information for ICWU Center Attendees
DOE Grant Year 6

Gender (n=1,210)		Race (n=1,092)	
Male	975	White	924
Female	235	African-American	51
		Hispanic	49
		Asian-American	8
		Native American	25
		Other	35
99% response rate		89% response rate	
Age (n=1,073)		Education (n=1,105)	
-29	86	Graduate Work	183
30-39	322	Completed College	232
40-49	407	Some College	348
50-59	227	Trade/Technical School	152
60	31	Completed High School	169
		Some High School	19
		Some Grade School	2
88% response rate		90% response rate	

Information in Attachment E is based only on participants who gave complete information in all categories (total of 1,100 participants) with a resulting lower response rate. (90%)

B) Training Minorities: We have continued to encourage the contractors and participating locals to send women and minority participants to all programs. We have been successful in recruiting DOE trainers whose demographics more accurately reflect the work force at these sites. Of the 35 active DOE trainers (excluding 1 site coordinator who does not train), 8 (23%) are women and 8 (23%) are minorities.

We hope to continue this diversity with ongoing efforts to train as many qualified members as trainers as possible. The Director of Trainer Development has been able to devote significant effort to incorporate material to ensure an equitable and fair treatment of all individuals involved with our program. This includes the elimination of all practices that result in the division of participants based on race, sex, and nationality and encourages the philosophy of the strength of our diverse work force.

C) Participant performance data: We have continued to implement the participant evaluation method developed over the last four years. The tests identify learning needs at the beginning of the program and are written simply to measure fundamental skills that relate to each module. We have 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 and post tests are administered to all participants in the initial general site worker training. For refresher classes, the use of tests varies from site to site due to variables such as contractor needs,

and significant time restrictions to cover all mandated material in only eight hours. Data currently available from one site that regularly gives pre and post test for the refresher classes have shown over the years that the amount of pretest knowledge of participants is slightly increasing. This effect is to be expected at DOE sites where the Center conducts annual refresher over an extended period (see Attachment H). However, pre-training scores in areas related to chemical protective clothing, respirators, decontamination and labels & placards continue to show the need for training. With the DOE and contractor mandate to conduct individual testing for initial training, we have implemented methods to remediate any participant who does not have the passing score of 80% and avoid any perception of "job jeopardy".

D)Year 06 Long Term Evaluation Report:

Because of the unique nature of DOE facilities, the use of the EPA evaluation tool at the DOE sites was discontinued while we developed a DOE specific evaluation tool. The unique differences between DOE and EPA sites which prompted this decision are outlined in Attachment C. From the evaluation perspective, there is currently no method of determining if 10 similar responses of successful change from 10 participants represented 10 changes or 1 change reported by 10 different people. Instead, the DOE evaluation project measures change as perceived by a significant percentage of the work force, not one or two individuals representing the entire site. The nature of training the same work force in annual one-day refresher courses is another major aspect of the on site DOE project and a difference with the EPA program.

The process of instrument modification to reflect the nature of the DOE program will be coordinated by our consultant, Dr. Marcus. To assist with this project, we developed a working relationship with Paul Becker of West Virginia University. He has extensive experience with labor education and evaluation projects. After a number of meetings with these consultants, staff and a DOE trainer, we have revised the evaluation tool and it is currently being pre-tested. Initial results are expected by the end of the current grant year and will be forwarded to NIEHS. It should be noted that the current ongoing EPA evaluation project resulted in a peer review article that documents numerous attempts to change health and safety conditions and many successful improvements.

Of the 110 people who have been interviewed in the past year, 77 were from Oak Ridge, TN; 17 from Amarillo, TX; and 16 from Kansas City, MO. The numbers we attempted to contact were limited by the dates of their previous refreshers and the need to have from 11 to 16 months of time, post training, to attempt worksite changes. Trends that we saw in our preliminary results from the pre-testing of the evaluation instrument last year at Oak Ridge, TN (n=44) continue to reflect the same major differences between DOE and EPA sites. For example, one big difference is in the composition of the class. In the EPA classes, at least 95% of the participants belong to a union. Of the 110 people interviewed who work at DOE sites where we conducted training, 37% belonged to a union.

Another major difference is the number of people who have been through our training before. For the EPA classes, approximately 8% of those coming to Cincinnati have been through training we have done before. Of the 110 people at the DOE sites, an average of 67% said they had been through our training before (Oak Ridge = 61%, Amarillo = 82%, Kansas City = 81%).

Last year we added a question to see if the participants conduct training of workers on their regular jobs. Thirty-two of the 110 workers (29%) said they do. Of these 32 workers, 28 taught others about health and safety issues they learned about in our class. They taught an average of 55 people for an average of 11 hours. But, even if they did not actually train others, most of the people (78%) have at least talked to coworkers about what they have learned in our program (ranging from 74% at Oak Ridge to 94% in Kansas City!) and 46% have talked with representatives of management about these issues (ranging from 42% at Oak Ridge to 69% in Kansas City).

Since many of these participants have been through multiple training courses, one of the challenges is to develop new materials so new material is covered. Of those interviewed, 57% said they learned

new information as a result of this particular refresher course (ranging from 47% at Amarillo to 60% at Oak Ridge). Looking at just union members, 73% said they learned new information from this refresher. Overall, 38% reported becoming more involved (ranging from 19% at Kansas City to 43% at Oak Ridge). Of those who belong to a union, an average of 52% reported being more involved. The items that helped people become more involved the most (n = 42) are "Greater awareness of hazards in the workplace" (91%), "Worker trainers who taught the course" (88%), and "Learning how to use educational tools to find out more about chemicals in the workplace" (83%). Other items are listed in Attachment I.

Since these participants have been through multiple training sessions, last year we added a question to this instrument to help in assessing the educational needs of those in the class. When asked what topics they wanted to learn more about, the majority (64%) said "Incompatibility of Chemicals". This is similar to the preliminary data we reported last year. As an effort to respond to this need, we have recently developed an Incompatible Chemicals game that we hope to incorporate in our training at DOE sites. Other areas respondents wanted to learn more about included "Health Effects of Chemicals" (54%), Lessons learned (50%) and "OSHA Standards" (46%). The ranking of other topics asked can be seen in Attachment I.

Most (85%) thought the length of the refresher course (1 day) was adequate. The results were similar on this question between union and nonunion responders. This was surprising to us since most of the feedback we get on our evaluations from EPA participants is that our 4-day initial HAZWOPER course is not long enough. But since DOE participants have reported to us having more training than EPA participants, this reflects another difference between these two populations.

Interest in health and safety also increased slightly as a result of this training. On a scale of 0 - 10 with 0 being "no interest" to 10 being "extremely interested", participants averaged 7.0 interest before the training and 8.1 afterwards (this is not statistically significant since the Standard Deviation is 2.4). This interest level before training is lower than we see in the EPA participants who are coming into our program for the first time. The average interest score for EPA participants on the Pre-Course Questionnaire is averaging 9.3. This again may be the result of the differences in recruitment and composition of the class or a result of the high security period (which discouraged too much interest in health and safety) at these sites which many attendees remember all too well.

One area of concern is the number attempting changes in the workplace. The overall percentage attempting change is much lower, on average, for people who have been through DOE refreshers than EPA participants have attempted before even attending our course. Part of this could be that there is much more room for improvement in general industry than at DOE sites.

Of the 110 interviewed at DOE sites, 32% (35 workers) reported as having made attempts, with 80% (28 of these attempts) being successful. This is comparable to numbers self-reported by EPA participants before taking our class (30% attempted to make improvements in this area with 77% of them successful). But many of the participants coming to the EPA course were chosen to attend by their locals because they have been involved in making health and safety changes in the workplace. The attempts and success rates for other areas at DOE sites can be found in the Attachment I.

An additional factor in this analysis is the significantly reduced response rate. This varied from 21 to 30% (Oak Ridge local members responded twice as much as salaried workers). One important factor to consider is that since the registration of participants is handled on site by the contractor, the Center does not verify addresses and phone numbers before participants register for classes. Inaccurate information currently on hand may decrease the response rate. Although we have attempted to improve this percentage, the results in the current year are similar to last year's rates.

E) Literacy issues: Since it is often difficult to determine if a participant has a literacy problem, our Center has developed all of its modules to be interactive so that these participants can learn material

without being singled out. One tool that was developed for DOE sites to see if training was effective is a review game called "HazMat Pursuit". This review uses a game board with colored spaces and all questions are read aloud so as not to possibly embarrass someone who has reading difficulties. If a participant does very well during this exercise and then does very poorly on a written test, that alerts the trainer that there may be a possible literacy problem and they should try asking the participant the test questions verbally. Due to time limits for curriculum within the eight-hour refreshers, this module is only used in the initial 40 hour CERCLA course.

3) CURRICULA UPDATES

During grant year 06 the Center continued its efforts to adapt, modify and integrate materials for educating workers regarding chemical emergency response and hazardous waste work. The key to the continual updating of the refreshers is the knowledge and experience of the DOE on site trainers. With the assistance of the Center's Education Director and the Educational Staff, we have compiled site specific Refresher manuals for each site. The Center's staff main task is to ensure quality control and accuracy. The existing Resource and Activity Manuals are used for all forty-hour classes.

The DOE grant is based on the principle that all trainers are from each site. To accomplish this goal, the Center needs to ensure that educational materials are consistent and clear to enable the part time trainers to practice and deliver the modules. This is also critical for new trainers who are periodically added. We have had the benefit of input from all trainers on improving existing material which helps ensure that our curriculum does not remain static. Their experience provides a direct link to the DOE work force and has helped meet numerous requests from contractors to develop site specific modules. Updating and modifying the curricula is an ongoing process that is lead by the Education Director and involves the entire educational staff. This process has become an ongoing part of the Center's program of quality control and assurance.

Due to the nature of the DOE grant, with refresher programs being requested by contractors to essentially the same workers each year, the Center has further developed the team method to develop new refresher courses and modify existing material. After a request is initiated from the site or by a Center staff who observes a need for a modification, the Education Director and the Center Director discuss the appropriate project time line. The Administrative Assistant monitors the overall progress on all priority educational projects to ensure their timely completion.

A Center staff member is assigned to act as a lead with the experienced DOE trainers from that site (with the on site coordinator and Liaisons) to write or modify existing resource material, exercises or facilitator guides. The designated Center educational staff travels to the site and meets with the trainers to arrive at a consensus for new material. For updated and new refreshers, a new agenda, module description and an outline of each module's objectives, questions and answer keys are designed.

The actual writing of this material is then shared between the Center staff and on site trainers (with most sites equipped with compatible word processing capabilities). Technical assistance is sought primarily from the ICWU Health & Safety staff, the Health and Safety staff of the two other unions, as well as from the other consortium members. The primary staff which approve DOE material are the Education Director, the Director of Trainer Development and the Nuclear Coordinator. This method has shortened the review process and led to a significant amount of material being updated.

4) The ICWU Center for Worker Health and Safety Education Board of Advisors

The Board of Advisors for the Center's DOE and EPA Hazardous Materials Worker Training Program is due to meet on July 15, 1998 in Akron, Ohio, the headquarters of the ICWU. The major topics of this Board meeting will be the reduction in likely grant funding under the DOE grant and resulting decrease

in some areas under both the DOE and the EPA grants, input from the Board on training material and programs and other items which we have asked the Board to propose. We will review our efforts to restore our grant and our efforts to continue training with a budget at approximately half the 1995-96 amount. As in previous years, the BOA meeting is open to any major topic that members would like to address.

The Board of Advisors for the Center's EPA and DOE Hazardous Materials Worker Training Program last met in November, 1996 in Cincinnati. The major topic of this Board meeting was the reduction in grant funding under both the EPA and DOE grants. In addition, we mailed the Board a sample module and facilitator guide which were reviewed in the meeting. We also met in May, 1997 with a number of the Union Consortium members to discuss the current status of our budgets and other training topics. We plan to hold these union meetings on at least an annual basis. Two members of the Board, Dr. Eula Bingham and Dr. Nick Ashford, have toured the Center during the current grant year.

This Board meeting will include our new members, Dr. Linda Rae Murray, Dr. Tony LaMontagne, and Dr. Kathleen Fagan. Dr. Murray is a noted expert in occupational health and safety and assisted us in teaching toxicology to trainers during the June Technical Skills class. Dr. LaMontagne has extensive experience with toxicology and worker education. Dr. Fagan is a board certified occupational health physician and has assisted the Center in teaching toxicology in Cincinnati and at the USWA's Linden Hall facility.

Nuclear Advisory Committee

To coordinate the training at the seven targeted DOE facilities, the Center has held regular meetings of the Nuclear Advisory Committee. The last meeting of this committee was in October, 1997 in Cincinnati, Ohio in conjunction with our curriculum symposium. Due to budget constraints, this was attended only by representatives of those sites actively conducting training.

The most pressing question was the reduction in the 1997-98 DOE grant. With the lack of carryover funds to make up the shortfall, we have had no choice but to notify the contractors at all sites that we could not deliver the same amount of training as in previous years. (After careful monitoring of our expenses through the early months of the grant, this was subsequently changed to meet our revised training plan. At four of the four sites this resulted in an increase in training.) All other aspects of the DOE program were addressed, including marketing programs to DOE contractors, assistance from NIEHS and DOE offices, trainer development, updating refreshers and other adjustments in the curriculum, ongoing efforts in soliciting support from the contractors and NIEHS grant applications.

These meetings are invaluable in coordinating activities with remote, self-sufficient training sites. We have currently scheduled the next meeting to take place in October, 1998 immediately after the next NIEHS/DOE grant award. This will enable us to discuss the latest grant award level and budget, collect input on areas to expand or reduce activities and discuss possible areas of expansion into other training opportunities in each sites geographical area. In addition, the Nuclear Coordinator devotes significant efforts to minimize the isolation of the geographically remote sites throughout the grant year through regular contact and conference calls.

5) PARTICIPANT FOLLOW-UP

Our major effort in the follow up of DOE participants is the long-term evaluation project. The current status of these efforts is detailed in section 2D of this report (Training Effectiveness, Year 06 Long Term Evaluation Report). The EPA evaluation tool has been revised to gather site specific information regarding the use of resources and ability to improve work place conditions. These data confirm the success we have demonstrated during previous years and replicates the improvements previously reported under the EPA grant.

6) 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. Due to the large reduction in this year's award, no trainers attended educational and staff only attended six educational (partially funded through the DOE grant) during the current grant year. Attachment G is a listing of the continuing education courses that the full-time health and safety educational staff at the Center have attended since the last progress report. We have made a concerted effort to sponsor classes in Cincinnati for advanced technical information for the DOE trainers. These are described more in depth under the Trainer Development.

Besides these courses, two educational staff have assisted in the presentation of an OSHA 501 course at the Cincinnati Center conducted by the Occupational Health Foundation (OHF), a consortium member of the OSHA Region 3 Training Institute. These two staff are certified to present this program with the OHF. The educational staff also have the opportunity of attending the modules by various experts who are brought to Cincinnati for the Technical Skills and Trainer Refresher courses.

7) TRAINER DEVELOPMENT

The training and development of trainers continued to be a central objective of this program during Grant Year 06. The Director of Trainer Development has further instituted structural development of trainers (both the EPA and DOE) during this grant year. This Director leads the five-day Train the Trainer, Trainer Refresher and Technical Skills classes. She 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, she works intensively with the trainers while they assist with the Cincinnati sessions. It should be noted that given the DOE trainers' current level of development, when they are teaching EPA participants, this is funded through the EPA grant. We have further developed this process by taking the opportunity for the trainers to practice various modules with the Director of Trainer Development while they are not working on modules to present in front of the class. Each of these sessions 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 Director of Trainer Development has held this position for four years with two years of experience as a trainer and three years as an instructor at the Center. This enables her to know the important points to emphasize in the development of new trainers.

The trainer practice session is the key 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 our modules touch upon. These programs assist the Center in assuring the site contractors that trainers have the technical capability to conduct HAZWOPER training. Six trainers and the Center staff attended our two-day Curriculum Symposium in the fall of 1997 delivered by the Labor Occupational Health Program of Berkeley, California. LOHP staff reviewed the fundamental principles of adult education and interactive methods which have been vital to the Center's success. This was well received by the DOE trainers who, as mentioned earlier, have the key role in writing new DOE refreshers.

The Center brings in subject experts who are familiar with our methods for brief presentations followed by in depth discussion with the trainers. Educational staff also attend as their schedule permits. This method is cost effective when compared to sending trainers to commercial courses. During this grant year, we have developed trainer classes that are tailored to the specific needs of the trainers as identified by the Center. The June technical skills class, for example, featured Dr. Linda Murray, a member of our Board of Advisors. She has committed to conducting a three day in depth

course for staff and trainers in delivering toxicology modules. In previous years we offered the OSHA 501 class which covered basic rights and responsibilities.

