



# **LEARNING FROM DISASTERS:** WEAPONS OF MASS DESTRUCTION PREPAREDNESS THROUGH WORKER TRAINING

## **Report of a National Technical Workshop**

### **Sponsored by:**

Worker Education and Training Program,  
National Institute of Environmental Health Sciences

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## Acknowledgement

The participation of the National Institute of Environmental Health Sciences (NIEHS) awardees and the subject matter experts is essential to the successful outcome of the Worker Education and Training Program (WETP) workshop process. Their participation is appreciated and acknowledged. The assistance of the WETP Clearinghouse staff in organizing and making arrangements for the workshop is also acknowledged.

Donald Elisburg

John Moran

## Preface

The events of September 11th and the subsequent anthrax incidents have caused all agencies of government to review their activities with respect to the response to terrorism. In the case of the WETP, the review requires a re-examination of the worker training program with respect to emergency response and hazardous waste cleanup given the clear lessons learned from the events that brought so many of these workers into the complex and dangerous response and cleanup activities.

This workshop represents the initial efforts to bring together awardees and experts to explore the issues of worker training surrounding emergency response and cleanup involving Weapons of Mass Destruction (WMD). The product of the workshop can serve as the initial basis for the WETP to advance development of the Hazardous Waste Operations and Emergency Response (HAZWOPER)-based WMD response training initiative.

## EXECUTIVE SUMMARY

Responses to the World Trade Center (WTC) and Pentagon terrorist attacks of September 11, 2001, particularly the World Trade Center, challenged many previously held views with respect to emergency response operations, communications, coordination, and resource requirements. The National Institute of Environmental Health Sciences (NIEHS) promptly mobilized resources drawn from among the Worker Education and Training Program (WETP) awardees to aid, primarily, in the massive and protracted WTC response. These awardees, their constituent organizations, and many workers trained in the emergency response and hazardous waste operations aspects of the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard responded and remained throughout the initial response, search and rescue/recovery, and cleanup phases. As a consequence, many of the awardees have developed first-hand experience in Weapons of Mass Destruction (WMD) responses uniquely viewed from the adequacy of current HAZWOPER training from a worker protection perspective.

The NIEHS WETP grants program was mandated by the Superfund Amendment and Reauthorization Act of 1986. Initial grant awards were made in 1987. The program has expanded to serve the special needs of the Department of Energy (DOE), the Environmental Protection Agency (EPA) Brownfields initiative, and the EPA Minority Worker Training (MWT) initiative. Over the period 1987-2001, nearly one million workers have been trained in accordance with the training requirements established by the HAZWOPER standard. More than 14 million training contact hours have been delivered to these workers. The WETP has continually

sought to maintain truly “state-of-the-art” HAZWOPER training programs. One approach utilized for this purpose has been national technical workshops begun in 1991, which have been attended by awardees, instructors, government agencies, employers, and the academic community. This workshop was the latest in the series.

This workshop brought together WETP awardees and other experts to explore the issues of worker training with respect to emergency response and cleanup involving WMD. As many of the awardees and the workers that they have trained have been actively and materially involved in the WTC, Pentagon, Oklahoma City and anthrax responses, the workshop offered a unique opportunity to explore lessons learned from the perspective of training preparedness for responses to potential future terrorist incidents.

The workshop format embodied an opening plenary session, five sub-topical focus area breakout sessions, and a closing plenary session during which the issues developed in the breakout sessions were presented and discussed.

The opening plenary session provided a detailed perspective of various aspects of the WMD issue by six national experts, all of whom have had direct experience in one or more of the recent terrorist attack responses and were, therefore, able to provide an unusually detailed and “real” perspective. The experts addressed the National Contingency Plan (NCP)/Federal Response Plan (FRP); WMD and the Hazardous materials (Hazmat) response experience viewed from the First Responder perspective; the findings of the National Institute for Occupational Safety and Health (NIOSH)/RAND WMD conference held in December 2001 and the activities underway to address these

findings; “Critical Incident Stress Management” in WMD responses; responses to WMD incidents from the perspective of worker safety and health as viewed by OSHA; and responses to biological/chemical incidents.

The breakout sessions addressed five specific subjects, each of which has WMD dimensions. These included:

1. First Responders.
2. Skilled Support Personnel (SSP).
3. The biological/chemical threat and recent experience in developing an anthrax response training program.
4. The transportation/petro-chemical industry sectors as potential WMD targets.
5. Communications, coordination, and stress management issues.

Each breakout session was attended by a diverse spectrum of workshop participants, many with direct experience in the recent WMD responses participating in each group. The focus of each breakout group was to understand the lessons learned in the recent WMD incidents as they may apply to future terrorist incidents and to develop recommendations and matters for consideration in the development of WMD preparedness training programs.

The closing plenary session included reports from each breakout session with subsequent discussion by the workshop participants. These breakout session reports provided a robust view of what has been learned in the recent WMD responses, what should be considered to improve future such responses,

and suggested approaches to other aspects of WMD response preparedness.

The discussion section of the report identifies several specific matters that should be considered for attention in order to aid our ability to develop improved WMD responses from training to actual WMD responses.

It is evident that the terrorist attack on the WTC and the sheer magnitude of the resulting catastrophic structural failures and large number of casualties stressed the emergency response system to levels not previously anticipated. The many deficiencies identified, when viewed from the context of the emergency response system, suggest a number of improvements can be made upon which to base increased preparedness for any future event of similar magnitude. These include:

- *Occupational Safety and Health Administration (OSHA) guidance should be enhanced.*
- *OSHA needs to update the policy under which the agency operates in declared disasters and OSHA must become an active participant in the National Terrorism Preparedness Program.*
- *Response should be conducted in full compliance with the Hazardous Waste Cleanup and Emergency Response standard at 29 CFR 1910.120 and 40 CFR 311.*
- *Transition should be timely from search and rescue to recovery, demolition, cleanup, and removal.*
- *Appropriate protection must be planned for and provided to the rescue personnel.*

- *Applicable worker protection standards must be enforced.*
- *Command, control, communications, and coordination should be improved.*
- *An effective injury/illness surveillance system should be established.*
- *Skilled Support Personnel need better protection.*
- *Training input needs to be continuous.*
- *Rigorous peer review process should be applied*

Finally, the Report concludes with recommended elements of a WMD training preparedness initiative by the NIEHS WETP based upon the current HAZWOPER base program.

1. Schedule periodic WMD initiative updates and coordination workshops.
2. Commission the development of a core pre-incident stress management-training module.
3. Develop a specific action plan for WMD response Skilled Support Personnel training and availability.
4. Schedule monthly conference calls with all awardees engaged in the WMD preparedness initiative.
5. Undertake a dedicated effort to establish and maintain contact and coordination with other appropriate federal entities.
6. Establish a dedicated workgroup to develop criteria for an “information resource center” supporting the WMD initiative.