As mentioned in Section 3, Curricula Updates, of this Progress Report, the Education Director, with the assistance of staff and on site trainers, has continued to review all modules to ensure they are user friendly for the trainers. This process assures the development of consistent facilitator guides that are critical for trainer use and DOE and contractor review.

2.3.4 International Union of Operating Engineers (IUOE)

National Hazmat Program DOE Progress Report

This year the IUOE has been working closely with DOE contractors to assure that the most appropriate quality training is provided to the customer. This past year has seen several strategic transitions take place at the DOE sites. These transitions have included the recent changes in contract awards such as BNFL at the Oak Ridge, Tennessee location. This situation and the respective training needs of this contractor were speculated during the previous year's application. The late award and subsequent transition had taken longer than anticipated. However, since that time, great strides in the provision of that training has been made.

The IUOE has worked closely with Fluor-Daniel Hanford to create a new "climate" for worker learning. This project, in particular, illustrates the cooperative effort by this organization to be responsive, as well as responsible, to the needs identified by the customer. In this situation, the customer, in cooperation with the local field office and this organization, identified the critical need to provide additional respiratory protection training. This was identified through lessons learned and other health and safety analysis performed at the site. Therefore, in response to this need the IUOE mobilized efforts and the appropriate subject matter experts to work with the customer, and the field office, to further identify the problem, develop specific knowledge and performance based objectives. A curriculum was developed for the subject matter based upon the assumptions stated in the developed objectives.

The IUOE assisted in the development of a model "pilot" course that was then delivered to a gathering of subject matter experts that accounted for representation of all customer, partner, and regulators needs at the Hanford site. The program was deemed an overwhelming success as this "pilot" was even further developed to meet the needs of the above mentioned individuals. A second pilot was then provided by the IUOE which has since been adopted and is currently up and running. This is a crown jewel of what can be developed with true cooperation between organizations. The IUOE has also been responsible for the provision of the train-the-trainer program for this particular subject matter area. In other words—anyone who will provide this training must first attend, and successfully complete, a course of instruction offered by the IUOE prior to delivery of this criterion to identified individuals at the Hanford site.

This is just another example of how the IUOE cooperates with the contractor/customer to provide quality-training opportunities to workers in the DOE arena. This scenario is repeated at most every DOE site within the complex.

The IUOE has also put forth an aggressive effort to assure that Radiological Worker Training meets and exceeds the needs indicated by contractors at Oak Ridge, Weldon Springs, and at the Savannah River Site. Subject matter experts have met with respective site representatives and DOE officials to assure that quality training is provided to their work force in a manner that is complimentary to their particular mission.

For the year to date, 2,034 workers have been trained by our program, with an estimated 205 workers to be trained in the remaining two months of this program year. Utilizing the IUOE's network of local union training instructors, DOE classes are coordinated by the staff in Beckley and Oak Ridge and are closely linked to cleanup jobs. Training equipment, training materials and supplies are sent from Beckley to local union training programs or DOE facilities.

Move to New Facility

As of December, 1997, the combined IUOE programs have moved into the new state-of-the-art training and testing facility located adjacent to the MSHA Training Academy in Beaver, West Virginia. The DOE Technology Assessment Cooperative Agreement funded the construction of the new IUOE facility which consists of three buildings for administration; technology testing and training; and equipment storage, printing and distribution

Trainee Effectiveness Data

Participants are administered a pre- and post-test. The pre- test is intended to assess the knowledge possessed by the participant prior to the application of the training. The post-test is administered to contrast and compare with the results of the previously administered subject matter areas. This will provide the basis for any modification of the training program as to better support the participant in their elevation of knowledge in the respective subject. This will also provide a basis for the instructor to modify their teaching techniques and therefore provide the curricula in a more useful manner.

Performance evaluations allow the instructor to assess the practical skills of the participant that will prove critical in the execution of their work to be performed at hazardous waste sites. This also provides a basis for the participant to know what is expected of them for assessment during the practical exercises. This will allow them to direct their attention accordingly as well as prepare for application to actual work scenarios.

The attached captioned tests have been designated as standard operating procedure for the administration of hazardous waste worker training programs that will be delivered from an effective date of July 1, 1998 and extend until otherwise revised. This information shall be submitted to the National HAZMAT Program along with the currently required reporting procedures. This information shall be tabulated to assess program effectiveness and serve as an integral part of the analysis process for further program revision and improvement.

Impact of Hazardous Waste Training

A pilot program has been instituted at one of our local training sites for the collection of **the impact of hazardous waste training on the worker in their respective work**. This particular program consists of a simple questionnaire during hazardous waste refresher training programs. The assessed information identifies which participants have been engaged in work at hazardous waste sites since their initial training program or since their last refresher training program. The participants are queried as to what hazardous materials they have been working with, their level of protection provided and utilized, and information as to any possible exposure.

This pilot program also assesses the hazardous materials that workers at non- hazardous waste sites have been exposed to. This allows for the participant to respond accordingly as to what chemical exposure may have occurred or to what impact the hazardous materials training has had upon them and their actions in such situations.

It has become apparent, as a result of this inquiry, that workers are exposed, or potentially exposed, to a wide range of hazardous substances during work performed at non-hazardous waste sites. Considering this potential impact on worker safety and health this program shall be requiring that this instrument be administered for all upcoming hazardous waste refresher-training classes until otherwise notified. This will not only provide a basis for the instructor to better address and facilitate the needs of their program participants but for this office to collect data that will be useful in the analysis of overall program effectiveness in reaching those impacted by hazardous waste training who are not necessarily working at hazardous waste sites. This will also allow for more guided assumptions to be made regarding the minimum criteria for hazardous waste refresher training topical areas and other pertinent criteria.

Literacy Issues

This program has been cognizant of the need to provide user-friendly materials for program participants for a number of years. Working under the assumption (provided to participants at NIEHS Literacy Workshops) that graduates of four-year, non-technical degree programs are reading at or about the eighth (8th) grade level, this organization has addressed this particular issue to better facilitate the needs of the target population. This has been done by assuring that all participant materials have been adjusted to reflect a high sixth (6th) grade level. This provides a more even playing field for those who need to know technical information in a format that will allow them to read and then place the written materials into a context that will be beneficial to them in their assignments of work at hazardous waste sites as well as locations not designated as such, but where the possibility of coming into contact with these materials may exist—a situation that our target population members encounter on a not infrequent basis.

Special Programs Update

This program has been a significant partner with Fluor-Daniel Hanford in the identification, development and implementation of a respiratory protection-training program that has been made mandatory for all site personnel who are required to utilize respiratory protection. This site specific program for all Hanford workers is very dynamic in the fact that participants are placed into small learning groups where more individualized attention is afforded to the participants and therefore critical knowledge and performance subject matter areas may be readily addressed. This assures individuals attending these programs are prepared to a necessary and sufficient level of training and performance prior to work assignments as well as refreshed to assure compliance with any significant changes in policy and procedures that would otherwise effect their health and well being.

This program was not only a significant player in the development of that draft curriculum but was selected by the customer, Fluor-Daniel Hanford, to present the initial pilot program as well as the subsequently revised program currently in use today. It is also of great significance to note that the customer assigned this organization to instruct a train-the-trainer program for this particular subject matter area. Therefore, *all individuals utilized to currently instruct the respiratory protection curriculum have attended programs facilitated by IUOE members.*

Advisory Board Activities

This organization has utilized a cadre instructors from across the country to provide critical input to current programs as well as to provide information as to the development of programs specifically identified that impact the individuals that serve as the target audience for the training delivered.

Current programs are discussed regarding their relevance to our target population. Information regarding the updating of curricula and related materials is foremost in these deliberations. The addition of new regulatory compliance issues and the complimentary deletion of outdated criteria are

performed. The development of additional subject matter areas that have been identified as critical is initiated/performed to provide the optimum level of protection so program participants remain the most safe, productive, and profitable for their respective employers. This cadre of master instructors has also been instrumental in specifying and developing master instructor refresher curricula.

The attached minutes reflect the discussion of the meeting held on December 11-12, 1997 in Beckley, WV.

Instructor Support

Instructional personnel are supported through annual refresher training, update packets, teleconference/electronic consultation, college credit programs, and instructor supplement support. Annual refresher training provides the primary platform where instructors are refreshed on critical subject matter areas as well as brought up to date on newly emerging regulations, tools, techniques, and innovations as they relate to the safety and health of hazardous waste workers.

Some of the subject matter areas have changed very little over the years. Although little change has occurred, it is of great importance that refreshment in these areas is undertaken to assure that compliance is maintained and augmented as appropriate. Refresher is designed to do just that—refresh. Over the years, "new" interpretations of "old" subject matter areas may provide a totally new view as to the intent and significance of a specific subject.

Subject matter areas are also prone to change due to revisions in their specific government regulations. This is most often driven by the results of research and response to actual or simulated field conditions. Many times when regulations and accompanying procedures are initially drafted very little may be fully realized about the entire span of their effects and consequences. Therefore, as time goes by, more is understood and the appropriate revisions are eventually made based on trends seen by those who work within these areas, as well as by statistical analysis of the situation.

Update Packets

Even though current instructors are brought back for annual refreshers, items such as regulatory guidance and tools techniques, and innovations may be released just shortly *after* the refresher training has been completed. This essentially means that an individual may go for an entire year before updating takes place. This is a very unhealthy thought process due to our commitment to arm instructors with the most up-to-date information to fire from their arsenal of facts and related training activities.

Therefore, the development, compilation, and distribution of master instructor update packets has been implemented to provide this necessary information in a more timely manner. Information regarding revisions to current regulations, procedures, tools, techniques, and innovations are distributed to instructors on a quarterly basis as the information is necessary. Subsequent classroom instruction may be offered at the time of the next respective annual refresher as necessary to assure that the subject matter is implemented and a thorough understanding of the materials is realized.

Teleconferencing/Electronic Assistance

During the course of the year, between the times of annual refreshers, questions arise through the instructor's independent study or posed by participants when initial and site worker refresher training programs are conducted. The IUOE stresses the need for instructors to provide feedback to program participants in a timely fashion and most importantly—accurately. Whereas, our cadre of instructors are well armed to provide a vast amount of knowledge regarding a broad subject spectrum it is not possible to answer all of the questions all of the time.

The Training Department provides support to instructors by providing technical information and/or interpretations requested by instructors at the local unions. This program has been an overwhelming success as well as a valuable asset to instructors. Many of the requests are to simply to confirm what the instructor already knows, but wants to be sure what they are sharing with program participants is the most current. Recent changes to 29CFR 1910.134- Respiratory Protection- has accounted for the majority of the requests in recent months. A close second has been information regarding silica/silicosis and followed by asphalt fumes, diesel exhaust, and chemical specific information respectively. Queries are answered and reinforced by the transmission of documentation for further reference and distribution to affected parties. In particular, this transmitted information often becomes a handout for the classroom. It has also come to our attention that the *highest incidence of these requests originate during the presentation of annual refresher training*. It is evident that program participants who have undergone initial training and have subsequently returned for annual refresher training are responsible for the majority of the inquiries. Many times it is due to their potential/real exposure that stimulates their need to know how they, or their family, may be adversely affected. Immediate responses to these questions enhances the field instructors rapport with participants in their respective programs as their questions posed to the instructor are apparently important enough for the instructor to take the time to seek further technical information that is accompanied by supportive reference. The instructor also has added confidence in as far as knowing that their inquiry will be addressed quickly and accurately.

College Credit

The IUOE has worked aggressively with several colleges and universities around the country to provide programs of professional development that have augmented the knowledge and skills of our instructors. Many instructors have enrolled in college credit programs and have obtained degrees in subject matter areas that are relevant to their mission of providing quality training. Inquiry from institutions of higher learning has been processed that has aided instructors in the award of college credit from their life long learning experiences coupled with their participation in instructor training programs offered through the IUOE.

Subject Matter Expert Supplemental Support

Although current master instructors go back to their local unions with a great wealth of information and skills in a wide variety of subject matter areas, one person is only capable of retaining, or even specializing in, only so many subject matter areas. Support is available not only by teleconferencing/electronically connected means—actual assignment of instructional personnel possessing specific subject matter expertise may be dispatched to augment training programs needing specialized attention. This may include, but not be limited to, the following: chemical process safety management ,specialized radiological concerns, and critical emergency response issues.

Attendance at NIEHS-sponsored workshops

Representatives from IUOE attended NIEHS-sponsored workshops in April 1998 in New Orleans, LA , and Oak Ridge, TN in June 1998.

Advocating the Need for Training

This program continues to promote the need for training to agencies, contractors, and others. A recent high-profile example of Congressional support for emergency response training occurred following a June 20, 1998 train derailment which caused a chemical spill near Huntington, West Virginia dumping about 30,000 gallons of formaldehyde along the train route. The spill forced about 500 people in a one-

mile radius to evacuate their homes, with approximately a dozen people being taken to hospitals for breathing difficulties

Trainee Follow Up

This program coordinates closely with IUOE International, local union staff and contractors to place trained members in DOE, EPA, DOD, state and private hazmat cleanup jobs. The program continues to utilize Dodge On-Line to track the phasing of hazmat jobs. An extensive notification system is in place to alert affected local unions and contractors of hazmat job opportunities.

Curricula Updates

Biosafety – Describes contagious illnesses of concern to operating engineers, including: waterborne diseases (giardiasis, salmonella, shigella, e. coli, hepatitis A, cholera), airborne diseases (Legionnaires' disease, tuberculosis, psittacosis, cryptococcoses, histoplasmosis, coccidiomycoses), and diseases spread by animals and ticks (Lyme disease, rabies). An Instructor's Manual provides supplemental information.

Bloodborne Pathogens - Covers terminology, identification of two most significant bloodborne pathogens, (AIDS and hepatitis B), incidence, transmission, treatment, and responsibilities of employers as detailed by 29 CFR 1010.1030

Cold Stress – Covers how the body loses heat; signs, symptoms, and first aid for mild, moderate, and severe hypothermia; cold injuries; and prevention of cold stress. An Instructor's Manual provides supplemental information.

Hazard Communication – Covers all sections of 29 CFR 1910.1200 and 29 CFR 1926.59: purpose, scope and application, definitions, hazard determination, written hazard communication programs, labels, MSDS's, employee training and information, and trade secrets.

Hazard Waste Operations and Emergency Response – Covers all sections of 29 CFR 1910.120: scope, application, definitions, safety and health, site characterization, training, medical surveillance, engineering, drums and containers, decontamination, and emergency response.

Heat Stress – Covers the body's normal cooling mechanisms, signs and symptoms of heat-related illnesses, evaluating the risk of heat stress, and controlling heat stress. An Instructor's Manual provides supplemental information. The role of PPE in adding to heat stress is discussed.

New OSHA Respiratory Protection Standard 29 CFR 1910.134 – Outlines the regulation which became effective 4-8-98, and for which compliance is mandatory 10-5-98. Sections include: permissible practices; definitions; respiratory protection programs; selection of respirators; medical evaluation; fit testing; use of respirators; maintenance and care of respirators; breathing air quality; identification of filters, cartridges, and canisters; training and information; program evaluation; recordkeeping; dates; and appendices. This presentation is geared for master instructors who need an in-depth understanding of the new law.

Understanding Material Safety Data Sheets – Explains MSDS's, including: product information, hazardous components, physical data, fire and explosion data, health hazard data, reactivity data, and safe use and handling.

Videos

Cold Stress - An overview of the body's warming mechanisms and the hazards of hypothermia and cold injuries.

Confined Space - The hazards and protocol for entry into permit-required confined spaces.

Emergency Response - An overview of the nature of emergencies at hazardous waste facilities, collateral duties, and the incident command system.

Hazard Communication - An introduction to the legally acceptable means of communicating hazards in the workplace to employees.

Heat Stress - An overview of the body's cooling mechanisms, heat stress signs and symptoms, and the importance of prompt treatment.

Introduction to Government Regulations - A brief view of the history of occupational safety and health legislation, and the agencies involved in this area today.

Lead - An introduction to the uses and hazards of lead, and the importance of protection from lead exposure in the workplace.

Noise - An introduction to the structure and function of the ear, noise-induced hearing loss, and hearing protection devices.

Radiation - An overview of atomic structure, background and man-made radiation, radiation detection devices, and radiation in the workplace.

Solvents - An overview of the uses of organic solvents, their hazards, and protection from solvents in the workplace.

FY 99 IUOE DOE Training Plan

The training plan for fiscal year 1999 will reflect the response of the IUOE to the needs identified and anticipated from DOE contractors. The IUOE has a long-standing track record of providing responsible responses to the specific needs of the customer. This budget year should be no different. The IUOE will coordinate initial, refresher, supervisory, and all other requested training, such as radiological worker, confined space attendant, entrant, rescue, and others that are provided to the customer. This shall include all aspects of curricula development presentation and evaluation of programs and responsible personnel.

The Beckley staff will be directed by the administrator and will maintain close communication with the principal investigator. The IUOE staff will oversee and duly direct all aspects of the delivery of quality training and associated support of instructors and accommodations to the customer requests. The training director will also serve as lead instructor for all train the trainer activities, both initial and refresher. All curricula presented to instructors will be a reflection of guidance documents developed specifically through the DOE for such purposes, as well as regulatory drivers that shall include, but not be limited to the following: 29 CFR 1910.120, 134, 132, 146, 147, etc.

Radiological worker training requests have greatly increased and are anticipated to increase further due to the dynamics of recently revealed projects that will incur greater numbers of workers and supervisors who will need required training. Projects at Savannah River, regarding the tritium facility, and the re-starting of activities in uranium enrichment at Oak Ridge Y-12. Training has already

increased at the above-mentioned location. A specific memorandum of understanding between the IUOE and Bechtel Savannah River has already been signed.

The program currently projects that approximately 1800 will be refreshed and 600 Operating Engineers will be trained and certified for work in DOE environmental restoration and waste management. This projection is based on the availability of cleanup funding and the current demand for heavy equipment operators and mechanics.

The Beckley staff will continue to modify curricula, training materials, and aids. A master instructor committee will continue to review and comment on draft copies with the modified curricula introduced at the instructor refresher classes in Beckley with subsequent implementation at the local union level.

The Beckley staff and master instructors will continue the refinement and implementation of pre-and post-test questionnaires to evaluate the effectiveness of training delivery.

2.3.5 United Brotherhood of Carpenters Health & Safety Fund:

DOE Training SUMMARY

The Construction Consortium for DOE Hazardous Waste Training, under the stewardship of the UBC Health & Safety Fund, includes the Ironworkers, Sheet Metal Workers, Painters, Roofers, Asbestos Workers, Plasterers and Cement Masons, and Boilermakers. Training was delivered at eleven DOE sites during the current grant year. Seventy-six hazardous waste refreshers and fourteen 40-hour site worker courses were conducted in the first nine months of the current grant year. In addition to these hazardous waste classes, the Construction Consortium has conducted lead and asbestos abatement courses and refreshers, hazard communication / MSDS courses, and confined space classes. In the next grant year, the Consortium plans to continue training workers needed for the cleanup effort throughout the DOE former weapons complex. In addition, the Consortium plans to expend new efforts to reach out to the new contractors who are assuming a growing share of the environmental cleanup workload at DOE sites.

The Construction Consortium for DOE Hazardous Waste Training, under the stewardship of the UBC Health & Safety Fund, includes the Ironworkers, Sheet Metal Workers, Painters, Roofers, Asbestos Workers, Plasterers and Cement Masons, and Boilermakers. A major advantage of this Consortium is that it provides a structure by which health and safety training for hazardous waste activities can be taught in a multi-trade setting which is representative of construction and hazardous waste work at DOE sites.

As of May 31, 1998, the UBC Health & Safety Fund has conducted seven 40-hour site worker courses, with three more scheduled, for a projected total of ten courses. This compares to our goal of only seven courses for the grant year. In addition, the class size of these courses has been larger than we had anticipated. We had projected reaching only 122 students with 40-hour Hazwoper training this grant year, and in fact we have already reached 162. If attendance continues at the present rate, we will exceed our goal for number of students in 40-hour courses by 90%. The largest factor in this increase in demand for 40-hour training is the emergence of BNFL as a major contractor for the cleanup of the K-25 site in Oak Ridge, Tennessee.

We have also exceeded our projected goals for confined space training and for MSDS / hazard communication training by significant margins already this year. This, too, is attributable to our relationship with BNFL in Oak Ridge.

The UBC Health & Safety Fund had proposed conducting 70 hazardous waste refreshers. This would have been a substantial increase over our performance the previous year. As of May 31, 41 refreshers had been conducted. Six additional refresher courses are scheduled between June 1 and August 31, 1997, so that we appear to be on track to reach only 67% of the projected refresher training classes. The primary reasons for this shortfall in refresher training appear to be a reduction in demand for training through the Hammer facility in Richland, Washington; and a reduction in demand for refresher training from M&O and M&I contractors at the Oak Ridge site. We have discussed the trend at Hammer with management there, and expect to see a change in that pattern in the near future. Another very important factor is that the classes we have conducted are averaging about 18% larger than expected. So while we have only done about 59% of the number of classes (as of May 31), we have trained 69% of our goal in terms of the number of students, in 75% of the allotted time. –So in fact we are very close to being on-pace with our refresher training.

In our progress report for the previous grant year, we noted that we had been approached by the HAMMER program at Hanford, Washington to help provide Radiological Worker II training; and that we had had similar discussions with Bechtel Savannah River. In response to these discussions, we had conducted a Radiological Worker II train-the-trainer at Fernald in April, 1997. By the time (late June, 1997) we were preparing our training goals for the current grant year, we had already begun to discount the level at which we expected the demand for these courses to materialize, and therefore set a very modest goal of two Radiological Worker II courses. Even this demand was not realized.

Following is a list of all other courses proposed and conducted by the UBC Health & Safety Fund under the DOE grant:

<u>Course</u>	<u>Proposed</u>	<u>Conducted</u>	<u>% Accomplished</u>
Haz waste worker	7	7	100
Haz waste refresher	70	41	59
Asbestos abatement	1	0	0
Asbestos refresher	1	5	500
Confined space	1	3	300
Lead abatement	1	1	100
Construction safety	7	0	0
Radworker	2	0	0
Lead refresher	0	1	

The Ironworkers are on pace to meet their training projections for 40-hour hazardous waste worker courses, and to significantly exceed their projections for hazardous waste refresher courses. The Ironworkers had planned to conduct six 40-hour courses, and have already conducted four by May 31, 1997. They planned to conduct 30 refreshers, and have already conducted 34. The Ironworkers have conducted all four of the four planned 32-hour lead worker abatement courses. The Ironworkers are planning a trainer refresher before August 31.

The other consortium members are generally behind schedule in meeting their expected DOE worker training targets. The Asbestos Workers, with one 40-hour hazardous waste worker course, one asbestos worker course, one lead abatement worker course, and one lead abatement worker refresher, are further along than the other Consortium members. The Boilermakers got a late start because of the train-the-trainer courses occurring so late in the grant year.

Training was conducted at the following DOE sites: Hanford, Oak Ridge, INEEL, Fernald, Grand Junction, Rocky Flats, Portsmouth, Paducah, Los Alamos, Argonne East, and Santa Susanna.

In June, 1998 the UBC Health & Safety Fund conducted two train-the-trainer courses: one in Whittier, California, and one in Atlanta, Georgia. These both served a mix of trainers destined to teach in connection with DOE and non-DOE courses. An earlier train-the-trainer, originally scheduled for November, 1997 to accommodate the Boilermakers as the new partner in the Consortium, was canceled because the Boilermakers trainers were not ready.

In late June / early July, 1998, the Consortium will conduct an in-service training session for experienced DOE trainers. The main topics will be scaffold safety, OSHA's new respirator standard, and beryllium. DOE-EH staff have agreed to teach the session on beryllium.

As we reported last year, we were encouraged by DOE-EH to participate in DOE's then-new Training Improvement Partnership Program. We understood that our Consortium, along with MK-Ferguson Company of Oak Ridge, had been accepted into the Partnership, using Oak Ridge as our site. UBC Health & Safety Fund staff traveled to Oak Ridge with Roy Gibbs, Special Assistant to the Deputy Assistant Secretary for Worker Health and Safety, DOE, to further this effort. We met with two DOE Deputy Site Managers as well as with contractor personnel. While those meetings were very positive, our efforts to follow up have not been very fruitful; and we have heard very little about the overall TIP program in recent months.

Trainee Characteristics

Demographic information on trainees is compiled and analyzed by the University of Kentucky's Behavioral Research Aspects of Safety and Health Group (BRASH), based on course registration forms filled out by each trainee.

Compared to persons trained during the previous grant year, we can see that this year's trainees are:

- A little more highly educated
- A little more female
- A little older
- Less likely to be employed at the time they took the training
- More experienced in dealing with hazardous materials

Demographics of course trainees appear below.

FY 1997 NIEHS DOE Training Summary
Demographic Information
UBC Construction Consortium for Hazardous Waste Training

Gender

X	Female	9.6%
X	Male	90.4%

Education

X	8th Grade or less	.7%
X	Some high school	2.1%

X	High school graduate/GED	23.6%
X	Some college or technical school	30.4%
X	Technical school graduate	9.6%
X	College graduate	24.3%
X	More than a college degree	9.4%

Primary Language

X	English	99.7%
X	Spanish	.2%
X	Other	.1%

Age

X	21-29	9.9%
X	30-39	25.5%
X	40-49	41.8%
X	50-60	20.8%
X	>60	2.2%

Currently Employed

X	Yes	73.9%
X	No	26.1%

Race

•	White	86.9%
X	Black	2.3%
X	Hispanic	3.7%
X	Native American	5.0%
X	Asian/Asian American	.9%
X	Other	1.2%

Prior H & S Training

X	Yes	92.1%
X	No	7.9%

Type of Employer

X	Private Company	97.9%
X	Local/County Government	2.1%

Hazardous Materials Experience

X	None	16.4%
X	Less than one year	11.8%
X	More than one year	71.8%

Training Minorities

Minorities comprised 13% of training participants in DOE classes, significantly less than in the Consortium's EPA training. The race and gender makeup of our DOE audience is determined by the demographics of the DOE sites at which we conduct training. This is especially true of refresher

training, in which our students are selected primarily by the DOE contractors with whom we cooperate.

Trainee Performance

The Construction Consortium administers pre-and post-training tests to evaluate how effectively our programs teach the required material. The test results, compiled and analyzed by the University of Kentucky / BRASH, clearly indicate that trainees come away with significantly more knowledge than they had before taking the hazardous waste program. Trainees in DOE 40-hour classes improved an average of 32 points from pre- to post- test. This is slightly lower than the average improvement (36) in our EPA classes.

Surprisingly, DOE participants score only about 7 percentage points higher on the pre-test than do participants in our EPA 40-hour classes— despite the fact that a much higher percentage (92% v. 69%) of DOE participants report having had prior occupational health and safety training, and a much higher percentage of DOE participants (84% v. 53%) report having previous experience in dealing with hazardous materials.

In addition to written testing, trainees are evaluated during hands-on activities. All trainees are expected to be able to inspect and don respirators and protective clothing, perform appropriately in a mock hazardous waste exercise, and proceed properly through a decontamination line. Check lists document that these activities were performed during the final site simulation exercise.

Lead and asbestos abatement courses have a skills-based test in addition to written exams. Trainees' hands-on work practices are graded individually by instructors. This required testing takes place after participants have performed the work practices as a group under instructor guidance.

Training Effectiveness

At the Consortium's Hazardous Waste Advisory Committee meeting in March, 1998, David Blackburn of the University of Kentucky presented findings from a followup study of 470 trainees who participated in refresher training under both the DOE and EPA funding in 1996-97. Among his key findings:

- The consortium's training is producing workers who utilize information resources and engage in proper work practices.
- The trained workers are acting as change agents to make their work environments safer.
- Trainees used their safety and health skills and awareness off the job as well as at work.
- Workers seeking to implement change in the workplace generally met with success.
- Two-thirds reported talking with co-workers about changes they can make to perform their jobs more safely.

BRASH / University of Kentucky also tracks the "Level 1" evaluations completed by course participants as well as the participant performance on pre-and post-tests of knowledge. At our Advisory Committee meeting in March, 1998, Mr. Blackburn presented the compiled findings for each grant year, 1992-1997, relating to the 40-hour hazardous waste worker, 8-hour refresher, and 16-hour confined space training courses. This information is broken out according to whether the courses were "EPA" or "DOE".

2.4 Literacy Issues

There were no new literacy issues raised during the current grant year.

Special Requests

It will be noted that we have done more Confined Space training than anticipated, and have done Hazard Communication / MSDS training that really had not been anticipated a year ago. The reason is that these training courses were specifically requested by BNFL to prepare workers for their cleanup activities at the East Tennessee Technology Park (formerly the K-25 site at Oak Ridge, Tennessee). In meeting this contractor's needs, the UBC Health & Safety Fund worked with the contractor's training staff to save a day from the training schedule by eliminating redundant information covered by the hazardous waste, hazard communication, and confined space training.

2.5

Curricula development

40-hour Site Worker Manual

Our project continues to revise the Midwest Consortium Site Worker Manual to enhance its readability, improve its relevance to the work performed by our target audience, and increase the number of illustrations. These changes are intended to improve the overall utility of the manual as a tool for effective hazardous waste worker training for construction workers.

The manual is also being modified to include a more extensive section on radiation, in compliance with DOE TRADE recommendations. We believe this helps trainees at both Superfund and DOE sites by making them more aware of possible radiological hazards. We are striving to get the final revised version completed and printed before the end of this grant year. We will of course forward this to the Clearinghouse as soon as it is printed.

8-hour Refresher Course

The Midwest Consortium has recently completed a revision of their student manual for hazardous waste refresher training. The UBC Health & Safety Fund and most consortium partners have used the "old" version of this manual since the beginning of this "DOE grant." The revised version is currently under review by Fund staff. We anticipate having this printed and in circulation before the end of this grant year

Each year, the Construction Consortium adapts the Midwest Consortium's new refresher small group activity. This year's scenario, "Brunswick Maintenance Facility", incorporates radiological hazards for the first time, in addition to chemical hazards. This was done at the specific recommendation of DOE contractor representatives. The first draft was authored by David Blackburn of the University of Kentucky, and evolved with input from Emil Lippert of the UBC Health & Safety Fund and others, including in particular Mr. Greg Zigulis, Safety and Health Manager, MK-Ferguson Company of Oak Ridge. A copy of this scenario has been sent to the Clearinghouse.

Advisory Board Activities

The DOE project shares its Advisory Committee with the "EPA Superfund" Hazardous Waste Worker project. The Advisory Committee held its annual meeting in Palm Springs, California, and March 7, 1998. This year's meeting included three new DOE contractor representatives: John Brock, Labor Relations Manager, Bechtel Jacobs, Richard Coe, Director of Training, Fluor Daniels Hanford, and Grahame Codd, Project Manager, BNFL. Also attending and presenting at the 1998 meeting was C. Rick Jones,

Director, Office of Worker Protection Programs and Hazards Management, U. S. Department of Energy. The minutes of that meeting are found in Appendix C.

In addition to the Hazardous Waste Advisory Committee, the UBC Health & Safety Fund maintains a separate Site Leaders Advisory Committee, consisting of leaders of the United Brotherhood of Carpenters local and regional affiliates servicing key Department of Energy sites. Members of this Committee currently are:

C. Steve Crumley, representing INEL
Richard Garretson, Business Representative, UBC Local 2403, representing Hanford
Mike Kuberski, Executive Secretary-Treasurer, Rocky Mountain Regional Council, representing Rocky Flats
Dan Maples, President, Knoxville Building Trades Council, representing Oak Ridge
Cliff Kahle, Senior Business Representative, representing the Nevada Test Site
Larry Phillips, representing Savannah River

The Committee met twice during the current grant year: once in California, and once Virginia. During the California meeting, the Committee heard a presentation on beryllium concerns in environmental cleanup from C. Rick Jones of DOE-EH, and a presentation on BNFL's plans for future work in the DOE complex from Grahame Codd of BNFL. The Committee's advice continues to be very important to project staff in understanding and planning for near-term developments in demand for training, and in helping project staff to deal effectively with site contractor representatives to meet their training needs efficiently.

Trainee Follow Up

The largest number of participants in Consortium courses associated with DOE sites across the nation are found in our refresher training. They are being refreshed in order to be allowed to pursue their work at that particular DOE site for another year. The sites where the most training takes place under this grant project are Oak Ridge, Tennessee and Hanford, Washington.

Most participants in Consortium training courses at Oak Ridge are employees of:

- MK-Ferguson Company of Oak Ridge
- Lockheed Martin Energy Systems
- Lockheed Martin Energy Research
- BNFL
- ATI
- other contractors active at the Oak Ridge sites.

As the table below will show, we train employees of other entities as well at Oak Ridge-- including employees of the Department of Energy.

At Hanford, we have trained in the last year, employees of:

- Fluor Daniels Hanford
- Fluor Daniels Northwest (a separate company)
- Babcock-Wilcox Hanford
- Lockheed Martin Hanford
- Battelle Pacific Northwest National Laboratory
- U. S. Department of Energy
- Bechtel Hanford

- Babcock & Wilcox Hanford
- Waste Management Hanford
- CH2M Hill
- Washington State Dept. of Ecology
- and others.