## **ACRONYMS AND ABBREVIATIONS**

Air-Purifying Respirator (APR)

Brownfields Minority Worker Training Program  
(BMWTP)

Centers for Disease Control (CDC)

Center to Protect Workers' Rights (CPWR)

Certified Industrial Hygienist (CIH)

Chemical Protective Clothing (CPC)

Department of Energy (DOE)

Department of Health and Human Services (DHHS)

Department of Transportation (DOT)

Division of Extramural Research and Training (DERT)

Emergency Support Function (ESF)

Environmental Protection Agency (EPA)

Federal Bureau of Investigation (FBI)

Federal Emergency Management Agency (FEMA)

Federal Response Plan (FRP)

Fire Department of New York (FDNY)

Hazardous Materials (Hazmat)

Hazardous Waste Operations and Emergency Response  
(HAZWOPER)

Hazardous Waste Worker Training (HWWT)

Incident Command System (ICS)

International Association of Fire Fighters (IAFF)

International Union of Operating Engineers (IUOE)

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

Minority Worker Training Program (MWTP)

National Clearinghouse for Worker Safety and Health  
Training for Hazardous Materials, Waste Operations,  
and Emergency Response (National Clearinghouse)

National Contingency Plan (NCP)

National Fire Protection Association (NFPA)

National Institute for Occupational Safety and Health  
(NIOSH)

National Institute of Environmental Health Sciences  
(NIEHS)

National Puerto Rican Forum (NPRF)

National Response Team (NRT)

New York Committee on Occupational Safety and Health  
(NYCOSH)

Occupational Safety and Health Administration (OSHA)

Personal Protective Equipment (PPE)

Powered Air-Purifying Respirator (PAPR)

Self-Contained Breathing Apparatus (SCBA)

Skilled Support Personnel (SSP)

Superfund Amendments and Reauthorization Act (SARA)

Unified Command System (UCS)

University of Medicine and Dentistry of New Jersey  
(UMDNJ)

Weapons of Mass Destruction (WMD)

Worker Education and Training Program (WETP)

## BACKGROUND

### The NIEHS Worker Education and Training Program

The Superfund Amendments and Reauthorization Act of 1986 (SARA) established an assistance program for training and education of workers engaged in activities related to hazardous waste removal, containment, and emergency response. Grant recipients are non-profit organizations with demonstrated access to appropriate worker populations and experience in implementing and operating worker health and safety education training programs. The National Institute of Environmental Health Sciences (NIEHS) was given responsibility for establishing and managing this program within the Worker Education and Training Program (WETP) Office.

Additional grant programs are administered by WETP for the Department of Energy (DOE) nuclear weapons complex cleanup, the Environmental Protection Agency (EPA) Brownfields initiative, and the EPA Minority Worker Training (MWT) initiative. Subsequent to September 11th, supplemental awards were made to support education and training activities related to the World Trade Center (WTC) cleanup, the anthrax contamination response, and the development of Weapons of Mass Destruction (WMD) training.

Training courses developed by the awardees include classroom, hands-on, and on-line health and safety training for workers, supervisors, and professionals focused on hazardous waste operations and emergency response. WETP supports the development of curricula and training programs to help employers meet Occupational Safety and Health Administration (OSHA) requirements under 29 CFR

1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER) including training programs to meet site-specific needs of contractors such as confined spaces, blood-borne pathogens, lead, asbestos, and general construction safety (OSHA 10). The model program encourages innovation for training difficult-to-reach populations, addressing issues such as literacy, appropriate adult education techniques, and training quality improvement. The WETP grants program was established in 1987. Since that time, the many awardees have trained an extensive cadre of workers on a national basis, as briefly in Table 1.

**Table 1.**  
**NIEHS/WETP Training Grants**  
**Program Summary Data.**  
**Period: 1987-2001**

#### Grant Award Categories

HWWT-EPA*	1987-present
HWWT-DOE*	1994-present
MWTP*	1996-present
BMWTP*	1999-present

#### Primary Awardees: current\*\*

HWWT-EPA	21
HWWT-DOE	8
MWTP	8
BMWTP	6

#### HWWT, EPA & DOE, 1987-2001

Courses presented	50,850
Workers trained	958,941
Training contact hours	14,385,736
EPA Regions covered*	All (10)

\* HWWT-Hazardous Waste Worker Training; MWTP-Minority Worker Training Program; BMWTP-Brownfields Minority Worker Training Program.

\*\* Some grantees have awards in more than one category. Many primary awardees have one or more sub-awardee groups within the scope of their grant award.

Twice a year NIEHS holds a technical workshop on an issue of importance to the awardees. Academics, union officials, staff of labor-management organizations, government officials, employers, and other recognized experts attend. These are working meetings that combine plenaries with breakout groups that have specific assignments. Such workshops have been conducted since the early 90s and have resulted in consensus guidelines that have been widely adopted by other organizations, such as Appendix E to the OSHA HAZWOPER standard, which is a non-mandatory training guideline based upon the initial NIEHS WETP workshop held in 1991.

NIEHS National Trainers' Exchanges bring together best practices for trainers from across the nation and from many different backgrounds to exchange information on training techniques, new topics in hazardous waste training, and the challenges faced by trainers.

The WETP helps organizations build institutional competency to provide model training and education programs. A large part of this involves the dissemination of information, including model curricula, electronic resources, links to online safety and health resources, programmatic and administrative updates, contracts management, and other program information. A key to information dissemination is the National Clearinghouse for Worker Safety and Health Training for Hazardous Materials, Waste Operations, and Emergency Response (National Clearinghouse), which is hosted on the web at <http://www.wetp.org>, and is funded through the WETP. The National Clearinghouse, which was created in 1988, provides information and communication services for the WETP and its awardees.

## The WETP and WTC Response Activities

A detailed discussion of the role of the WETP awardees in the WTC response is of value as a basis for better understanding the tremendous range of near-term "on-the-ground" experience that these organizations brought to this workshop. These individuals and their organizations truly represent "experts" in responses to WMD destructive incidents and the anthrax terrorist attack incidents, as many of them were there.

1. Re-establishment of training capacity for the Fire Department of New York (FDNY) Hazardous Materials (Hazmat) teams was the highest priority for support by NIEHS. The International Association of Firefighters (IAFF) immediately had begun the process of retraining the needed skilled Hazmat personnel for the FDNY. There was a continuing need for supplemental resources to initiate required OSHA HAZWOPER training at the technician and specialist levels. Just to re-train and train-up new Hazmat teams for the FDNY to replace those who perished in the disaster would require months and years to complete required training under National Fire Protection Association (NFPA) and OSHA 1910.120 (q) requirements. With NIEHS support, IAFF was in a position to initiate this training immediately and will continue to carry out this process for a number of years.
2. With support from NIEHS, the International Union of Operating Engineers' (IUOE) Hazmat Emergency Management Team was located on the WTC site beginning on September 18, 2001, to ensure the protection of the heavy equipment operators toiling in the dust and smoke. The team was located at the corner of West and Murray Streets, working out of several trailers. The activities included:

- a. Distribution of more than 11,000 respirators at the WTC disaster site. During rescue conditions, the IUOE Hazmat Emergency Management Team trained workers on positive and negative fit check in accordance with 29 CFR 1910.134 and distributed Personal Protective Equipment (PPE) including the required respiratory protection to workers at the site. As work moved into recovery, the IUOE, with the New York Department of Health and OSHA, provided quantitative respirator fit testing, physical evaluations, and training.
  - b. The team was staffed with a certified industrial hygienist (CIH) and a rotating team of industrial hygienists, safety professionals, and certified Hazmat instructors. The team has collected over 80 personal samples for a wide range of contaminants and coordinated and shared the results with other Federal agencies such as the Federal Emergency Management Agency (FEMA), OSHA, EPA, and NIOSH, as well as agencies for the State and City of New York. The Team also monitored the health and safety issues at Fresh Kills landfill, located on Staten Island, and provided training to those workers.
3. The WETP commissioned two consultants, Donald Elisburg and John Moran, to visit the WTC in September 2001 beginning 10 days after the terrorist attack on the WTC complex. The purpose of this study was to 1) assist in coordination of NIEHS-WETP awardee activities at the WTC site; 2) assess the current safety and health status at the WTC site; 3) evaluate the current site safety and health plans or programs and related aspects with respect to worker protection; and 4) conduct a preliminary assessment of training needs to serve as a basis for additional WTC responses supported by the WETP. A report, "Response to the World Trade Center (WTC) Disaster: Initial WETP Awardee Response and Preliminary Assessment of Training Needs," was issued on October 6, 2001. The time of the study was a point early in the response to the disaster when the efforts on the WTC site by thousands of first responders, Skilled Support Personnel (SSP), volunteers, and several government agencies were solely focused upon rescue of victims. As a consequence, many issues were identified that have subsequently served as lessons learned. While it was difficult to identify specific training needs with clarity, many were identified which served, in part, as the basis for subsequent site-specific training programs developed by the Center to Protect Workers' Rights (CPWR) and individual awardee craft-specific training programs, and provided a basis for subsequent supplemental awards by the WETP.
  4. Since mid-September, NIEHS awardees had a major presence at daily WTC Site Health & Safety meetings to provide input into the decision making process as events unfolded, including development of WTC site safety and health plans, review of specific issues including confined space entry, environmental impact, blood-borne pathogens, and odor suppression. NIEHS awardees provided user-friendly brochures and other written information on the hazards and protective measures at the disaster site. This included information on asbestos, lead, silica, dust, benzene, heat stress, and the type of respiratory protection that was needed.
  5. The CPWR, in partnership with other NIEHS awardees, developed and presented required Site Safety and Health Orientation Training and certified over 1,300 workers on the WTC site. This training was conducted for all workers at the WTC including all crafts, fire, police, city and state agencies, etc. The site safety and health orientation training was also translated into Spanish.
  6. New Jersey/New York (NY/NJ) Hazardous Materials Worker Training Center, which includes the University of Medicine and Dentistry of New Jersey (UMDNJ) School of Public Health, the New York

Committee on Occupational Safety and Health (NYCOSH), and the New York District Council of Carpenters Labor Technical College, provided training and other activities in response to the disaster at the WTC. Training for Port Authority of New York and New Jersey personnel included Emergency Response 8-hour Awareness and 8-hour Operations courses.

7. International Brotherhood of Teamsters members, primarily truck drivers who engaged in the transportation of debris off the WTC cleanup to landfills located in New York and New Jersey, received safety and health training through the NIEHS program..
8. The Laborers-AGC Education and Training Fund (Laborers-AGC), the labor-management training organization for the Laborers' International Union of North America and the Associated General Contractors of America, provided extensive training and on-site support to the large number of laborers working at the WTC site. This included facilitating coordination with the New York Police Department Criminal Division with respect to identification and recovery of evidence, as the WTC site was a criminal scene and laborers represented a majority of the workers on the ground during debris handling and removal.

## **The WETP and Post WTC Activities**

1. Laborers-AGC, with NIEHS support, conducted anthrax remediation training for environmental laborers in New York City and New Jersey. The Laborers-AGC is translating the anthrax worker course into Spanish and Polish, and is developing two new course modules on other WMD to begin the process of creating a comprehensive Chemical/Biological Agent Remediation Worker course. Short modules were immediately created to provide training for the Laborers who were actively involved

in the anthrax remediation at the U.S. Postal facilities in Washington, D.C. and New Jersey as well as the National Broadcasting Corporation building in New York City.

2. Laborers-AGC was requested to provide special Hazardous Waste/Anthrax response training to several law enforcement agencies. In December 2001, Laborers-AGC provided two 50-hour Hazardous Waste Operations/Anthrax Awareness courses to the D.C. Metropolitan Police SWAT teams. In January 2002, a similar course was provided to a group of U.S. Marshals who are tasked with protecting various judicial buildings/personnel throughout the United States. The U.S. Marshals will need to have approximately 150 more marshals take this specialized Hazardous Waste Worker course. Requests for training are also in process from the Capitol Police, the Park Police (US National Park Service), and the Federal Bureau of Investigation (FBI).

## **Purpose of the Workshop**

Many of the NIEHS WETP awardees have been actively involved in the responses and subsequent operations at the terrorist incidents at Oklahoma City, the Pentagon, and the WTC as First Responders, Skilled Support Personnel, remediation workers, incident-specific training program developers and providers, and in many other capacities. The WTC incident most particularly was so massive, extensive in duration, and complex that nearly all aspects of our well developed and relatively mature destructive incident response and cleanup operations plans were challenged and, in many cases, found defective in some measure. A similar situation emerged in response to the anthrax remediation operations. Further, the need to better understand, anticipate, and prepare for the enormous

personal stress that such responses place on the response workforce has never before been so evident.

The NIEHS WETP awardees have viewed their experiences in these responses from the perspective of the core training foundations of all of the WETP awardees, the three primary sectors of the HAZWOPER standard and related training programs including confined spaces, asbestos abatement, lead abatement, and site-specific training. Many have also been involved in developing and delivering supplemental training courses in support of the WTC incident response.

It is clear that the WETP awardees provide the current state-of-the-art training with respect to the HAZWOPER standard and represent an enormous range of currently trained workers who will be actively involved in any future terrorist incident response, should such occur. Utilization of the current WETP awardee infrastructure provides a rapid, effective, and proven means through which to provide terrorist incident response training to this national cadre of response personnel. This workshop was intended to lay the foundation upon which these additional training programs will be developed and delivered.

The purpose of this workshop was to review the various aspects of the responses to these terrorist incidents from many perspectives including from those “on-the-ground” and engage in discussions and dialogue among the awardees with respect to what has been learned from the responses that may serve to improve the future preparedness of the many constituencies served by the training awardees.

The one-and-a-half-day workshop was conducted with participation by the WETP awardees, federal agency representatives, employers, associations, and others.

The workshop featured an opening plenary session panel of experts representing various aspects of terrorist response and our recent experiences. Several breakout sessions followed, each focusing on a specific aspect of the terrorism threat response. Each breakout group developed and presented the recommendations that emerged in a closing plenary session.

## **The WMD Workshop Report**

The NIEHS WETP initiated the efforts that resulted in the substantial participation of several WETP awardees providing support to the WTC response. The support provided was extensive and represented a substantial contribution to the WTC response efforts. In many instances, such as training replacements to the FDNY, hazardous materials response resources continue.