Our best source of information about information about the types of work done by our trainees is that which is reported by students in UBC refresher courses. The following is a sampling of the information reported through this method, in DOE refresher training during the current grant year at Hanford and Oak Ridge:

<u>Contractor</u>	<u>Site, location</u>	<u>Work</u>
Oak Ridge:		
LMES	Y-12	Decontamination
LMES	Y-12	Pipefitting
LMES	Tennessee State Superfund	Project Manager
LMER	ORNL	Electrical Maintenance
LMES	Y-12	Nuclear Facilities
LMES	Y-12	Radiological Monitoring
LMES	ETTP	RCRA Closure
LMER	ORNL	Engineer
F.S Speery	K-25	Tear out brick & reline
LMES	K-1070 Mitchell Branch	Project Manager
LMES	TSCA Incinerator	Incinerator repairs
LMER	X-10	In-situ vitrification
LMER	X-10	Cleanup
ORNL		Waste Operator
DOE	X-10	Supervision
DOE	ETTP, Y-12, X-10	Oversight of maintenance program
LMES	Y-12, Alpha-4	Cleanup
Lockheed Martin	K-25	Transportation
ATI	X-10	Dismantlement
ATI	ETTP	Pipefitter

LMES		Welder
BNFL	ETTP	Laborer
Lockheed Martin	K-25	Laborer
ATI	K-25	Remove machinery
Johnson Controls	Y-12 water treatment	Satellite storage
MK-Ferguson	Y-12, X-10, K-25	Carpenter
Lockheed Martin	ETTP	Drum yard sludge overpack, TSCA incinerator shutdown

Hanford:

Bechtel Hanford	100 N area	Haz Mat specialist / waste shipper
CH2M Hill		Sampling
Waste Management		QA
Bechtel Hanford		Pump & treat plants
Los Alamos Tech. Associates	200 Area tank farms	Planning, scheduling, coordination of waste related work
Lockheed Martin Hanford	200 West	Work Planner
SESC		Project Engineer
Fluor Daniels NW		Engineer
Fluor Daniels NW		Management
Waste Management		Site characterization
DE&S Hanford	K Basins	Management observation of asbestos removal
Waste Management Hanford	T Plant	Cleanup engineering
FDH		Millwright
Fluor Daniels	200 West	Maintenance
Numatec Hanford		Laboratory work
Lockheed Martin		Safety Oversight

FDH	WRAP	Electrical
FDH	T Plant	
Bechtel Hanford	ERDF	Engineer
DOE		Oversight
Battelle	Tinker AFB, Okla.	RI/FS, RA
State of WA– Dept. of Ecology		Oversight/sampling/ regulatory/ remediation
FDH		Pipefitter
FDH		Millwright
FDH	Tank farms	Tank sampling
FDH		Carpenter
Bechtel	100N, 100C, 100F	Electrical
FDH		Pipefitter
Waste Management		Administration
Bechtel Hanford	100 D	Site remediation
Lockheed Martin		Core sampling
FDH		Insulator
BWHC		Cleanup
Dyncorp FDH	200 E / East Tank Farms	Ironworker/Operator manager
Lockheed Martin		Safety Engineer
Lockheed Martin		Env. Restoration
FDH		Electrician
FDH	200 W tank farms	Carpenter
WMX		Driller / sampler
DOE	ERDF, 100 N	Oversight
Bechtel Hanford	233-S	D&D
SESC	tank farms	Field engineering

Waste Management Fed. Services Hanford		Team lead at TSD Management
Duke Engineering		Management
Waste Management Hanford	WRAP	Engineer
Waste Management NW		Waste management
FDH	Characterization project	Operations
FD Northwest		Electrician
FDH	East & West tank farms	Electrician
Lockheed Martin Hanford		Tank characterization
FD Northwest	300 Area	Carpenter
FDH	Tank farms	Chemical monitoring
DOE		Contractor oversight
FD NW	222 S	Pipefitter / welder
FD NW	100 K W	Lead paint removal
Bechtel Hanford		QA auditing
FD NW	300, 400 areas	Painter

The Ironworkers report that trained members have obtained work at the following DOE sites:

MK-Ferguson, McCarthy Bros., Specialized Iron	Weldon Springs, MO	Structural steel, metal buildings, fence erection, rebar (30)
Morrison, Knudsen, Babcock & Wilcox, BW Technical, Fryman & Kook	Mound, Ohio	Reinforcing & Rigging(4)
Missouri Valley Construction	Pantex, Texas	Structural (3)
Wise Construction, Security Fence	Fernald, Ohio	Machinery installation, fencing, reinforcing slabs, rods, footings (7)
Arrington Construction, Lockheed Martin, Idaho Iron, Continental Steel, Kiewit	INEEL, Idaho	Rebar, steel erection, fence, rigging (30)

Johnson Controls	Los Alamos, NM	Rebar, steel erection, demolition, fence erection, rigging, fabrication (35)
MK-Ferguson, Lockheed Martin, Davis Construction, Continental Steel	Oak Ridge, Tennessee	Structural, rigging, rebar (70)
Bechtel, Muns Steel, Erico Construction, Grays Construction	Savannah River Site, SC	Rebar, rigging, fence erection, demolition (100)
Bechtel, Fluor Daniels Hanford, Fluor Daniels NW, Battelle, Rust Federal Services	Hanford, Washington	Reinforcing, structural, fence erection, rigging, demolition (70)

2.6 Instructor Support

The UBC Health & Safety Fund and its partners in the Construction Consortium are very cognizant of the need to provide in-service training to instructors who teach hazardous waste worker training. All District Environmental Coordinators and Master Trainers working for the UBC Health & Safety Fund attended the UBC Health, Safety and Apprenticeship Conference in Palm Springs, California in March, 1998. These instructors participated as both workshop speakers and participants. Many local trainers who train for the Fund under this grant also attended. All instructors attended plenary sessions and workshops that provided them with new information on developments in health and safety. These help to broaden their knowledge and help make them stronger teachers of occupational health and safety courses.

The UBC Health & Safety Fund will host, on June 20-July 2, 1998, an in-service training session for DOE instructors from all of the consortium partners at the Maritime Institute of Technology and Graduate Studies in Linthicum, Maryland. This will include instructor training on scaffold user safety, update on the new OSHA respirator standard, and training on hazards of beryllium exposure in environmental restoration work at DOE sites.

The UBC Health & Safety Fund staff instructors also participated in a two-day course on presentation skills in September, 1997.

In addition, various trainers have received training in additional subject matter areas, such as instructor training in fall protection, ergonomics, OSHA 500 construction safety and health training, and other courses. This training serves the dual purposes of broadening the instructors' range of teaching competencies, and also deepening their expertise in occupational safety and health-- thus making them better-informed instructors.

Instructors employed by the other consortium partners attended instructor workshops conducted by their national training organizations. Virtually all Sheet Metal instructors attend their National Training Fund's annual instructor training at Ohio State University. Virtually all Ironworkers instructors attend the Ironworkers National Training Fund's instructor conference at the University of California at San Diego.

UBC instructors are evaluated at least once per year by outside experts under contract to the UBC Health & Safety Fund. Marianne Brown, Director of the Labor Occupational Safety and Health program at the University of California at Los Angeles, coordinates this evaluation effort. Instructors are evaluated on their presentation skills, relationship with trainees, technical accuracy of information, and

use of interactive training techniques. The feedback that the trainers receive helps them to see their strengths and weaknesses, as well as providing a valuable quality control tool for the Fund.

During the current grant year, the UBC Health & Safety Fund has worked with consultants from the Tulane University School of Public Health (under our DOE grant) to develop and pilot test a new system for using our District Coordinators to evaluate local instructors. We expect this system to be completed and implemented during the next grant year.

The other consortium partners use somewhat different approaches to evaluating the teaching of their instructors. The favored approach, by the Painters and Ironworkers, for example, is conduct this observation during practice teaching that instructors do during their annual instructor conferences.

The UBC Health & Safety Fund continues to work with the BRASH program at the University of Kentucky to conduct evaluation of our training based on pre- and post-test scores and on written evaluations of classes by participants.

Supplement Progress

The Consortium's only supplement under this program was for the Boilermakers to come into the Consortium and begin training as a partner. Unfortunately, they were not ready for a train-the-trainer early in the grant year. Several Boilermakers instructors took part in train-the-trainers conducted in June, 1998 in Whittier, California and in Atlanta, Georgia.

2.6.1 Oil, Chemical and Atomic Workers International Union:

2.6.2

1) DOE TRAINING ACCOMPLISHMENTS

In our previous grant year the OCAW provided training to all of our seven targeted DOE sites. This represents 2226 workers for total of 21584 contact hours through May 31. Our projection is that by the end of the grant year we will have trained 2226 employees for a total of 26464 contact hours. Included in these numbers are three 24 hour Hazardous Waste and Emergency Response trainings for 65 employees at the Los Alamos National Laboratory, representing 1560 contact hours.

Our training numbers have remained what we had anticipated they would be, even with a lot of uncertainty with contractor changes at Oak Ridge, Mound Laboratories, Hanford, Brookhaven National Laboratories, and the Paducah and Portsmouth Gaseous Diffusion plants.

We completely revised our 8 hour refresher workbook to include several safety systems activities, introduction to logic tree diagramming, and an appendix of where the objectives of 29CFR 1910.120 are covered in the workbook. We held three 24-hour train the trainer sessions to ensure our trainers were trained in the new materials. The last day of these sessions was in actual training classes with workers.

This year, the following curricula were pilot tested: DOE Refresher and Radiation Worker II.

2) TRAINING EFFECTIVENESS

We evaluate the effectiveness of our training along four 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, changes or attempted changes in safety systems flaws.

In order to gather useful information in these areas, we use a variety of instruments and approaches.

2.7 A. Site-Specific Training Needs

Local union officers and international union representatives are consulted to assist us in identifying site-specific training needs. We also conduct a regular survey of our local unions to determine what they think are the most important safety & health issues they are facing. Courses are set up in response to these identified needs.

In addition, we use an attendance form in each of our classes to help us identify the job classification, previous safety & health training, and demographic characteristics of each trainee. The information on this form enables us to compare the perceived training needs as described by union officers and staff with the actual needs as reported by the trainees.

2.8 B. Trainer Performance

An essential precondition for effective training is effective trainers. We monitor trainer performance closely using both site visits and Activity Evaluation forms that are completed by every trainee at the end of each learning activity. In addition, we require trainers to critique each other after each class presentation. These trainers engage in a candid discussion about the class and make suggestions to each other about ways to help them improve as trainers.

C. Individual Trainee Performance

The most effective training provides the greatest learning enhancement to the largest number of individuals with the smallest expenditure of time, effort, or other resources. We keep track of how well our training is doing in this respect in two ways.

3 1. Worker-Trainer Oversight

The OCAW program relies entirely upon participatory, small group learning activities. Our trainers monitor the progress of each individual in a training session to ensure that there is universal trainee participation and learning.

2. Participant Self-Observation and Monitoring

Moreover, the groups themselves, whose work is tightly structured by the learning activities, work closely together and monitor their own progress and the progress of each of their members. This self-monitoring supplements the trainers' oversight.

D. Measure Impact on Work Practices and Standards and Changes or Attempted Changes in Safety Systems Flaws

Finally, the bottom line of any training program is its impact on work practices and engineering standards in the workplace and how much activism our trainees exhibit towards changing or attempting to change workplace safety systems flaws. This will be measured by Focus Groups, 3 of which were held this year. No results are currently available.

Following is an Executive Summary of the 1996-97 Impact Evaluation of Hazardous Materials Training:

*Hazardous Materials Impact Evaluation, DOE Facilities Report
September 1996 - August 1997*
Executive Summary

This report evaluates NIEHS funded OCAW hazardous materials training programs at Department of Energy (DOE) sites conducted during the 1996/1997 grant year. Self-reported observations of awareness, actions and organizational change were collected from respondents who had participated in OCAW training. Quantitative and qualitative data were collected via telephone interviews conducted approximately six months following training sessions. New Perspectives Consulting Group conducted the evaluation as a subcontractor for the Labor Institute.

Participants were randomly selected from registration lists. Sixty Impact Interviews were completed. Fifty-one were with workers from three DOE facilities: three from Los Alamos in New Mexico, 20 from Hanford in Washington, and 28 from Oak Ridge in Tennessee. Nine interviews were conducted with managers at the Oak Ridge, Tennessee facility. Key conclusions from these interviews follow.

The training catalyzed action on health and safety concerns. Almost two-thirds (63.3%) of DOE evaluation participants said they were more willing to raise workplace concerns after the training. While 20 percent of those interviewed reported that they or their co-workers had raised at least one health and safety concern with management as a result of the OCAW training.

Health and safety systems changes were made as a result of the training. Changes were made in response to over half (56.3%) of the health and safety concerns raised by workers after the training. Three-quarters (76.2%) of the reported management initiated changes were attributed to the training. Almost half (48.4%) of the reported changes were focused on changing health and safety systems. System changes included: creating or revising standard operating procedures, eliminating dangerous chemicals, and redesigning unsafe jobs.

Workers felt better prepared to respond safely to emergencies. Almost all (95.0%) of the evaluation participants reported that they believed they were better prepared to respond safely to an emergency situation involving hazardous materials because of the OCAW training. Over half (55.0%) felt they were "much better prepared."

The training increased worker awareness and changed manager attitudes. Almost all (91.8%) of the workers and managers indicated that they felt more aware of health and safety conditions because of the OCAW training. In addition, almost half (45.0%) of those interviewed felt that manager attitudes towards health and safety had also shifted because of the training.

Worker-trainers were preferred over professional trainers. Almost three-quarters (71.7%) of DOE workers and managers praised OCAW worker-trainers. People felt more comfortable learning from their peers and thought that worker-trainers were effective because they bring real world knowledge to the training. Ten percent (10.0%) of the evaluation participants volunteered that they

valued the small group activity method discussion and sharing of experiences among participants. Doing practical exercises at the training helped participants learn to apply new knowledge.

To strengthen future evaluations, we recommend two new protocols be developed: a follow-up system to track down more specific details about hazardous materials incidents or near misses, and a protocol that allows for more specific questions about how health and safety concerns are raised.

4 Trainer Report Back

We also maintain regular contacts with local safety & health committees at the various worksites where our program has been held, using the Trainer Report Back Form and other reports to chart any steps that need to be taken to correct problems and eliminate hazards identified in the course of the training.

These contacts and reports provide the program with information about specific changes that participants would like to see made at their worksite, and helps us track the extent to which management has been able to respond to these concerns.

The report back forms also provide us information about problems trainers may have encountered during the class, including differences in literacy levels and cultural or organizational barriers to either the learning or to the translation of learning into impact.

Information gathered by these activities provides the data to address the programs concerns in the following areas.

a) Trainee Characteristics

Our attendance form collects information on each person attending one of our training sessions, including name, address, local union, age, sex, educational background, job classification (ten categories), previous safety & health training, and optional questions about ethnic identity.

b) Training Minorities

During the past year, approximately 11.4% of the participants in the DOE trainings were ethnic minorities. 13.8% were women; 4.8% were African-American men; 8.5% were African-American women; 2.9% were Hispanic men; 1.5% were Hispanic women. 2.3% were American Indian or Alaskan native men and women; 1.0% were Asian or Pacific Islanders, and 21.5% fell under the category of other.

c) Trainee Performance Data

As part of our program's educational philosophy and goals, every trainee in one of our classes is required to complete the required tasks in a given activity successfully before moving on to the next one. Each trainee is, in this way, "tested," though we prefer to think of the learning process as a more cooperative undertaking and to stress the fact that trainees, by participating in the activity, learn together and are, in effect, "tested" together.

Our approach has several advantages, including close monitoring of individual participation by other members of the group, immediate feedback about tasks from both group members and trainers, and the opportunity for continuous comparison of one's own understanding of and knowledge about an issue with that of others. This approach not only allows for better self-monitoring and self-correction, but it also more closely mirrors the actual processes of cooperation and learning that occur in the workplace.

d. Training Effectiveness Information

1. Evaluations done at time of training:

- a) *Activity Evaluation Forms*: These forms are completed by the trainees after each activity. The importance of the activity to the trainee is rated from 1 (least important) to 5 (most important). Trainees are also asked to report which of the activity's fact sheets contains the most important information, what was the most important point discussed, and what could be done to improve the activity. This information helps us determine if the activity's objectives were met. An summary of this data is attached.
- b) *Evaluation Workshop Forms*: These are used to evaluate the OCAW Worker-to-Worker health and safety training workshops. Attendees are asked to make a list describing the most important things they have learned during the workshop, and to give their experiences at their worksite concerning health and safety problems.
- c) *Evaluation Activity Priority Concern Lists*: These concerns are discussed in the classroom with the trainer which includes proposing ways to resolve the issue.
- d) *Dialogue about Proficiency Assessment*: This year OCAW engaged in a concerted dialogue within the organization and with members in the wider health and safety training community about the relationship between improving workplace health and safety and the role of individual participant testing. This dialogue has included: written documents and papers which have been circulated for discussion; and dialogue within the OCAW CAT team, the OCAW Advisory Committee, employers, contractors, other grantees, and within the SREPP consortium. No consensus has been reached and so we plan to continue the dialogue in the upcoming year.