Those awardees and the worker constituencies they support, who have been involved in the WTC and anthrax responses, and in the Pentagon and Oklahoma City disasters in some instances, have gained an enormous amount of experience. They are particularly able to address additions or modifications to current HAZWOPER training that would be appropriate to support similar responses in the future.

The WETP has developed a WMD preparedness initiative in response to the experiences in these terrorist disasters. That initiative is intended to foster the development of WMD-specific training programs for the purpose of preparing a cadre of experienced workers for response to future terrorist incidents. This workshop was intended to provide a forum where these experiences could be captured and serve as an initiation point upon which to advance the program. In order to achieve these objectives, the workshop was organized

into an opening plenary panel of experts in diverse aspects of the WMD area; five breakout sessions, each of which focused on a sub-topic of relevance to the WMD initiative; and a “report-back/discussion” closing plenary session. A draft of this report was reviewed by the breakout co-chairs, National Clearinghouse staff and WETP staff. Comments received were addressed in the final report.

This report should, however, be considered as a status report within the context of the WMD initiative. It is anticipated that future workshops will be held to advance the WMD initiative within the WETP.

## THE WORKSHOP PROGRAM

### The Introductory Plenary

The introductory aspects of this workshop were put forth by Dr. Anne Sassaman, Joseph Hughes, and by the workshop Keynote, Dr. Paul Schulte.

Dr. Anne Sassaman, Director of the NIEHS Division of Extramural Research and Training (DERT), described the two major thrusts of the NIEHS terrorism response program. This response effort is based upon the Omnibus Federal Terrorism Response package approved by Congress for \$10.5 million to NIEHS. The two elements of the NIEHS response package included \$4.5 million as WTC research supplements and \$6 million as WETP supplemental awards to awardees who were and remain involved in the response to the WTC disaster.

The purpose of the supplemental awards is to support an integrated research approach to provide a framework to address current and future health and environmental matters arising from the WTC attacks on September 11, 2001. Research awards were made to Columbia University, Johns Hopkins, New York University, Mount Sinai NYC, the University of North Carolina, and the UMDNJ. Awards to WETP awardees were to the IAFE, UMDNJ, IUOE, Laborers-AGC, the CPWR, and the National Puerto Rican Forum (NPRF). The WETP awardees were actively engaged in activities at the WTC since the attack of September 11. They were represented at the workshop and provide a powerful from-the-field perspective upon which the workshop has been constructed.

Mr. Joseph Hughes, the Director of the WETP, set the theme for the workshop, embodying two primary thrusts:

1. Improving the protection of worker safety and health at future federal disaster sites by developing appropriate training for disaster response workers.
2. Participating in the development of revised plans for better assuring worker safety and health protection at federally declared disaster sites.

The WETP has developed a WMD Disaster Response Initiative that supports these two primary thrusts, which are stated in some detail in the sections that follow. (See Hughes presentation located in Appendix D and the Summary of Lessons Learned Initiatives in Appendix H.)

In his Keynote address, Dr. Paul Schulte, Director of the Education and Training Division of NIOSH, covered two important dimensions related to the WMD response issue.

First, he addressed the many roles that NIOSH served in the WTC incident response as one of the federal response organizations. The NIOSH Emergency Worker Safety Initiative emerged from the participation of NIOSH in the WTC response. That initiative includes evaluation and intervention, surveillance, communications, training, technology, and prevention elements. NIOSH is continuing follow-up efforts based upon the WTC experience within this initiative as well. These include development of guidance on respiratory health problems, health hazard evaluations, and baseline medical screening.

Second, he addressed the broader matter of the environmental and public health issues emerging from the WTC disaster. These include a need for more

effective leadership and communications, more modern tools for disease tracking and laboratory support, and the need for trained personnel for rapid response in future such events. These points are based, at least in part, on a recent report that concluded: 1) the environmental health system was inadequate and fragmented; 2) responsibilities are scattered among several agencies; and 3) there was an inability to link environmental and health databases. Dr. Schulte established the case that exposures to hazardous materials or substances is not only a worker and workplace issue, particularly in destructive disaster incidents such as the WTC. Workplace exposures are only the leading edge of exposure to the environment, public, and the home. As the late Dr. John Finklea, a previous Director of NIOSH, often noted, “Workers are only the first and worst exposed.”

NIOSH, as in the case of many other federal agencies, is moving forward with various initiatives keyed to both the lessons learned from the recent terrorist attacks and development of improved response approaches. NIOSH is uniquely important to the WMD initiative in that the organization has a statutory mandate with respect to worker safety and health, is one organization within a major public health agency (Centers for Disease Control), and has a robust training and education mission enacted through the Education and Training Division. (See Dr. Schulte presentation located in Appendix D.)

## **The Expert Plenary Panel: Setting the Stage**

The purpose of the workshop was not to consider what training might be needed to respond to future terrorist attacks. Rather, the purpose was to consider what *additional training or modifications to existing*

*training* that has been developed and delivered by the WETP awardees in the HAZWOPER area for over a decade may be needed to more effectively and safely respond to future terrorist attack consequences. The workshop was, therefore, a practical effort based upon the experience of the awardees in terrorist incidence responses as contrasted to a more typical conceptual workshop approach. In keeping with that basis, the Expert Plenary Panel was comprised of individuals representing different facets of a terrorist incident response. At least four of the panelists had extensive experience at the WTC site, one had experience at all of the recent terrorist attacks sites, one had served as the Chair of the Committee that developed the Laborers-AGC anthrax remediation training curriculum under contract from the Department of Labor (DOL), and another has over two decades of experience as a mine disaster rescue team leader/supervisor.

The panelists provided powerful, practical, and insightful perspectives on the various aspects of these recent terrorist incident responses. The following briefly summarizes the points made by each. (Plenary presentations are included in Appendix E).

## **The National Contingency Plan/ Federal Response Plan**

Rod Turpin with the EPA Environmental Response Team in Edison, NJ provided an excellent perspective of the National Contingency Plan (NCP), Federal Response Plan (FRP), and the lessons learned with respect to these federal response plans as a consequence of the massive WTC terrorist incident. Mr. Turpin has over two decades of field experience in environmental and hazardous materials response and has been at all of the recent terrorist incident sites in that capacity.

The NCP, actually the National Oil and Hazardous Substances Contingency Plan, issued in 1968, is comprised of 16 federal agencies, termed members. The NCP established a response headquarters, national reaction team (termed the National Response Team (NRT)), and regional reaction teams. EPA Chairs the NRT. There are several established response assets, including Federal On-Scene Coordinators and Special Forces, the latter dealing with specific hazards that a release may present such as radiation. With respect to counter-terrorism, the NCP provides responses to chemical, biological, and radiological terrorism incidents and is responsible for a Nuclear, Biological or Chemical Domestic Preparedness Training Program.

The FRP was issued in 1992. It describes the mechanism and structure by which the Federal government mobilizes to provide assistance to state and local governments that are overwhelmed by major disasters or emergencies. There are 27 federal agencies signatory to the FRP. The FRP is based upon the position that state and local authorities handle most disasters and emergencies while the federal role is to provide assistance and resources. In a response, the FRP functions within a multi-agency incident commander system not unlike that employed by local fire and rescue organizations. The FRP includes twelve Emergency Support Functions (ESFs) to assist local and state response authorities. Each of these ESFs has a primary lead federal agency and support agencies, depending upon the mission of the individual ESF. The ESF for Urban Search and Rescue, for example, has FEMA as the primary agency with seven support agencies. FEMA, under that ESF, mobilized the National Urban Search and Rescue Response units for the WTC and Oklahoma City incidents. The ESF (Hazardous

Materials Annex) is led by EPA and has 12 support agency participants. This support function serves to provide federal support to releases of hazardous materials, which include WMD, and this Support Function is carried out under the NCP.

Until September 11, 2001, it was believed that the FRP functioned quite well and the ESF rules of engagement were effective, as they largely had responded to natural disasters such as floods, chemical spills/releases, and hurricanes. After September 11, it has become apparent that more than one ESF may be required at an incident site. September 11 demonstrated the need for: 1) better communications; 2) a well-established chain of command; and 3) good interagency coordination.

As a comment, the authors note that FEMA issued the Terrorism Annex in April 1999, to which six federal agencies were signatory and the guide to that Annex for local and state emergency planners on May 11, 2002 as Attachment G to Chapter 6 of SLG 101: Guide for All-Hazard Emergency Operations Planning (first issued 9/96.) These are available from the FEMA Web site ([www.fema.gov](http://www.fema.gov)). Of note, all of these federal guidelines apparently assume that local and state authorities are solely responsible for responder safety and health because worker safety is not addressed at all in the federal plans.

## **WMD and Hazmat Response**

Mr. Jeff Borkowski is a Hazmat Technician with the FDNY who participated in the response to the WTC incident. He provided a unique perspective from the point of the first responder to that massive, complex, and tragic event. He focused on three major themes: 1)

demands placed on the FDNY on September 11, post-incident, and today; 2) how September 11 changed the way they now would respond; and 3) the impact of September 11 on training needs.

The FDNY response on September 11 resulted in the loss of 343 fire personnel. Most of the Department's Hazmat response personnel were among the victims, including the command structure. All of the Hazmat Specialists were lost. In addition, 91 pieces of equipment were destroyed. The WTC response changed the view of the traditional role of the first responder and evidenced issues with respect to the FRP in that there was a lack of federal support to the responders and a lack of coordination among the responding federal agencies.

The impact on the fire service with respect to future responses included several key issues:

1. Hazmat training is key to an effective and safe WMD response.
2. There is a need to integrate equipment and WMD response actions.
3. There is a need for cross-functional incident command system training and exercises.
4. PPE needs and requirements have changed.
5. Law enforcement tactics need to be integrated in the response.
6. Decontamination needs to be re-evaluated.
7. There is a need for reliable bio-detection equipment.
8. There is a need to consider criminal intent during response. (2nd threat)

9. Firefighters need additional training and administrative support.

10. Stress management is a major issue.

Training needs were described in terms of positive Hazmat/WMD training changes and training changes still needed. Among the positive changes noted were increased cross-training, inter-agency cross-training, and the IAFF/NIEHS-WETP project that has begun the rebuilding of the FDNY Hazmat resources lost in the WTC disaster. Training changes still needed include faster and direct access to new technologies, more operations-level training for first responders, unified command system training and exercises, additional PPE training for first responders, Hazmat team support personnel with specific respect to Chemical Protective Clothing (CPC) and decontamination, and critical incident stress management.

## **NIOSH/RAND Personal Protective Equipment Conference Recommendations**

Mr. John M. Dower, Program Manager in the new NIOSH National Personal Protective Equipment Laboratory, provided an excellent perspective of the recently issued NIOSH/RAND report on personal protective issues that arose in the recent terrorist responses. His perspective was based upon many years as a National Mine Rescue Team leader and supervisor. He noted that the goals of the NIOSH/RAND conference held in December 2001 in NYC were to understand the post-attack response environment, provide input from those involved in the WTC/Pentagon/Oklahoma City responses upon which to develop a PPE research agenda, and to improve safety PPE education and training.

He described several aspects of lessons learned under each of four headings: 1) resources unavailable or used ineffectively; 2) responders abandoned or modified PPE during the long duration campaign, and productivity diminished; 3) multi-threat events; and 4) new roles for new responders.

The actions that NIOSH is taking as a consequence of the conference and experience at the WTC were reviewed. NIOSH is taking the following key actions:

1. Revising powered air-purifying respirator (PAPR) and air-purifying respirator (APR) full-face respirator standards.
2. Changing standards to promote interchangeability of respirator parts, decontamination procedures and guidance, respirator cartridge end-of-service-life indicators, biological protection, cooling systems, lighter PPE, better eye protection, combination self-contained breathing apparatus (SCBA)-APR respirators, and multi functional PPE ensembles.

As new products, new approaches, and new technologies are developed, it is essential that the information be integrated into the HAZWOPER and WMD preparedness training programs. Initial insertion of this information can be through the required annual refresher training programs.

## Critical Incident Stress Management

Marilyn Knight, President/CEO, Incident Management Team, Inc., addressed physiological and emotional stresses that individuals may face when involved in a critical incident stress event from the perspectives of defining critical incident situations,

describing crisis reactions, and discussing critical incident responses.

Critical incidents were defined as “events outside of the range of normal human experience which would be distressing to almost anyone.” Such incidents were characterized as being sudden and unexpected, disruptive of an individual’s sense of control, and perceived as a life-damaging threat, among others. Three general types of critical incidents were described: natural, technical (induced by omissions), and man-induced (incidents of commission such as the WTC). Several examples of each were described, including threats and violence and organizational, such as plant closings.

Based upon this foundation, crisis reactions were discussed. Physiological response reactions characterized the human body’s response to these stresses, such as increased heart rate and shock. Emotional reactions were described as occurring in phases. Stage one: shock, disbelief, denial, etc. Stage two: anger, rage, fear, confusion, etc. Stage three: “reconstruction of equilibrium,” the emotional phase associated with the post-event emotional recovery process, which included discussion of the process and trigger events that exacerbate the recovery process. Post-traumatic Stress Disorder was discussed in some detail as well, as understanding the signs and issues involved has direct relevance to many of the workers trained by the various awardees who were engaged in the WTC response.

The discussion then flowed to the matter of critical incident stress management response. Approaches that have been shown to be effective included crisis intervention with particular emphasis on the on-site crisis team. The various aspects of the on-site crisis

team approach were discussed including benefits that have been realized in prior responses, the goals of such team efforts, and typical activities undertaken by such teams. Associated aspects of on-site crisis management were discussed as well with particular emphasis on crisis communications on-site.

Critical incident response formats including on-scene support, demobilization, debriefings, and follow-up services, among others, were discussed. This was followed by a discussion of the “Critical Incident Response Program,” which addressed worker re-entry options and supervisor/employee representative roles during worker re-entry to the workplace or job.

Problem cases were briefly described as representing additional challenges that require special attention. Examples included individuals who had caused the incident, traumatized family members, the supervisor from the incident scene, and the worker who may be severely injured or disabled.