2. Evaluations done following training:

- a) *Impact Study to Understand How Training Impacts Participants' Thinking About Systems of Safety*. OCAW launched a new initiative to learn about and understand: 1) how workers perceive systems of safety concepts as presented in OCAW curriculum; and 2) how systems of safety concepts influence the process workers follow after participating in OCAW training; as well as 3) document changes back at worksites in systems of safety that prevent hazardous materials incidents and exposure, work practices, and response to hazardous spills or releases that can be attributed to OCAW training. This new initiative utilizes an innovative focus group design that allows us to study the thinking of individuals and the group in their responses to case study of a hazardous materials incident in which participants are asked to identify the causes of the incident and subsequently what actions they believe would prevent the incident from happening again. Pre training and post training focus groups are being conducted with participants from the same site. To date six focus groups have been conducted at three DOE sites. No results are currently available.
- b) *Publication of Article by Dr. Allan Hanson titled "Evaluating HAZWOPER Training Programs"*. The article was published in the June 1998 issue of Occupational Health and Safety on pages 37 to 66. This paper was commissioned by OCAW with funding provided by NIEHS.
- c) *"Worker Trainer Led Health and Safety Training Leads to Worker Action and Workplace Change" Article*: Development of article for publication reporting results of OCAW and SEIU impact interviews with workers and managers from nuclear facilities, oil and chemical refineries, hospitals, and blue collar government sites. Results attribute the following changes to union sponsored training led by worker trainers using the Small Group Activity Method: worker attempts to make change, health and safety systems changes, individual work practice changes, increased preparedness to respond to hazardous materials

emergency and increased willingness by managers to make workplace changes. Anticipate article to be submitted to professional journal by the end of 1998.

- d) *Trainer Report Back Forms*: These forms are filled out by the trainers after each class. They give useful information about how the class went and includes suggestions on improving the activities.

e.) Literacy Issues

The OCAW uses the Small Group Activity Method in all its courses. This method is particularly gram. We rely on our worker-trainers to integrate participants with limited literacy skills into appropriate learning groups. They report that a small number of people in each class have difficulty reading the material in our workbook. Often, however, these individuals are already sitting with people who are aware of their problem and can help them deal with it. If necessary, though, the trainers do not hesitate to shift the learning groups around so that those with limited literacy skills can get the maximum benefit from the program.

We can also report that the New Jersey Occupational Safety & Health Education Project based at Rutgers, the State University of New Jersey uses our curricular materials as the basis for a less reading-intensive safety and health workshop aimed at both English and Spanish-language audiences. Once perfected, we plan to use materials as a bridge or introduction to our more intensive workshops.

The New Jersey project has also translated our learning activities into Spanish and conducted several successful pilots with them.

3) CURRICULA UPDATES:

The major thrust of curriculum development for the proceeding year was the integration of the OCAW's logic tree diagramming into our core curriculums. The OCAW's Health & Safety Curriculum Adaptation Team (CAT) has developed a methodology for systematically analyzing incident and accidents in order to identify their root causes. We have taken the logic tree method and introduced it as a training vehicle. Through the use of this vehicle we make "systems thinking" come alive through interactive visual training exercises. Workers are asked to analysis real incidents to determine which health and safety system had failed and to make recommendations to remedy the flaws. By engaging in this process our expectation is that workers will gain a greater understanding of the hazards they face on the job, the steps they can take to protect themselves on a day to day basis and, most importantly, to become systems analysts. By training workers to view the work world from a system of safety perspective not only raises their awareness but offers the only opportunity for proactive prevention to take place. By that we mean that the training will lead to workers identifying flaws in systems **before they cause accidents, injuries or exposures.**

At a recent technical training one of our OSHEC's tracked the evolution of the OCAW's training program by diagramming the following anecdote: The workers lived in a village at the bottom of a mountain upon which they worked. On top of the mountain lived a giant. As the giant moved around he dislodged boulders that rolled down the mountain and injured the workers. The workers complained and were given training on how to dodge the boulders. The training consisted of workers being driven around in a van with no windows which stopped at various sites at which time the doors of the van were opened and the sites were identified as dangerous. Then the workers were allowed to take charge of the boulder dodging training. The first thing they did was to put windows in the van so they could see where the boulders were coming from. Then they got rid of the van and got a four wheel drive vehicle and started to climb the mountain to try to stop the boulders from coming down in the first place,

prevention. The OCAW Health & Safety systems based hazards analysis curriculum provides workers with the tools to climb the mountain in order to stop the boulders rather than just dodging them. Another exciting tool to help workers analyze safety hazards at the work site is currently being developed. This training will integrate the OCAW's systems of safety method into a Job Safety Analysis framework. Applying Job Safety Analysis principles to the workplace will reinforce the principles of prevention of accidents and incidents at the workplace by helping workers apply systems based analysis to the work place in a systematic way. For example, workers will be able to do a JSA of a confined space entry on a case by case basis as well as to analyze the entire confined space entry program as a system with a view toward identifying any potential flaws in the system.

Safety systems have been successfully integrated as the template for our health and safety training program. The recent up date of the hazmat training work book introduces systems thinking with a "Systems of Safety" activity. This is the first activity in the workbook and the one used to introduce the training. In our DOE refresher we have fully integrated systems as the vehicle to deliver the safety training. The workbook consists of an updated Systems of Safety activity, a Lessons Learned activity which analyzes an incident from a DOE site using the interactive logic tree approach; the Chemical Safety Game, another interactive activity in which the trainees sort out a group of chemicals, their health and safety properties as well as the health and safety systems, which should be in place to protect workers from exposures; Applying Systems Thinking, is another logic tree activity in which an incident is dissected in order to achieve a better understanding of the systems which are, or should be in place; the Physical Hazards activity sets the trainees at solving a task by which the trainees review hypothetical accidents, and Getting to Recommendations is an activity in which employees complete a logic tree of a hypothetical accident and make recommendations on what systems should be put in place to reduce the probability of repetition.

Curricula Production:

The following are curriculum that were modified, updated and desktop published over the past grant year:

DOE

1. Chemical and Radioactive Hazardous Waste Cleanup Workbook: Volume 1, 1,500 copies.
2. Chemical and Radioactive Hazardous Waste Cleanup Workbook: Volume 2, 2,500 copies.
3. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 1,000 copies.
4. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 1,500 copies.
5. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 200 copies.
6. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 50 copies.
7. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 250 copies.
8. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 250 copies.
9. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 30 copies.
10. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 100 copies.
11. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 600 copies.
12. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 40 copies.
13. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 200 copies.
14. Annual Refresher Training for Hazardous Waste Operations, Draft 4.3, 60 copies
15. Rad Con Revision, 4/98
16. Cards for Name That Chemical, 10 sets, 10/97

4) ADVISORY BOARD ACTIVITIES:

The advisory board to the Department of Energy/NIEHS training grant will meet in October, 1998. The meeting will be held in conjunction with our annual OSHEC meeting allowing the advisory board to observe first-hand the Oshecs involved with their annual Train-the-Trainer meeting.

MANGEMENT POLICY REVIEW COMMITTEE

In response to concern over programmatic direction, the Department set up a special policy committee composed of people active in the public health and legislative community.(list of members, **Appendix H**)

Their first year's work was devoted to an analysis of how OCAW's health and safety program could be improved. The perception on the part of the public and occupational health community that the Union was isolated on a series of issues. Most of the lack of communication revolved around two issues:

- The continued use of worker-trainers to fill functions that are normally held by professionals;
- Our aversion to testing

The testing issue has been particularly acute at Hanford. It has been an issue at Hanford since Flour Daniel assumed the Management and Integration contract at Hanford. Their argument is that they need to be assured that the individual understood the material in the class and that a written test is the only way to know. They look at this as a liability issue. We have had countless meetings with their Training Director to discuss this issue and so far there has been no resolution to the conflict. We are still doing training at Hanford without testing, and discussions will resume in the near future with President Wages and Mr. Charles Little, Vice President Flour Daniel Hanford.

We do have support from DOE Headquarters, who wonder why this issue is still being raised.

In trying to embrace a broader health and safety direction, we began to look for partners who might be interested in joining with us. Our first impulse was to achieve this goal through a discussion of safety systems in the occupational health community. Our aim was to point out the futility of individual testing in the framework of a systems approach.

The approach did not work and, in fact, was perceived as incendiary by some. With the aid of our review committee, we have crafted a new approach which brings together diverse unions with the common purpose on constructing a unified approach to evaluation. The Self-sufficiency Research and Evaluation Pilot Project (SREPP) has successfully used workers as evaluators and, at the same time, highlighted the irrelevance of testing.

This year, we plan to work towards a broader collaborative effort among the various grant programs and find common elements and projects to join together on.

We plan to hold six meetings of the Policy Review Committee in the upcoming year in conjunction with curriculum team meetings, technical meetings, and other functions of the grant. The input of this group has been a very positive influence on the program and our outlook. The Evaluation Director will be attending four of these meetings.

5) TRAINEE FOLLOW UP:

With very few exceptions, all of those trained by OCAW under the current training grant are employees at their respective DOE facilities. Our greater concern is not the applicability of our training, but rather, the large number of employees we may be missing. Attendance at our training is based upon mid-level management's interpretation of the 29 CFR 1910.120 requirements, which can be

vague. One example is that some managers are granting equivalency training 29 CFR 1910.120 (e)(9), to workers taking both the 8-hour refreshers and the 24 hour training. They are basing their decisions on other training that their department furnishes them. Some of this other training includes; Off Road Defensive Driving, Lessons Learned, Radiological Worker II, etc. The lessons learned training usually consists of a written document which the workers are required to read and sign, almost always during break or lunch. There is never anyone who can properly answer questions about this document nor is there anyone there to verify that the document was even read.

While the regulations clearly recognize and allow for exemptions from training due to equivalencies, the OCAW is concerned that these exemptions will become the rule rather than the exception. If this does become the rule, the DOE will be faced at nuclear weapons complex clean-up sites with an ill-trained work-force.

6) TRAINER SUPPORT:

In 1997-98, we continued our goal of constantly upgrading the quality of our training. For a worker-centered program this involves both improving the curriculum and improving the skills of the worker trainers. We concentrated on the following approaches:

1. **Using worker-trainers to train new workers-trainers.** It is important to stress that in our delivery system the trainer is not the expert on subject matter. They are supposed to 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 they are trained to lead a discussion and discovery process which we call the Small Group Activity Method. The expertise the trainers must improve upon is their understanding and use of this pedagogical method. For us, "sticking to the method" is the single most important skill our trainers must have.

We are fairly certain that the best way to improve the pedagogical skill of our veteran training force is to deploy it in training new trainers. Therefore, the heart of our current trainer support system is to find opportunities for trainers to be a part of train-the-trainer programs for new worker-trainers. We feel that when workers conduct new train-the-trainer programs they become much more self-conscious of their training technique and greatly improve on it. In short, they end up practicing more of what they preach. During this grant year we used 8 trainers in 2 different train-the-trainer programs.

2. **Technical Training.** Systems of safety is the one extremely important technical-analytical concept that holds together all of our curriculum. A key component of trainer support is our annual technical meeting which we use to bring the trainers up to speed on emerging issues, new curricula and new tools to use.

Due to scheduling conflicts the technical meeting is scheduled for October, 1998. The proposed agenda for the Annual Technical Training is as follows:

a) Workers As Evaluators

The primary purpose for this session will be to help introduce the trainers to the concept of workers as evaluators (SREPP). We will run several of the SREPP activities designed by the curriculum writing team so that our trainers can begin to explore the various aspects of evaluation. By doing so, we will be actively involving these trainers in OCAW's ongoing evaluation process.

b) Training Techniques

We will be experimenting with activities to help the trainers review their training techniques. We will especially concentrate on the SGAM power-sharing focus. We'll explore both the underlying philosophy and mechanics for ensuring that the power-sharing takes place as much as possible.

c) Curriculum Writing

More and more trainers are interested in the curriculum writing process. Therefore we will conduct a portion of our advanced curriculum writing seminar for all the worker-trainers.

d) Job Hazard Analysis and Systems of Safety

We will be introducing the concept of JHA and systems of safety as a new tool for achieving prevention in the workplace. This curriculum is currently being developed and we will be seeking input in developing this new approach.

- 3. Curriculum writing.** Curricula and workbooks are the key to our learner-centered approach. The better the curricula, the better the training. Those that participate in curriculum writing, we believe, gain extra insight into training, and thereby become better trainers. This is not a mystical process. Rather, it happens because our worker-curriculum writing process involves conceptualizing, writing, research and testing -- and the testing is done by worker-trainers who did not write the curriculum in question. This process of curriculum writing enriches the worker-trainers involved. Invariably it leads to better training. Our goal is to get more and more worker-trainers significantly involved in the curriculum writing-testing process. This past year 28 trainers participated either in the writing or the testing of new curricula, up from 11 the previous year.
- 4. Learning the Evaluation Process.** In addition, instructor training emphasized the critical role of evaluation. In our process, evaluation attempts to document how the courses help promote shop floor health and safety change. To facilitate that process, instructor training focused on how to make each course generate a participant-generated list of specific health and safety items that need to be fixed on the shop floor. We built trainer commitment for the idea that the very act of developing such lists helps promote change. We also developed trainer understanding on how the lists provide a trail for the evaluation process to see whether or not changes, or attempted changes, actually occurred as a result of the training.

7) SUPPLEMENTAL PROGRESS:

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We involved 28 of our worker-trainers in either development or field testing of our new 8 Hour Refresher curriculum in this grant year. In December 1997, we field tested our curriculum in a real class room setting in Oak Ridge utilizing 6 worker trainers and 3 curriculum writers as observers. In January 1998, we utilized 11 worker trainers and 3 curriculum writers as observers in Hanford to field test our 8 Hour Refresher. In March 1998, we utilized 6 trainers, who were not involved in the other previously mentioned field tests, and 3 curriculum writers as observers in Paducah to field test our 8 Hour Refresher. Then in April, we sent 2 trainers to Mound Laboratories for our final field test where we utilized 6 trainers and 1 curriculum writer/observer. These field tests served two main purposes; 1) it tested our new curriculum, providing vital information for any changes and 2) it served to train almost all of our trainers on the new curriculum.

In this grant year we involved 3 worker-trainers in our evaluation process. We conducted a total of 2 focus groups (one pre training and one post training) at each of three DOE Sites (Oak Ridge, Paducah, and Hanford). Working with our evaluations consultant, Tobi Mae Lippin, these worker/trainer/evaluators wanted to know if, in fact, our training caused the worker to consider systems flaws as the cause of accidents or incidents rather than the traditional model of always blaming the worker.

Self-sufficiency Research and Evaluation Pilot Project (SREPP)

OCAW has served as the lead organization in SREPP. Although the SREPP workshops and actual program work began late in the grant year, the SREPP concept of involving workers as evaluators has

been central to OCAW's evaluation this year. This has included involving the OCAW Curriculum Adaptation Team in discussing evaluation at it's trainers meeting last summer, and following through on their suggestions to design the focus group project described above.

Worker trainers and the Evaluation Coordinator worked closely throughout the year to move the focus group project along. This included designing and co-facilitating all focus group sessions. In addition, a team of OCAW folks including two worker trainers, a staff member, and a staff member of the Labor Institute, worked closely with SREPP facilitators to develop and design curricula for the SREPP workshops. While the involvement of this team served to create a high quality worker-relevant SREPP workshop, it also had other subtle impacts on educating these OCAW worker trainers and staff further about evaluation. This increased knowledge and understanding led to increased involvement and more informed input into the regular OCAW evaluation. In fact, it actually led to hands-on involvement by worker trainers in the focus group design and implementation.

II. PLANNING FOR THE NEXT BUDGET PERIOD:

Summary of Planned Activities: DOE Grant 1998-99

From the start of this program it has been our intention to involve workers in every aspect of the training effort. Our theory was, and still is, that the more workers are directly involved, the more effective the training will be. We believe that such worker involvement helps promote a positive culture of safety through which workers on the job feel equipped to improve the systems of safety at work.

We see this empowerment as a series of steps or plateaus. The first plateau entailed training workers to be health and safety trainers. To make this initial step successful we used the Small Group Activity Method -- a learner centered pedagogy conducive to adult learning and to use by worker-trainers. We still use this method, and we still are working to improve both the delivery and the curricula around which it is built.

The next step was to involve worker-trainers in expanding our training capacity by developing a worker-led train-the-trainer program. We found out that experienced worker-trainers are fully capable of training new worker-trainers. This second stage of empowerment allowed the program to expand its delivery system through this worker-led train-the-trainer process.

In addition to training, and training new trainers, we also found that experienced worker-trainers could make major contributions to the drafting and modification of curricula. We found that our curricula became greatly enriched as experienced worker-trainers brought their shop-floor experiences to bear on the design of materials needed for the training process.

Now we are entering another stage of empowerment as we bring worker-trainers into the evaluation phase of the program. This year we hope to develop a system of worker-evaluators to further enrich the program.