This presentation provided an excellent framework upon which the breakout group specifically focused on matters associated with pre-incident stress management approaches and the potential that training might provide in that regard. Ms. Knight, as a means of assisting in that effort, served as the co-chair to that breakout session. WMD incidents are clearly those in which individuals responding and engaging in the subsequent response effort are put in harms way not only physically, but emotionally as well. From the perspective of the WETP awardees, this is a matter that must be addressed.

## **Response to Destructive Incidents**

Richard Mendelson is the Director of the OSHA Manhattan Area Office, a facility destroyed in the WTC

attack. He has been at the WTC site essentially every day since the attack. His presentation addressed several issues based upon the experience in the WTC response. These included: 1) planning for emergencies; 2) OSHA's role and activities in the WTC response; 3) challenges that terrorist incident responses pose; 4) special considerations in such responses; 5) safety and health management; and 6) a few success stories emerging from the WTC response.

Planning for emergencies needs to consider additional dimensions since September 11, with particular attention to consideration of worst-case scenarios, attention to enhanced employee training, and development of contingency plans that address such issues as resumption of operations and communications.

OSHA's role in the WTC response was dictated by the Safety and Health Annex to the FRP and the OSHA CPL 2.94 Policy guidance. As such, OSHA provided technical assistance and support, rather than enforcement. In that capacity, OSHA conducted health risk assessments and sampling, safety monitoring, PPE distribution, and Emergency Operations Center staffing. OSHA also brokered several safety and health management approaches including partnership agreements between OSHA, the response employers, and the response unions; standing and ad hoc safety and health committees; and safety and health meetings of those engaged at the site.

Challenges faced at the WTC site included operations under a local government co-incident command structure, a crime scene, coordination and logistics, perimeter security, access control, and visitors. Issues involving special considerations that arose included risk communication, critical incident stress

management, weather, and fatigue.

The Joint Crane Inspection Task Force, two successful confined space entries, and an evacuation drill were described in some detail as success stories within the context of the WTC response setting.

## Biological/Chemical Incident Response

Dr. Glenn Paulson, who served as the Chair of the Committee that developed the recent Laborers-AGC anthrax remediation training curriculum, discussed the matter of response to biological and chemical terrorist incidents. He addressed the rather broad mandate of considering responses to both biological and chemical terrorist attacks on the basis of knowledge about various biological and chemical agents, realizing that our only actual terrorist experience in this area has been with anthrax. He discussed the similarities and the differences between biological and chemical weapons, the military experience, and what lessons have been learned from the recent anthrax responses.

Among the similarities between biological and chemical agents he noted:

1. They arrive “unexpected.”
2. Impact is often initially very limited in area.
3. They are more effective in enclosed areas such as buildings.
4. PPE that is effective is available for both groups.
5. There is generally poor real-time monitoring capability.

Among the differences are:

1. Mechanism of action.
2. Speed of action on humans.
3. Detection techniques.
4. Medical responses.
5. Remedial measures.
6. Remedial equipment and methods.

Dr. Paulson expressed the view that the military experience is of limited value with respect to attacks on civilian populations and, more importantly in the current context, military information is difficult to obtain.

Recently learned lessons arising from the anthrax attacks and subsequent increased attention to biological threats in particular were noted:

- There is no single, reliable, authoritative information source on biological or chemical agents. This has a major impact on those developing training materials.
- There are many uncertainties with respect to response to these threats, particularly important again in the context of developing training materials.
- There is a short-term need to develop your own network as a means of staying involved in the emerging training developments and staying up to date as new information becomes available.
- Far more attention needs to be placed on obtaining external expert peer review of training materials under development.

## WORKSHOP BREAKOUT FOCUS SESSIONS

The purpose of the breakout sessions was to have a diverse representation of workshop participants focus on the topic of the breakout session to which he or she was assigned. Individuals with extensive experience in the subject of the breakout sessions served as co-chairs of each session in order to facilitate the sessions. While the five breakout sessions ran concurrently, participants were assigned to a particular breakout group and did not participate in other sessions.

A narrative was developed for each breakout session topic for purposes of facilitating an initial focus within each group. The summaries contained in the following sections provide an overview of the issues addressed by each group. Each group brought their discussions to a focal point on the second day during the development of the closing plenary presentation by each group.

### First Responders

This session addressed issues associated with the role, capacity, limitations, hazards management approaches, coordination with SSP (volunteers) and additional training and other resources that are required for first responders to appropriately, safely, and adequately respond to destructive terrorist incidents based upon the Oklahoma City, Pentagon, and WTC terrorist incidence responses.

The breakout group approached its complex task by developing five sub-groups to address the key points. The sub-group reports were then used to frame group consensus and develop the report at the closing plenary session.

### Issues Considered:

1. The recent destructive terrorist incidents have placed first responders in extremely challenging, difficult, complex, threatening, and protracted situations. What lessons have been learned in the following response sub-categories?
  - a. Initial response
  - b. Search and rescue
  - c. Incident command
  - d. Use of SSP
  - e. Volunteers
  - f. Transition to post-emergency clean up
  - g. Coordination (in a Federal Disaster Declaration setting)
2. Based upon the above, what can be said about current training programs for first responders with regard to responses to destructive incidents? What additional training may be appropriate?
3. Do the responses to the recent destructive terrorist incidents suggest that changes and/or additional training may be appropriate for future responses to other WMD incidents involving radiation, biologicals, or chemicals or in high vulnerability industry sectors such as transportation and the petroleum-chemical complex industries?
4. Are the roles and responsibilities of the SSP as established within 1910.120(q)(4) adequate? What improvements might be helpful to enhance the effectiveness of such personnel in aiding the emergency responder in his/her mission in such disasters?
5. Emergency responders are already in a stressful occupation. Responses to massive terrorist destructive incidents exacerbate this problem. What can be done to help mitigate this problem? Could pre-incident training be an effective approach?

## Skilled Support Personnel

Skilled Support Personnel played key roles in the Oklahoma City, Pentagon, and especially the WTC terrorist incidence responses. The governing OSHA standard at 29 CFR 1910.120 is vague at best about the training and protection of this essential workforce in events of the magnitude and complexity of destructive terrorist incidences including those involving WMD and biological agents. SSP include a wide range of job categories including laborers, operating engineers, carpenters, ironworkers, sanitation workers, and utility workers.

This breakout group developed recommendations for safe and effective utilization of SSP in such incidents based upon the recent incident response experiences and developed recommendations for additional training with specific respect to development of a national cadre of pre-trained SSP to respond to WMD and biological terrorist incidents.

### Issues Considered:

1. Is the role of SSP in destructive incident responses adequately defined and specified in the HAZWOPER standard at 1910.120(q)(4)? Are there consensus standards, such as NFPA, that provide adequate definition? If not, what issues need to be addressed to improve the ability of SSP to effectively respond and to do so in a safe and healthful manner?
2. SSP are defined within the HAZWOPER standard as participants in the emergency response phase while those engaged in the post-emergency response activities are “cleanup” workers. Does this imply that two categories of workers need additional terrorist incident response training: SSP and post-response clean-up workers?
3. Is HAZWOPER core training an appropriate requisite for SSP in a destructive terrorist incident response?
4. Can SSP better aid search, rescue, and recovery efforts? If so, what training would be appropriate?
5. Should all terrorist incident responses be considered to be in accordance with 1910.120 (or be 120 like)? If so, should all SSP be 120 trained? Or should they be so trained after the transition from search, rescue and recovery to cleanup operations as may be required for post-emergency cleanup workers?
6. What approaches are useful to developing the necessary skills and experience of the instructional staff that teach the terrorist incident response training programs?
7. What specific training categories should be considered to prepare a cadre of pre-trained SSP in anticipation of future destructive disaster responses?
8. Do disaster response SSP crafts/trades require craft/trade unique training? If so, can a core disaster response training program be developed to serve as a foundation upon which to structure craft/trade specific modules?
9. In this rapidly developing and changing terrorist preparedness national initiative, is it appropriate for the WETP to develop or provide an approach to obtaining and providing up-to-date information to all awardees? What approaches should be considered?

### Summary of Observations:

1. In WMD responses, SSP have to be exceptionally well integrated with the prime response workers. Under current practices and procedures, they are not well positioned to do so.
2. The presence of many large pieces of equipment, such as cranes, and many other assorted vehicles

in a confined area such as the WTC site, presented real hazards for which workers were not adequately prepared or experienced.

3. Understanding of the particular work each of the crafts may do in a WMD response is important to assuring a coordinated, cooperative, effective, and safe SSP response. Cross-training among the WMD incident response crafts would be valuable in this regard.
4. Definition of training categories among WMD responders as a basis for developing additional training would be useful. Two categories should be considered: 1) immediate responders; and 2) subsequent responders or, in other words, short-term and potentially long-term response workers. Both need to be considered differently as the activities are different although they both face many of the same hazards.
5. Some minimum level of training should be required for WMD skilled response personnel. Problems arise with respect to the matter of immediate responders and subsequent responders, how to determine who is qualified, what qualified means, and related issues. As a basic rule, however, WMD response workers need to have sufficient training, experience, and familiarity with such incident response scenes in addition to their craft specialty, such as crane operators, to understand the basics of self protection and protection of others. Basic construction safety (OSHA 10 suggested) is critical. Further, minimum criteria (HAZWOPER training considered most appropriate) should be established and a clear transition from rescue and recovery should be evident with the subsequent operations required to meet applicable safety and health requirements.
6. The role of the contractors, for whom the SSP actually work, in WMD incident responses is critically important as they bear the fundamental

responsibility for the safety and health of their employees. Contractors should be pre-qualified by local jurisdictions for work of this nature.

7. How do you get workers to get additional site-specific training once they are on the site and engaged in the response effort? The suggestion was that a team be ready to respond to provide such training.
8. Volunteers, who are not trained at all or are inadequately trained, present a major issue with respect to their own safety and that of others on the response scene. This is a difficult issue to resolve, but it needs to be addressed.
9. Local governments need to consider SSP in their WMD response planning.
10. Site control and access is a critical issue that needs additional consideration and attention including site rosters that indicate who is on-site and who is not.
11. A site safety and health plan must be developed quickly as a means to aid in site control and management, including safety and health. It was recognized that this initial plan might not be perfect and would likely change as the response matures. This was considered a less important matter than having not planned at all until some time when it can be perfect.
12. WMD incident response pre-training for SSP crafts, based upon a HAZWOPER training foundation, would be an excellent approach to minimizing the problems evidenced in the recent responses. A registry of workers so trained would be important to assure their availability in future responses.
13. SSP can provide enhanced assistance to the first responder operations during early phases of WMD incident responses if they better understand the response, rescue, and recovery activities. Cross-

training with first responders in this regard may have merit.

14. Fatigue and shift work need to be given consideration.
15. Biological and chemical incident responses may require different training for SSP and the crafts may be a different mix than in the case of destructive incidents such as mechanical, sheet-metal, and service workers. For biological responses involving remediation, pre-qualifications should include asbestos abatement training.
16. Hazards materials inventories are important to responders. Such should be part of the local jurisdiction pre-incident planning activity. Knowledge of what hazardous materials are present to which workers may be potentially exposed is critical information. It must be available very quickly as well.
17. Peer trainers with relevant field experience are most important in SSP WMD pre-incident response training.
18. Participation of first responders, such as fire fighters, would be of great value to those involved in developing SSP WMD pre-incident response training programs.
19. SSP WMD pre-incident response training needs to be instructor-led, hands-on, and skills focused.
20. Training should be based upon a foundation of HAZWOPER training with refresher training used as one vehicle to update and get new information out to SSP WMD pre-incident trained personnel. Some modifications to the basic HAZWOPER training may also be appropriate in order to stage subsequent WMD pre-incident training for newly HAZWOPER trained workers.

21. HAZWOPER work often requires additional worker training specific to the hazards on particular sites. Examples are confined spaces and asbestos. WMD responses may require a different set of additional hazards and the associated training required to assure worker protection. This should be considered and addressed.

22. Respirator fit testing should be conducted on-site utilizing the respirator assigned to the individual worker.

23. Several suggestions emerged with respect to the role that WETP needs to play in keeping awardees informed, providing up-to-date information, and the like as the WETP WMD initiative progresses.

## **Biological/Chemical Threat and Anthrax Response**

This session focused on the extensive experience gained in anthrax remediation activities and the Laborers-AGC anthrax remediation course currently being finalized under a grant from OSHA. Additional discussions and recommendations developed with respect to validity of extending the anthrax remediation approaches to other biological agents and chemical agents. As appropriate, what training revisions would be appropriate for other biological agents or chemical threats?

### Issues Considered:

1. It is important to look also at longer-term effect of exposure, not just immediate effects of terrorist incidents or disasters. Many workers are suffering from long-term exposure.
2. Questions to pose: Do we have a target audience for this training? Should we be focusing only on remediation or also incident response?

3. Misinformation and uncertainty were major obstacles for those trying to do training. Target audiences were: 1) individuals going in to do decontamination tasks and clean-up work in post offices, Congressional buildings, post emergency response remediation; and 2) those doing sampling.
4. Interested in interagency coordination - what works and what has not worked. How can we improve it?
5. Issues to address: How to keep up-to-date on training materials as they are developed. How do you keep abreast of this information? How do you protect law enforcement officials? Status of an anthrax-monitoring guide?
6. Observations: Recommendations need to be “dual-use.” We have to rethink PPE needs for fire rescue sites.
7. Questions: What are recognition and protective measures? We must focus on these to avoid facing quick response measures.
8. What is the appropriate level of response for an average worker?
9. Why not include nuclear and radiological in this discussion?

#### Case Study

The Laborers-AGC development of an anthrax remediation course was presented to the break out group essentially as a case study in course development while under the immediate need to provide training to workers engaged in the cleanup of facilities with suspected anthrax contamination.

Steps in the development of the anthrax course:

1. Laborers-AGC started development of this course in October 2001 after being contacted by local unions

in NY, NJ and DC. An Advisory Committee was established and met and subsequently formed two committees: one looking at anthrax remediation work - post-emergency response, and the other at mold (microbial) remediation.