However, the development of this top to bottom, worker centered program poses many challenges. We have found that in order to make this program of worker-centered training effective we must constantly review and improve its essential features. We believe that this next year offers us an excellent opportunity to intensify our review process. In fact, we plan to re-examine every critical aspect of our program to make certain that we are as effective as possible in delivering high quality training that protects our membership by improving the systems of safety which govern the workplace. The following summarizes the major elements of work for the upcoming year:

1. Program Review Committee. We are establishing a high level program review committee of the top health and safety officials within the program, and selected outside consultants to help us review all areas of the program. This committee will meet periodically during the year to conduct a program

review and make recommendations for change and improvement.

2. Trainer Support. We recognize that our exclusive use of worker-trainers and the small group method requires special trainer support efforts. In addition to a technical training, we have found that worker trainers develop most quickly when they are engaged in advanced program activities such as curricula modification and train-the-trainer programs. We find this to be the case regardless of the subject of the curricula or the train-the-trainer program as long as it is a Small Group Activity Method program. Therefore, in the upcoming year we will seek as many opportunities as possible for worker-trainers to engage in the curricula modification process and to train new worker-trainers. In addition, we intend to review each aspect of our current trainer support systems and to experiment with various additional means to assist our trainers.

3. Curriculum Modification: Curricula modification has developed into a critical cog in our training operation. We have found that workers who are involved in writing and field testing reworked curriculum turn out to greatly improve their training. Also, the involvement of worker-trainers has led us towards the development of a more coherent “systems of safety” approach to training. The use of this analytic approach requires that we carefully review and modify each of our curricula so that they consistently develop the systems approach as the fundamental framework for prevention. As a result, we plan to continue our worker-curriculum writing efforts this coming year.

4. Worker Evaluators: We intend to improve our overall evaluation process by developing worker-evaluators. Over the next year, in conjunction with other grantees, we enter into our second year building an evaluation process that centers on the involvement of worker-evaluators.

5. Evaluation:

- a) *Activity Evaluation Forms:* Since the inception of OCAW's training, we have been doing a participant evaluation following each activity. We are committed to evaluating each activity because of the multiple uses of this information including: an immediate tool for participants to voice their opinions and feelings about the training directly to trainers; a vehicle to provide immediate feedback for trainers about how their training is going; key feedback about new curricula during pilot tests of new material or tasks; and ongoing quality assurance to spot problem curricula, trainer performance or other things that might interfere with effective training. During the next year, OCAW will re-examine our Activity Evaluation Forms to see how they are constructed; how they are used and by whom; and how they can be handled in a more efficient manner using available technologies. OCAW's SREPP team will take the lead in this project. They will bring this discussion to the annual OSHEC Technical Training in October. The aim is to develop and implement a set of recommendations to improve the effectiveness and use of Activity Evaluation Forms.
- b) *Evaluation Activity Priority Concern Lists:* These concerns will be discussed in the classroom including proposed ways of resolving the issues.
- c) *Impact Focus Groups to Understand How Training Impacts Participants' Thinking About Systems of Safety.* We will continue our initiative to learn about and understand: 1) how workers perceive systems of safety concepts as presented in OCAW curriculum; and 2) how systems of safety concepts influence the process workers follow after participating in OCAW training; as well as 3) document changes back at worksites in systems of safety that prevent hazardous materials incidents and exposure, work practices, and response to hazardous spills or releases that can be attributed to OCAW training.

This new initiative utilizes an innovative focus group design that allows us to study the thinking of individuals and the group in their responses to case study of a hazardous materials incident in

which participants are asked to identify the causes of the incident and subsequently what actions would prevent the incident from happening again.

Pre training and post training focus groups will be conducted with participants from the same site. We intend to complete eight focus groups, four pre and four post at four different sites around the country. Two will be at DOE sites and three will be at EPA regulated sites.

In addition, we will begin to track focus group participants to learn how systems of safety training has influenced their thinking about health and safety over time following training via telephone interviews about any actions to attempt to improve health and safety systems at their worksites, and to document changes back at worksites in systems of safety that prevent hazardous materials incidents and exposure, work practices, and response to hazardous spills or releases that can be attributed to OCAW training. We will call each participant at least twice during the grant year. The telephone interview will use both quantitative and qualitative methods.

Consistent with OCAW's commitment to the Self-sufficiency Research Evaluation and Pilot Project (SREPP) OCAW worker trainers and staff from the OCAW SREPP Team and the Evaluation Coordinator will work closely on the continuation of the focus group project, including conducting and organizing focus groups as well as the analysis and writing of the report. This group will also aid in the development of the follow-up phone interview portion of this evaluation. This will include development of the interview guide and protocols and possibly conducting interviews as well.

6. Pilot Testing New Curriculum: We will continue to pilot test new curricula as it is created in real training situations. Information about new curriculum will be gathered from activity evaluation forms; observation by members of the Curriculum Adaptation Team, the Labor Institute, OCAW Grant Administrators, and sometimes plant managers, contractors or DOE officials; and interviews with training participants. This year we anticipate pilot testing the following DOE curricula: Respiratory Protection, 8 Hour Refresher and Radiation Worker II.

7. Dialogue about Proficiency Assessment: OCAW will continue to engage in a concerted dialogue within the organization and with members in the wider health and safety community about the relationship between improving workplace health and safety through training and testing participants. This dialogue will continue to include: written documents and papers which have been circulated for discussion, dialogue within the OCAW CAT team, The OCAW Advisory Committee, the Management Policy Preview Committee (formerly the Program Advisory and Planning Committee), employers, contractors, other grantees, and within the SREPP community. We anticipate this dialogue advancing through the ongoing relationships among worker trainers involved in SREPP:

8. Complete article tentatively entitled "Worker Trainer Led Health and Safety Training Leads to Worker Action and Workplace Change" Article: Complete the writing of an article for publication reporting results of OCAW and SEIU impact interviews with workers and managers from nuclear facilities, oil refineries and chemical plants, hospitals, and blue collar government sites. Results attribute the following changes to union sponsored training led by worker trainers using the Small Group Activity Method: worker attempts to make change, health and safety systems changes, individual work practice changes, increased preparedness to respond to hazardous materials emergency and increased willingness by managers to make workplace changes. Anticipate article to be submitted to professional journal by the end of 1998.

9. Trainer Report Back Forms: These forms will be filled out by the trainers after each class. They will provide useful information about how the class went and will provide good suggestions as to improving the activities.

10. SREPP: OCAW's SREPP Pilot Project. The second SREPP workshop at the end of year-one will assist OCAW's team in developing an evaluation plan to guide the development and implementation of our pilot project. Shortly after the second SREPP workshop, OCAW's team will determine the focus of our pilot evaluation project(s).

The OCAW team will refine and implement data collection and analysis plans prior to the third workshop ("Development of Meaning and Reporting of Findings," tentatively scheduled for the early part of 1999). This will be followed by ongoing data collection and analysis and the generation of a project team evaluation report. The pilot project(s) will be the major focus of the OCAW SREPP team in the upcoming year. We anticipate that there will be pilot evaluation(s) of DOE and EPA training by different members of the OCAW SREPP team.

At this time we do not know the specific nature of the OCAW pilot project(s) because they have not been selected yet. However, efforts will be made so that the SREPP pilot evaluation project(s) integrate with, or complement the focus group and follow-up phone interview project described above. Funds to cover the costs of these project(s) are included in the OCAW Supplemental SREPP Proposal Budget.

OCAW's team will participate in all SREPP workshops and the development of evaluation reports of our pilot evaluations, as well as the inter-program draft report of lessons learned from SREPP prior to the fourth SREPP workshop.

Full Time Health and Safety Representatives

Two five-day training courses to prepare the health and safety representatives to carry out their responsibilities were conducted in October, 1997 and May, 1998. The thrust of the October, 1997 training was leadership training and systems of safety. The May, 1998 school focused on systems of safety, human factors, introduction to the logic tree, and use of the internet.

In an effort to define the role of the health and safety representatives and provide them with a job that is independent of serving as a "runner" for the company safety and health department, the Health and Safety Department has developed a program called Triangle of Prevention (TOP) which relies on the full time health and safety representative for its success. TOP consists of a tracking system, a training program and the health and safety representative. The training system focuses on providing every worker in the plant with the knowledge to accurately assess a problem and report an incident. The Union has begun a campaign nationwide to promote the TOP program.

Trainer Support

During this next year we plan to continue the three support systems that we believe have worked well in the past -- technical meetings to work on systems of safety issues, participating in train-the-trainer sessions, and curricula writing and field testing.

However, we also want to conduct a major review of trainer support to reevaluate each of these items and to see what else should be added to the overall trainer support effort. At the beginning of the grant year we will conduct such a review within the staff, the worker-trainers and the newly formed review committee. Our hope is to generate an even more coherent overall plan.

For the remainder of the year we hope to test and evaluate new trainer support ideas that will be generated by the earlier review process. By the end of the year we hope to have in place a fully reviewed and modified trainer support system that can take us into the next year, (and perhaps even over that bridge to the next century.)

Staffing

Doug Stephens is in his second year as the Grant Administrator for the DOE/NIEHS Worker Training Program for the OCAW. Gillian Smith continues to be his Administrative Assistant. Mr. Rick Hillier, CIH, resigned his position as our full-time Industrial Hygienist. We are currently searching for a replacement for Mr. Hillier.

5.1.1 International Association of Fire Fighters (IAFF)

PROGRESS REPORT FOR DOE COOPERATIVE AGREEMENT

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.

Using the NIEHS/DOE sponsored Ruttenberg study and other sources of information, the IAFF identified five DOE sites at which personnel were not adequately trained in hazardous materials emergency response. The IAFF proposed training at least 100 emergency responders who work either at or surrounding the identified DOE sites each year. Accordingly, the IAFF has trained more than the amount projected in the original proposal each of the past two years. Based on those trained to date (through July 1, 1998), the IAFF is pleased to announce that the goal of 100 trainees per year will be exceeded for the third consecutive year.

The IAFF has either delivered or scheduled three different types of hazardous materials training programs this project year: two different Hazardous Materials Instructor Training programs and a Confined Space Rescue program. Also this year, the IAFF will conduct an Instructor Development Conference in Washington, D.C. for some of its Master Trainers (instructional staff).

It should be noted that the IAFF has achieved two significant accomplishments directly related to the IAFF/DOE project this year:

- (1) **In-roads have been established for training volunteer fire fighters and mutual aid emergency responders at and around the Savannah River Site (SRS).** As noted in past progress reports and year-end summaries, the IAFF encountered problems reaching the target audience of volunteers and mutual aid responders. This year, more than 25 responders from the area will receive training. We are finalizing details to conduct additional courses in the area, possibly before the end of the current grant year.
- (2) **The IAFF has developed a working relationship with DOE's HAMMER facility at the Hanford site in Washington State.** The IAFF now participates as a formal member of HAMMER's Advisory Board and attended its most recent meeting in New Orleans during May 1998. At least two training programs will be scheduled at the new, state-of-the-art facility, by the end of the grant year.

The IAFF is pleased to report ongoing success with the IAFF DOE Cooperative Agreement. The following report details the progress of the IAFF training.

1. Training Accomplishments

As described in the IAFF's FY '96 report, sites for training under the DOE program were identified by several means. The IAFF reviewed news reports of fire fighters who had refused to respond to facilities because they were insufficiently trained. The IAFF had also received reports from its membership regarding training needs in departments at and around DOE facilities. The primary source of information for site selection, however, came from an NIEHS/DOE-sponsored report by Ruth Ruttenberg & Associates, Inc. (January 1994). Of those sites with the poorest training for emergency responders, five were those 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 using a series of training programs that would enable an untrained fire fighter, upon completion, to effectively respond to radiation incidents using offensive as well as defensive tactics, and to train other response personnel at DOE sites in basic, defensive emergency response operations. However, the IAFF has approximately doubled the original estimate each year. This year, the IAFF has trained almost 100 emergency responders during four separate courses. It is expected that the IAFF will train an additional 80 responders during the remaining four courses scheduled this summer.

The training conducted and scheduled to take place this year encompasses a wide array of hazardous materials emergency response levels. The IAFF conducted its "special issues" Instructor Training program, which analyzes Confined Space Operations, Hazardous Materials Training for the Emergency Medical Services, and Hazardous Materials Training for Infectious Diseases, at the Oak Ridge, Lawrence Livermore, and Hanford-area training events. A custom format of the Instructor Training program was developed and delivered to the responders at the Savannah River site. The SRS course focused on the IAFF Infectious Diseases program.

The IAFF's has remained successful in the DOE grant project due to a flexible approach to training emergency responders. For this and the previous year, the most comprehensive and cost-effective approach was to conduct Instructor Training programs. Since many response personnel at several locations had received previous hazardous materials training, the best medium for delivery of training and distribution of training materials was to conduct a regional Instructor Training program that could incorporate on-site personnel, adjacent emergency responders, as well as those fire service trainers in the region who have taught (or would be available to teach in the future) the target response groups. The IAFF, therefore, scheduled Instructor Training for those individuals who were adequately trained to the level of First Responder Operations. Second, survey responses (reported in FY '96) consistently identified the need for specialized training, so these programs were added to the IAFF training schedule (e.g. Confined Space Operations & Rescue, Infectious Diseases, etc.).

Finally, the work schedules of the primarily volunteer fire fighter audience have made it extremely difficult to schedule any courses, notwithstanding lengthy training events such as the 80+ hour Technician level training program. The largely volunteer audience at several sites (especially Savannah River) has demonstrated unwillingness to submit to training that extends beyond a weekend. The majority of the target audience has a primary occupation other than the fire service. This has forced the IAFF to plan, cancel and re-schedule training events several times at certain DOE facilities (e.g. Savannah River). This year, the IAFF has succeeded in adapting the "weekend training format" for at least one course at SRS. These events demonstrate the IAFF's desire to provide this needed training in the format most convenient for the affected emergency response groups.

Training Effectiveness

Tools for collecting data on trainees and impact of training were submitted in the original application for this cooperative agreement. Data reported here are preliminary and not detailed since all of the training has not

been completed. Furthermore, the IAFF is in the process of switching over to an optical mark scanning system that will process, disseminate and structure data to a degree much greater than that required by NIEHS. (See Appendix B.) During the short transition, we are able to provide only generalized data. As in the previous progress reports submitted by the IAFF, updated and complete statistics will be submitted to NIEHS by October 31.

a. Trainee Characteristics

All trainees complete profiles which provide the IAFF with general information about themselves. At the beginning of each training program, registration forms are administered. As noted in last year's Continuation Grant Application, partial reporting of preliminary data would not provide a fair prediction of the final results. Our preliminary data was unable to register the true number of minorities reached, as well as the vast worker categories receiving training. The data to be reported for FY '98 will be very similar to the final progress reports submitted in FY '96 and FY '97. The overall numbers trained are still above our original projection of 100 trainees, and the demographics, work history, Department characteristics, and DOE site experience will remain essentially the same. Preliminary review of the data does suggest a greater representation from emergency responders who have direct working relationships with the target DOE sites (on-site Haz Mat responders and on-site fire department personnel).

b. Outreach to Minority Trainees

The IAFF continues to recruit minority trainees by encouraging labor and management representatives to recruit minorities for the IAFF classes. In addition, the IAFF has revised its training announcement letters requesting departments and IAFF representatives to encourage minority participation. The steady increase in the numbers of minorities receiving training through the IAFF supports these efforts. Examples of training announcement letters have been provided to NIEHS in the past and remain available upon request.

In addition to these efforts, the IAFF will continue its work in making IAFF training, particularly for the First Responder Operations level—the level of response required of all fire fighters—available to responders who speak only Spanish. The IAFF has five Master Trainers who are bilingual, though none of the surveyed sites have requested classes in Spanish.

c. Trainee Performance Data

The training conducted and scheduled to take place this year encompasses a wide array of hazardous materials emergency response levels.

Participants in the Instructor Training program are evaluated primarily by observing presentations, particularly a final presentation of an assigned section of materials from one of the IAFF hazardous materials training programs. The trainees of the Confined Space and Emergency Medical Services courses receive extensive didactic and hands-on training that requires demonstrated skill proficiency. Final evaluations on the training received will be forwarded in the October 31 report.

The IAFF proposed to evaluate the immediate impact of First Responder training on student performance using various tools developed with the assistance of Dr. Alex Cohen, including written pre- and post-tests and observation of skills demonstrations. No First Responder programs will fall within the dates of FY '98. However, the results of evaluations for FY '98 Confined Space and Instructor Training programs will be reported in the fall. Specifically, the tools developed for First Responder training will serve as the basis for testing and evaluation in the other courses conducted under the DOE grant.

The IAFF also elicits responses from trainees regarding the materials, training environment, and Master Trainers. Evaluations of the training process are conducted throughout each training program so that modifications can be made as needed. These evaluation forms, submitted with the original proposal, focus on the Master Trainers' instruction, the speed and depth of the classes, and the facilities. Of the classes conducted to date, the reviews of the instructors, the materials, and the facilities have been more than satisfactory. A summary of evaluations for all training programs will be submitted as part of our October 31 update.

d. Training Effectiveness Information

In addition to data reflecting trainee understanding and competence, the IAFF collects data on the outcome of training; that is, the impact on work practices and worker health and safety. Because much of the training is scheduled for the end of FY '98, this data is not yet available and will be submitted at least six months after training to allow an appropriate period to assess impact more than once. Tools for assessing training effectiveness (for example, Participant Action Statement forms) were submitted in the original grant proposal. The IAFF will also review departmental incident reports, logs from fire officers, and personal interviews following incidents to compile anecdotal reports of training impact.

In addition, the IAFF will continue to monitor morbidity and mortality data through the Death and Injury Survey conducted by the IAFF's Health and Safety Department. Past reports are available upon request. Analysis and comment on the reports will be included with our final submission to NIEHS this Fall.

e. Literacy Issues

In our experience, both career and volunteer fire fighters have reading and writing skills sufficient to meet the requirements of IAFF training programs. In most situations, particularly in professional fire departments, admittance into the fire service is a highly competitive process and applicants must pass a series of tests, including written tests. According to the written evaluations of Master Trainers who conduct the IAFF programs, IAFF staff members who attend them, labor representatives, and trainees, there has not been a single instance in which a trainee has failed to understand written materials or instructions. This was demonstrated objectively by performance on written quizzes and tests (which are completed individually, under the supervision of Master Trainers) as well as by student evaluations regarding the manner in which information was conveyed in each training program. Reports of these evaluations are discussed in the above section on trainee performance data.

The IAFF will continue to emphasize the need for sensitivity to literacy problems in its Master Trainer meetings and Instructor Training programs. Note that an Instructor Development Conference is scheduled at the end of this grant year. The Conference will emphasize trainer development and improving their instruction through small-group activities. Should literacy problems be encountered in an IAFF training program, Master Trainers will work with individuals during breaks and before and after class periods to cover information in written training materials verbally, on a one-to-one basis. Evaluation forms can also be completed with the help of Master Trainers or IAFF staff who are on-site.

3. Curricula Updates

The IAFF sought funding through the NIEHS/DOE program to update curricula for the Technician Program. Also, other curricula utilized in this program was developed and updated with other sources of funding. The programs developed or updated are as follows:

Hazardous Materials Training for Emergency Responders: Technician

This is a comprehensive course involving over 240 hours of instruction for emergency responders at the Technician level (as defined in 29 CFR 1910.120). The program is a compilation and update of two courses funded in past years by the NIEHS-EPA program (Hazardous Materials Team Member and Hazardous Materials Specialist). Funding for this program was provided through carryover funding from the NIEHS-DOE FY '96 and '97 programs. This program is still under development. When completed, a draft will be sent to NIEHS for review.

Hazardous Materials Training For First Responders

This program is the workhorse of the IAFF Hazardous Materials Training Program. It was originally developed nearly 9 years ago with NIEHS-EPA funding. It is a 24-hour program that trains emergency responders to the "Operations" level. This program is widely recognized in the U.S. as a standard for fire fighter training, as has been certified by state fire marshals in a number of states, most recently, California. Through funding from NIOSH, the IAFF is working on a 3rd Edition update of this program.

Hazardous Materials Training for First Responders: Radiation Emergencies: First Responder Operations

This is a new 24-hour program that has been developed to refresh emergency responders on basic hazardous materials response in day-one, and then moves to comprehensive training regarding response to radiological incidents in days-two and three. Developed under contract with Fluor Daniel Fernald (DOE), the program is intended for emergency responders who may face incidents involving the transport of radioactive waste. The program was intentionally developed to have a broad application for all radioactive wastes and should prove useful in both the NIEHS EPA and DOE programs. A copy of this program was forwarded to NIEHS for review in June, 1997

4. Advisory Board Activities

A list of Advisory Board members and their professional affiliations is provided in Appendix C. This year, the Advisory Board met in Las Vegas Nevada to review the IAFF Hazardous Materials Training Program. They also enjoyed the opportunity to tour operations at DOE's Yucca Mountain project.

Meeting minutes of the Spring 1998 Advisory Board meeting are included in Appendix D. The Advisory Board reviewed each of the newer training programs available, the IAFF's budget under the NIEHS and DOE Cooperative Agreements, and the plans for training and evaluation. Since several Board members are fire service representatives, they provide essential oversight regarding training content and program feasibility.

5. Trainee Follow-up

Trainee follow up data is not yet available because the training is not complete. After this summer's scheduled training, the IAFF will maintain contact with participating departments to follow trainees. IAFF Hazardous Materials Assistants will send letters and follow up with telephone calls to elicit information about hazardous materials response activities, particularly responses to DOE sites. This data, along with anecdotal reports, will be submitted to NIEHS following completion of training. This allows the IAFF to collect data approximately six months following completion of training and analyze it before submitting a comprehensive report.

In addition, the IAFF will conduct a written follow-up survey of Instructor Trainees 6 - 12 months after the fiscal year to assess their use of IAFF hazardous materials training programs in training fire fighters in their departments and other response personnel.

6. Instructor Support

The IAFF has supported the skills of IAFF Master Trainers through previous meetings, written communication, and verbal review of feedback forms by IAFF staff with individual Master Trainers. The IAFF received approval to conduct a Master Instructor Refresher meeting in FY '96. The meeting was an overwhelming success. Accordingly, another conference has been scheduled for this Summer, funded partially with carry over funding from last year's DOE budget. We will organize the IAFF Master Trainers for the review of training programs, presentation methods, and any concerns regarding the programs funded through NIEHS. This meeting is described in greater detail in the Training Plan.

II. TRAINING PLAN

The IAFF surveys of the five targeted DOE sites indicate that multiple additional programs are needed at all sites for the next grant year. This is consistent with the NIEHS/DOE sponsored Ruttenberg study which stated that several years of training will be needed to address the deficiencies at each site. Training will continue at these sites into future Grant years until response personnel are adequately trained and can continue training without further assistance.

For FY99, the IAFF proposes to conduct seven (8) direct training programs (*First Responder Operations, Emergency Medical Services, Confined Spaces, Technician*) and four (4) Train-the-Trainer Programs. This number will provide at least two programs at each of the five selected DOE sites, while two sites will receive three programs. At this point, the exact courses to be conducted at each site have not been determined as the emergency responders in those areas have not completed their local schedules. This information will be forwarded to NIEHS upon completion of scheduling at the sites.

Training completed to date is listed below, as well as those events tentatively scheduled for this grant year. (Tentative information is listed in italics).

Site	Class	Date	# of Students	Contact Hours
Hanford, WA	Instructor Training	6/29-7/2	25	800
	<i>Confined Space Rescue</i>	<i>July '98</i>	<i>25</i>	<i>800</i>
Lawrence Livermore, CA	Instructor Training	6/8-6/12	14	448
	<i>Instructor Training</i>	<i>8/10-8/13</i>	<i>25</i>	
Rocky Flats, CO	<i>Instructor Training</i>	<i>8/3-8/6</i>	<i>20</i>	<i>640</i>

Savannah River, SC	Instructor Training <i>Instructor Training</i>	6/27-6/28 <i>August '98</i>	30 20	480 320
Oak Ridge, TN	Instructor Training	6/1-6/4	25	800
Washington, DC	<i>Instructor Conference</i>	<i>August '98</i>	17	340
<hr/>				
TOTALS	9 Programs		201	5,428

The content of the classes to be given at DOE sites have been presented as part of earlier applications to NIEHS. As noted in the NIEHS - EPA reapplication, the Instructor Training program can be customized - at the request of local emergency responders - to include modules for any current IAFF course. As local needs demand and resources permit, we may accept more than the projected number of students into a given class.

As noted by the figures suggested above in both Direct and Instructor Training events, the IAFF proposes to train well in excess the numbers projected in our original proposal. The total number of trainees as shown in last year's numbers (201) represents a "best-case" scenario for the next year.

The IAFF will follow Instructor Trainees to track the number of emergency response personnel they train in the year following training. We anticipate that each Instructor Trainee (approximately 160) will train at least 30 personnel each, for a total of 4,800 personnel trained at various levels of emergency response in the year following Instructor Training. The IAFF encourages instructors to report any/all training after they have completed the Train-the-Trainer program.

2. Evaluation

The IAFF will continue to evaluate Direct Training and Instructor Training courses as described in our original application. In addition, under a separate grant, the IAFF has embarked on an effort to assess long-term behavioral changes on emergency response personnel resulting from training. The long-term assessment program was developed and implemented in consultation with Dr. Alex Cohen, a human factors psychologist whose research experience has focused on environmental factors affecting health, productivity and well-being, and behavioral approaches to workplace hazards control.

In brief, the IAFF initiated a follow-up interview evaluation project to complement the First Responder Operations course. The intent of the project was to analyze knowledge gain, competency level shift, long-term behavioral (action statements), and administrative changes that take place as a result of the First Responder course. The IAFF experience with our on-site interviews was shared with other NIEHS grantees at the NIEHS workshop, "Measuring and Evaluating the Outcomes of Training" (March 1996). The IAFF travels to different locations to conduct interviews with randomly-selected trainees approximately six months after their training is conducted.

The IAFF proposes developing a similar approach to following selected trainees in the Confined Spaces and Emergency Medical Services programs. Participants in Train-the-Trainer programs will continue to be evaluated and followed with written questionnaires as described in our original proposal.

3. IAFF Master Trainer Meeting

The IAFF has maintained contact with our Master Trainers through written and verbal communications, direct supervision during training programs, and feedback from the Project Director following his review of student evaluations after training program completion. As noted earlier, the Instructor Development Conference conducted in FY '97 was an undisputed success. Many IAFF Instructors reported that the Conference was the most beneficial training they had received since the original IAFF Master Training program (1993). The Master Trainers will meet to refresh skills, ensure consistent delivery of materials, and to review updated materials, as well as learn of any previously unreported difficulties. The IAFF has scheduled a 3-day meeting of the Master Trainers who have taught in the IAFF NIEHS projects most frequently. Master Trainers will meet in Washington, DC, near the IAFF Headquarters. During this meeting, we plan to review existing training materials and evaluation tools, practice presentation methods, and provide advanced training for the new Instructor Training program which will include more recently developed IAFF programs.

The focus for the FY '98 Conference will be on improving IAFF instructor skills and competencies. In order to maintain our "cutting-edge" training approach, the IAFF will be instructing advanced presentation methods (computerized projection systems), small group activity workshops, and the latest adult learning techniques. In addition, we anticipate that the meeting will allow the exchange of information with IAFF staff and other Master Trainers. The budget for this meeting is described in detail under Budget Justification. More attendees will be added as the budget allows.

5.2

5.3

6 Publication of "Resource Guide for Evaluating Worker Training"

During May 1998, the Resource Guide for Evaluating Worker Training: A Focus on Safety and Health was published by RRA in conjunction with the George Meany Center and NIEHS. This guide summarizes the insights and methodologies of the NIEHS Worker Training Awardees in conducting formative and summative program, training, instructor and trainee evaluations. During March 1996, NIEHS sponsored the first national conference on Measuring and Evaluating the Outcomes of Hazardous Waste Worker Training to examine the methods which have been developed by various programs to document the effectiveness of training activities. Drawing on public health experts in the evaluation field, awardee representatives spent two days exploring the methodological issues that underlie the collection of program effectiveness data. Breakout sessions examined issues from trainee comprehension of curricula to outcome results in the workplace after training had taken place. The significant resources that have been allocated for NIEHS training awards require that recipients demonstrate not only effective implementation, but also positive impacts on the health and safety of trained workers. The findings reported at the technical workshop and the publication of the Resource Guide clearly demonstrate that NIEHS grantees have responded to the challenge for program evaluation and have documented monumental changes in the health and safety of workers and communities across the United States.

.1

7 Continued operation and support for a national clearinghouse

The Clearinghouse functions as a link between the DOE awardees of NIEHS Worker Training cooperative agreements and other members of the general public who are concerned with quality worker health and safety training. Tasks of the Clearinghouse include, but are not limited to, the distribution of curricula, research work to support the development of the NIEHS Worker Training Program, cataloguing of training materials, and other information pertaining to worker health and safety training for hazardous materials, waste operations, and emergency response, as well as other related activities. The Clearinghouse is the information exchange and dissemination mechanism for 7 worker training programs whose support from the (DOE) is intended to set a high standard for health and safety training to protect workers in the burgeoning environmental technology sector.

The Clearinghouse web page has been redesigned and includes a help desk section designed to provide information on the Internet for both the computer novice and the expert. Links exist for the following topics: Brownfields, Regulations, Hazard Communication, Hazardous Materials Libraries, Lead and Asbestos, Material Safety Data Sheets, NIEHS Grantees, Pollution Prevention, Radiation, and State Resources.

Also linked to the page are documents produced by the Clearinghouse, including the **Resource Guide for Evaluating Worker Training: A Focus on Safety, and the Minimum Criteria Document**. Interested parties are now able to register for workshops and meetings on-line via the Clearinghouse Web Page.

Features of the updated Web Page were presented at the October awardee meeting. This task by the Clearinghouse will also include enhancing the existing Web page and related resources, collecting data on existing computer technology, linkages to other resources, and direct assistance and consultations in creating on-line access for individual users and participating organizations in the NIEHS program. The Help desk program will increase the use of Web page resources, available LISTSERV resources, NIEHS FTP site, email exchange, on-line conferencing capabilities and related electronic resources. The Clearinghouse web address is: <http://www.niehs.nih.gov/wetp/clear.htm>

8 Trainee Environmental Job Tracking Initiative

.1.1

.1.2 In our request for continuation applications during May 1998, NIEHS asked that each awardee propose a system to track trainees and collect post-training employment information. A number of the awardees have proposed approaches which build on existing trainee registrations, while others are creating innovative systems to catalogue employment experience through refresher training exercises. At a September 1998 all-awardees meeting, NIEHS and DOE staff discussed the various approaches which various awardees have proposed in their applications and initiated a process to set a "minimum criteria" for the collection of baseline employment information on trainees.

In addition, RRA and the Clearinghouse have been tasked with supporting this effort by providing technical assistance to awardees during this process. During the first six months of the contract year, the Clearinghouse helped coordinate and support several awardee pilots on trainee tracking. Significant attention will continue to be dedicated to trainee tracking during the second half of the contract year.

Besides conducting a telephone survey of awardees to gather information on data collection systems, the Clearinghouse helped organize a meeting on tracking, in Washington, D.C., which was attended by about 40 representatives of awardee organizations, NIEHS, DOE, and EPA. As a basis for discussion, before and after the meeting, the Clearinghouse collected and disseminated, by fax and with the help of a tracking listserve, the data collection instruments used by various awardee organizations.

Technical/research support was also supplied to awardees who participated in a series of tracking conference calls organized by NIEHS during September and October. The conference calls were organized for sub-groups of NIEHS awardees: separate calls were conducted for the industrial union group, the construction group, the DOE group, the university group and the Minority Worker Training Program group. The results of these conference calls were presented at the October awardee meeting. A new trainee-tracking page has been added to the Web Page. All awardees have created pilots projects to collect trainee employment data

Descriptions of these efforts include:

International Association of Firefighters

The IAFF has selected training sites by identifying departments near geographic locations with the

highest densities of DOE Superfund sites and TSD facilities. The IAFF entered data from the federal EPA NPL Final Site Bulletin (dated 10/02/95) into a software program (Geographic Information System) that mapped the entered locations and listed the top locations for NPL sites. For site clusters near several smaller cities, the IAFF identified central locations for training. The sites receiving training over the past three years were among these top locations.

Laborers-AGC Education and Training Fund

Laborers-AGC recently developed a separate application to be used for all environmental remediation refresher courses. This form continues to provide demographic information that was included on the old form, but it also has a section on recent work activities in the environmental remediation field. Trainees are asked to provide their work history on hazardous waste sites, including the job location, contractor, and date of job. They are also asked to indicate if their training was relevant to their job, prepared them for their job, or improved their health and safety on the job.

University of Medicine and Dentistry of New Jersey

The registration form used by the New Jersey/New York Consortium is a scannable form. Data are collected in several means. 1. Registration forms; 2. Follow-up questionnaires; 3. Refresher Courses. It collects typical demographic data, including age, gender, education level, ethnicity, primary language. Additionally, it collects whether the trainee is employed, and where they are employed (i.e. private industry, government, union, DOE site), and job duty (i.e. clean-up of waste sites, transport wastes, TSD of wastes, site investigation).

9 Worker Trainer Programs: Guidelines for Success

Key to the success of the Superfund Worker Training Program has been the continuing development of trainers at the local level throughout the United States. NIEHS has undertaken an effort to inventory Train-the-Trainer Programs for hazardous waste workers and emergency responders in order to examine the characteristics of successful programs. This inventory process and a companion technical workshop was resulted in the publication of **Worker Trainer Programs: Guidelines for Success in hazardous waste Operations and Emergency Response**, a technical document which summarizes best practices and lessons learned for the development of high quality train-the-trainer programs. It is the goal of this effort to establish a national consensus for how to maintain the delivery of high quality HAZWOPER training through the ongoing support and development of both professional and worker trainers. This national development of a minimum criteria document includes a state of the art discussion concerning the current status of the unique characteristics of train-the-trainer programs which will include the content of training programs, mechanisms for ongoing support of peer trainers, and minimum qualifications for trainers in 1910.120 programs. Information has been collected and catalogued from NIEHS Worker Training awardees to document the processes and content of existing trainer programs, refresher and tune-up activities, and other activities which assure the ongoing technical competency of trainers supported by NIEHS programs.

10 Summary of the Environmental Job Training Summit in New Orleans, LA

In March 1998 more than 170 participants conferred for a workshop on environmental job training with the focal point of continuing review and planning for the Minority Worker Training Program. Participants represented trainees, peer trainers, labor unions, professional trainers, training program administrators, colleges and universities, community groups, environmental justice advocates, consultants, and government officials. Hosted by Xavier University and sponsored by Clark Atlanta University, U.S. Environmental Protection Agency and NIEHS in cooperation with the National Clearinghouse for Worker Safety and Health Training, discussion centered on:

- A look-back of three years of start-up and training in the MWTP and progress since the technical workshop at Cuyahoga Community College in Cleveland, April 17, 1995 on "Environmental Job Training for Inner City Youth."

- A review of the programs as they currently exist, evaluating recruitment, life skill training, jobs skill training, safety and health training, placement, retention, and advancement.
- A look forward at ways to improve training, training partnerships, and training-to-work partnerships. Substantial time both formally and informally was spent strengthening and forging such vital links.

Participants were invited to a tour of facilities such as training sites, chemical companies, brownfield sites, and other sites in the New Orleans and Mississippi River Chemical Corridor. The Opening Plenary included welcome from Norman Francis, President of Xavier University, and Dr. Yvonne Scruggs-Leftwich, Executive Director and CEO of the Black Leadership Forum. This first plenary provided an excellent overview and challenge to training with emphasis on urban infrastructure issues, and how to maximize the benefits of training for trainees, the community and the training providers. Several breakout sessions were presented on topics such as Life Skills Management and Curriculum Issues; Incentives and Barriers to Modifying Construction/Cleanup Contracts; Linking Up With Other Job Training Programs; and Raising the Level of Training.

11 Continuation Applications

Eight and a half million dollars of the FY 98 funds for the were allocated to continue support of the DOE Worker Training Program to train hazardous waste workers and emergency responders.

See Appendix 13 for Awardee Breakout of FY 98 Funds for the period of September 1, 1998 to August 31, 1999. Budget adjustments in the proposed funding plan have been 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 generate program income for independently continuing their programs, and the availability of unobligated balances from prior years, as well as other administrative considerations. Budget line items have been adjusted for each individual awardee to target training delivery to focused populations and assure that program costs are related to direct training support. Budget adjustments have been recommended which will assure that awardees will still be able to undertake the most critical parts of their proposed programs as outlined in their initial applications.

For each component of each awardees' noncompeting reapplication, an analysis and review was carried out to evaluate the program progress during the current year, compliance with existing terms and conditions, measures of program effectiveness and other quality assurance factors. Individual progress report forms for each awardee are included as appendices to this document, along with budget worksheets, in which targeted reductions have been made in specific line item categories.

12 Conference on Workplace Safety & Health Training

With the involvement of the EPA/NIEHS Superfund Worker Training Program, an interagency effort has been initiated to examine health and safety training. A National Conference on Workplace Safety & Health Training will be held October 24-26, 1999 in the Henry VIII Hotel & Conference Center, St. Louis, Missouri, co-sponsored by the National Institute for Occupational Safety & Health, the Occupational Safety and Health Administration, and the National Institute of Environmental Health Sciences. The conference is planned to bring together cross-sector representatives to look at the workplace of the future, and plan new approaches to occupational safety and health training, evaluation strategies, and enabling policies to meet better the challenges ahead.

The conference is designed to be participatory and engage conference attendees in the process of planning for the future. Considering medical, insurance, lost-productivity, and personal costs, it is estimated that occupational injury and illness costs totaled \$171 billion/year in 1992 for the U.S. These

great costs to industry, insurance, and society highlight the need for safety and health interventions in the workplace, and an important role for public health training and education professionals.

The conference will discuss how changes in the nature of work and the makeup of the work force require changes in training and education programs; explore how training and education relate to other components of effective health and safety systems; identify new approaches and technologies that can enhance traditional teaching methods; consider how to evaluate the impact of training and education programs as one component of many in the health and safety system; and stimulate collaboration among business, labor, academia, professional associations, government agencies and others to identify additional resources and shape future directions for training and education.

13 Guidelines for Training in Support of Workplace Safety and Health Programs

On November 12-13, 1998, a National Technical Workshop was held in Silver Spring, Maryland at the George Meany Center to develop a consensus document "*Guidelines for Training in Support of Workplace Safety and Health Programs.*" This Workshop was organized with the specific intent to develop consensus guidelines, based upon the unique experience of the participants, to provide guidance associated with the development of training programs in support of employer safety and health programs. OSHA recently announced, in the annual regulatory agenda for the Agency, the intention to promulgate a Notice of Proposed Rulemaking for a comprehensive Safety and Health Program Rule. Training is proposed as a requirement in the draft rule. Yet, very little detail is included with regard to the development of training programs associated with the Program rule.

The Guidelines developed in this Workshop and the resulting Guidance Document will serve as important resource to OSHA during the rulemaking process and to employers and trainers who seek to develop quality workplace training programs in support of their safety and health programs. The purpose of this guidelines document, therefore, is to provide a comprehensive source of guidance and information to aid employers, trainers, training providers, and training program developers in the development, delivery, evaluation and continual improvement of training to support and enhance workplace safety and health. These guidelines are based upon the extensive experience of the Workshop participants in occupational training and training associated with the OSHA Hazardous Waste Operations and Emergency Response standard specifically.

14 Technical Workshop on Virtual Safety and Health Training

WORKER TRAINING AND THE INTERNET: A RESOURCE AND A TRAINING MEDIUM will be an upcoming technical workshop in April 1999 in Denver, Colorado. Both computer-based training and on-line distance learning are becoming invaluable resources for hazardous waste and emergency response training information. Worker access to the Internet can provide 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 upcoming technical workshop and companion research paper surveys resources currently available on-line to aid in hazardous materials training and will examine efforts to evaluate the effectiveness of these training methods and resources.

The Internet is also being used increasingly as a training provider. Many colleges and universities are on-line to provide a variety of academic and technical courses. Some of these courses are of a correspondence nature, and students can contact a faculty member and submit papers by E-mail. Some courses provide chat room and live-on line interaction. Some courses provide interactive curricula on-line complete with videos and self-testing. This technical workshop will survey the state-of-the-art of virtual training, with a focus on safety and health training, and a further focus on HAZMAT training.

15 Request for Applications (RFA) Development Process

During August 1999, the NIEHS will be releasing the next formal program announcement which will 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. In its announcement, the NIEHS will specify a deadline in December 1999 for grant applications from qualified non-profit organizations to support curriculum development, direct training delivery and program evaluation.

NIEHS' announcement will specifically state that proposed training activities and curricula will be required to meet OSHA regulations, as NIEHS has significantly expanded the proposed target populations for OSHA-required training to include workers involved in waste site investigations and assessments and in the transportation and generation of hazardous waste; groups facing potential health risks that are similar to cleanup workers and emergency responders.

The NIEHS will request 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 will also require 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 will be encouraged to minimize duplication of efforts, to provide wide geographic coverage and to reduce administrative costs.

16 Conclusion

Based on our program experience over the past eleven years, the NIEHS will continue to use cooperative agreements as the appropriate mechanism for making awards to non-profit training

organizations for fiscal years 1995-99. Because of the substantial programmatic involvement by NIEHS staff to ensure the consistency, appropriateness and technical reliability of funded training programs, the use of cooperative agreements appear to be a more suitable instrument for supporting extramural training of hazardous waste workers and emergency responders and assuring the delivery of high quality safety and health programs to high-risk populations.

In administering the DOE Hazmat Worker Training Program through an Interagency Agreement with DOE, the NIEHS ensures that the traditional peer review process of the National Institutes of Health (NIH) provides the essential framework for the oversight of grant application reviews, and guidance of the program with grants management activities and ongoing program administration. Technical experts in toxicology, industrial hygiene, labor education and hazardous waste management from both the public and private sectors have played an ongoing role in assuring that NIEHS supported programs demonstrate high technical merit and adhere to stringent standards for quality control through periodic site reviews and an ongoing peer review process.

The NIEHS/DOE Hazmat Worker Training Program must continue to meet the EM-related national environmental goals of protecting communities from exposures to wastes at abandoned dumpsites and currently operating facilities and from exposures related to the storage, treatment and disposal of waste. Additionally, we will continue to develop programs to protect and train those who live and work in communities affected by DOE environmental remediation activities. These goals will be achieved by responding to the nation's changing needs for worker training in the area of hazardous waste operations and emergency response to hazardous materials.

The need for a trained workforce to handle environmental cleanup activity at DOE has not diminished in recent years. To the contrary, the DOE complex continues to be a very active laboratory for environmental remediation technology, and the continued reduction in the number of production facilities generates a corresponding increase in the number of sites to be cleaned up. The waste management process also continues to grow. Changes in the nature of the contracting to performance-based makes the importance of contractor utilization of a very well trained workforce compelling. The information available for the 1994 Needs Assessment was, by virtue of the gaps in actual knowledge about cleanup activity, somewhat sketchy.

The 1994 and 1997 Needs Assessments were prepared on the basis of information on cleanup activity that was not always comprehensive; since then, DOE has generated much more information about its environmental remediation plans, and the DOE awardees have also delivered a substantial amount of training throughout the complex. The information in this report demonstrates that there is a significant level of cleanup activity underway, and that the workers trained through the NIEHS program now constitute--and are likely to continue to constitute--a substantial part of the DOE workforce.

The NIEHS model programs will continue to encourage innovation for training difficult-to-reach populations. This program is addressing issues such as literacy, appropriate adult education techniques, training quality improvement and other areas unaddressed directly by the market place. The program enhances rather than replaces private sector training by demonstrating new and cost-effective training techniques and materials.

Appendices for DOE Progress Report

17

18 Appendix 1: Percent and Total of NIEHS/DOE Courses Completed

18.1 DOE/NIEHS WORKER EDUCATION AND TRAINING PROGRAM PERCENT AND TOTAL OF NIEHS COURSES COMPLETED, WORKERS TRAINED, AND CONTACT HOURS, BY SITE FOR BUDGET PERIOD 09/01/97-08/31/98						
SITE	COURSES COMPLETED		WORKERS TRAINED		CONTACT HOURS	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Argonne National Laboratory	4	0%	76	1%	1,088	0%
Brookhaven National Laboratory	15	2%	256	2%	2,648	1%
Fernald Environmental Management Project	8	1%	98	1%	2,464	1%
Formerly Utilized Sites Remedial Action	29	3%	309	2%	4,024	2%
Hanford	212	22%	4,339	29%	49,714	23%
Idaho National Engineering Laboratory	83	8%	1,383	9%	13,432	6%
Kansas City Plant	7	1%	115	1%	3,488	2%
Lawrence Livermore National Laboratory	4	0%	50	0%	992	0%
Los Alamos National Laboratory	21	2%	359	2%	9,040	4%
Mound Plant	16	2%	238	2%	1,904	1%
Nevada Test Site	32	3%	323	2%	7,144	3%
Oak Ridge Field Office	251	26%	3,900	26%	66,864	31%
Paducah Gaseous Diffusion Plant	21	2%	303	2%	4,240	2%
Pantex Plant	20	2%	274	2%	2,208	1%
Portsmouth Gaseous Diffusion Plant	32	3%	360	2%	3,328	2%
Princeton Plasma Physics Laboratory	18	2%	45	0%	418	0%
Rocky Flats Office	41	4%	500	3%	7,169	3%
Santa Susana Field Laboratory	5	1%	81	1%	2,432	1%
Savannah River Site	59	6%	744	5%	17,200	8%
Umtra Project Office	3	0%	41	0%	1,968	1%
Waste Isolation Pilot Plant	1	0%	6	0%	48	0%
Weldon Spring Site Remedial Action Project	12	1%	248	2%	2,984	1%
West Valley Demonstration Project	69	7%	856	6%	9,072	4%
Other ¹	16	2%	144	1%	3,782	2%
19 TOTAL	979	100%	15,048	100%	217,651	100%

¹ Includes: Department of Energy – Headquarters and others

20 Appendix 2: Five-Year Summary

20.1.1 DOE/NIEHS 20.1.2 5 YEAR TRAINING SUMMARY			
.1 .2 YEAR	20.1.3 TOTAL COURSES	20.1.4 TOTAL WORKERS	TOTAL CONTACT HOURS
1994	476	7,107	184,605
1995	1,082	13,524	249,368
1996	1,195	18,663	291,107
1997	1,270	18,394	244,212
1998	979	15,048	217,651
.1 TOTAL	5,002	72,736	1,186,943

21 Appendix 3: FY 97 Funding

21.1.1 DOE/NIEHS WORKER EDUCATION AND TRAINING AWARDS FOR BUDGET PERIOD 09/01/97-08/31/98 FY 1997 FUNDS	
AWARDEE	HWWT 9/97 AWARD
International Chemical Workers Union Council	\$650,000
International Association of Fire Fighters	\$300,000
Laborers-AGC Education and Training	\$2,180,000
Oil, Chemical & Atomic Workers	\$970,000
University of Medicine & Dentistry of New Jersey	\$298,175
International Union of Operating Engineers	\$1,300,000
United Brotherhood of Carpenters	\$2,297,825
TOTAL	\$7,996,000

22 Appendix 4: FY 98 Funding

22.1.1 DOE/NIEHS WORKER EDUCATION AND TRAINING AWARDS FOR BUDGET PERIOD 09/01/98-08/31/99 FY 1998 FUNDS	
AWARDEE	HWWT 9/98 AWARD
International Chemical Workers Union Council	\$1,000,000
International Association of Fire Fighters	\$400,000
Laborers-AGC Education and Training	\$2,180,000
Oil, Chemical & Atomic Workers	\$1,025,000
University of Medicine & Dentistry of New Jersey	\$350,000
International Union of Operating Engineers	\$1,078,000
United Brotherhood of Carpenters	\$2,403,000
TOTAL	\$8,436,000

23 Appendix 5: TRAINING PARAMETERS

FINAL FIVE YEAR SUMMARY: DOEWIEHS WORKER EDUCATION AND TRAINING PROGRAM						
TRAINING PARAMETERS ¹	1994	1995	1996	1997	1998	TOTAL
Number of Awardees	8	8	8	7	7	
Courses Completed	476	1,082	1,195	1,270	979	5,002
Workers Trained	7,107	13,524	18,663	18,394	15,048	72,736
Contact Hours	184,605	249,368	291,107	244,212	217,651	1,186,943
Dollars Awarded	\$9,898,826	\$9,719,474	\$8,935,000	\$7,996,000	\$8,436,000	\$44,985,300
Cost Per Contact Hours	\$53.62	\$38.98	\$30.69	\$32.74	\$38.76	\$37.90

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.

24 Appendix 6: Target Populations

DOE/NIEHS TARGET POPULATIONS 9/1/97 – 8/31/98						
TARGET POPULATIONS	COURSES COMPLETED	% COURSES COMPLETED	# WORKERS TRAINED	% WORKERS TRAINED	# CONTACT HOURS	% CONTACT HOURS
CERCLA Cleanup ¹	395	40%	7,030	47%	113,332	52%
RCRA/Industrial	284	29%	4,502	30%	43,312	20%
Emergency Response	28	3%	340	2%	5,325	2%
Radiation	94	10%	942	6%	20,448	9%
Lead Abatement	11	1%	113	1%	2,552	1%
Asbestos Abatement	92	9%	1,099	7%	22,424	10%
Other	75	8%	1,022	7%	10,258	5%
TOTALS	979	100%	15,048	100%	217,651	100%

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

25 Appendix 7: Total Training by NIEHS Awardee

DOE//NIEHS WORKER EDUCATION AND TRAINING TOTAL TRAINING FOR BUDGET PERIOD 09/01/97-08/31/98				
26	27 AWARDEE	COURSES COMPLETED	WORKERS TRAINED	CONTACT HOURS
	International Chemical Workers Union Council	119	1,994	19,954
	International Association of Fire Fighters	6	156	4,793
	Laborers-AGC Education and Training	315	3,748	84,752
	Oil, Chemical & Atomic Workers	182	2,945	28,432
	University of Medicine & Dentistry of New Jersey	122	1,347	14,250
	International Union of Operating Engineers	129	2,337	27,936
	United Brotherhood of Carpenters	106	2,521	37,534
	TOTAL	979	15,048	217,651