2. Subsequently funded by DOL to develop an anthrax remediation worker-training program. Gathered group of writers, CIHs, contractors working on Brentwood facilities.
3. The large Spanish and Polish populations in NY caused translation to become a big issue. Basic anthrax information (wouldn't call it training) was provided to these workers regarding antibiotics and other relevant information.
4. The Advisory Committee conducted an internal review, and outside participants an external review (NIEHS, OSHA, Cornell Med Center, Johns Hopkins, EPA, former member of the CDC). Laborers-AGC incorporated these into the material, and sent to the DOL. Two pilot courses were conducted in January and February 2002 in NJ with a group of laborers who were Hazardous Waste trained (80-hr program). Did an 8-hr program and obtained feedback. Second pilot was with asbestos-trained workers. Of the two groups, asbestos workers understood materials better because work practices were more closely associated with typical asbestos abatement procedures. These comments were incorporated into the manual.
5. Conducted a train-the-trainer. Looked at pre-requisites. Asked questions: What information skills do these people need to have vs. those with other skills sets?
6. Language issue: how to address the language issues. Laborers-AGC now has two training course schedules, one for 16 hours and one for 24 hours. The amount of hands-on is the only real difference.

The Hazmat wanted more interaction. The asbestos groups didn't feel the need to have such an extensive program. They are still getting feedback on these two schedules. NY, NJ and DC area locals that have received the train-the-trainer courses are now going back to their communities to deliver anthrax remediation training courses.

7. The importance of peer review must be stressed: CDC was issuing advisories to its health alert network. Laborers-AGC could not get these alerts without the help of friends. During external review, comments and opinions were on opposite ends of the scale (This is great vs. this needs to be re-done.)

Summary of Observations:

1. Until we can get an independent confirmation or a reviewable product, we are in a quandary as to the credibility of the work.
2. Quality Assurance - how to produce a quasi-governmental product for non-government entities?
3. Medical surveillance and follow-up needs to be done. May vary by agent.
4. Chemical/biological hazard summary handout, a three-page summary from government sources provided to this breakout group only, was described as an example of information being handed out by various organizations. There is a need to think in terms of what is wrong with this approach. It was vague, incident-specific, agent-specific, and, if given to wrong person, can be dangerous.
5. How do you tell people how they have been exposed to various substances? We need to work on this regarding anthrax attacks. We know that you cannot know if you are remote from the known source.
6. Sampling methods vary - some more effective than others.

7. There are differences in monitoring and identification methods between biological, chemical, and radiological agents as well.

Types of Training Required - Defining by Target Audience

Awareness Training - safe work practices from an operations level - recognition and identification.

Facility Employees, First Responders, Second Responders, Remediation Workers

There needs to be integration among all of these people. Goals and objectives of the training need to be defined Skills and needs of all of these workers are different.

**IDENTIFYING MATRIX**

	Target Facility Employees	1st, 2nd Responders	Remediation/Clean-Up Workers
<b>Chemical</b>			
<b>Biological</b>			
<b>Radiological</b>			
<b>Nuclear</b>			

1st responder - Fire, EMS, police department  
 2nd responder - law enforcement doing investigations.

Where do skilled support workers fit? Type of second responder - involved in both rescue and back-end response modes.

Does this matrix work? What you need is a checklist or a set of principles (identification, notification, self-protection). First, decide what you want the target audience to do. Based upon that, apply concepts to a specific training environment. Accurate technical information will be required.

Summary of Biological/Chemical Hazard Issues:

1. NIEHS WETP activities should also include radiological agent and nuclear methods - this should be included here. First question a worker is going to ask. Attention should be given to these contaminants as well.
2. The definition of target audiences and their duties/responsibilities are critically important in terms of assessing accuracy and relevancy of content and deciding what to disseminate. Start with the end in mind.
3. Though difficult, it is essential to keep training materials “evergreen” because techniques differ, medical opinions change, there is a lack of independent confirmation. We need the right kind of information.
4. Steps need to be taken to ensure that all parties define players in the same manner. i.e. - how do you define First Responder, second responder, SSP, and remediation workers? Some may fit into more than one category.
5. We need agent, individual, and public health techniques in place. All three are necessary!
6. The group agreed that sound curricula materials developed for a single biological like anthrax can significantly form the basis for materials developed for other agents. The same is undoubtedly true for any other future curricula materials on other biological/chemical/nuclear agents.

**Transportation/Petro-Chemical Industry**

This session examined the current approaches to developing preparedness within these industry sectors with respect to the special vulnerability of these industries as potential terrorist targets. The session

also developed recommendations appropriate to the WETP awardees with constituencies in these industries for supplemental training to enhance their trainee participation and preparedness through refresher or additional training programs linked to their current core training. For example, awareness and operational level training might be enhanced to include additional security dimensions that are currently emerging from these respective industry sectors.

The breakout group approached this session by posing four questions specific to the transportation/ petro-chemical industry sectors and WMD preparedness and then developed a group consensus response to each of them. This framework also served as the basis for the groups report in the Closing Plenary session.

Issues Considered:

1. What new training questions have come up after September 11 and anthrax for transportation/petro-chemical Industries?
  - Security issues
    - FBI Warnings
    - Who is responsible?
    - Plant shut down?
    - FBI wanted to know trainee personal info from Teamsters
  - Requests for training (there has been a significant increase in training requests)
  - Labels/Signs
    - Removing hazardous materials signs from areas in facilities
    - Truck labeling requirements may be weakened (DOT placards)
    - Less marking (less information available to terrorists, but to workers as well - thus increasing their potential risks)
  - How to talk about larger questions?

- Pollution prevention
  - Substitution
  - Inherently safe operations
  - Truck security- transit and unattended
  - Storage in railcars
  - Definition of risk (The big picture- daily operation vs. terrorist risk with labeling.)
  - Evacuation/shelter plan in place
  - ER Plan - many scenarios (How does the federal program relate to the regional plan?)
  - Anthrax test strips and other biohazard monitoring methods
2. What resources are available to meet these new training needs?
- Existing Core Programs & Capacities
  - Trainers
    - Delivery mechanism
    - Organization
    - Infrastructure
    - Workplace experience across crafts
    - Access to workers
    - Curriculum – yes & no
    - Evaluation models
    - Access to resources & organizations
    - Trained workers (through our programs)
3. What additional resources are needed for this training?
- Real enforcement
  - New laws (inherently safe operations)
    - Chemical use reduction
  - Money
  - Curriculum
  - Program development
  - More trainers
- Newer resources
    - Technical
    - Exercises
    - Guidelines
  - Warning systems (homeland security safety levels)
  - Clearinghouse
  - Spanish & other languages
    - Educational material
  - Good graphics
  - Common Guidelines
  - Expand Minimum (and/or the word possible) Criteria
4. How do we get the additional training resources?
- MONEY
  - Avoid single-issue approach
  - Broad approach
    - Comprehensive
  - Contact Federal agencies
    - Homeland Security
  - Web links
  - Use existing staff/trainers
  - Use of web training- (Some may disagree, but without it many would not get trained)
  - Social action (With use of computers- not much social interaction; With use of web boards able to interact with other users)
  - Clearinghouse
    - Web links
      - Homeland Security & etc. org to WETP
    - Information repository
  - Meeting curriculum development

## Communication, Coordination, and Stress Management

This breakout group developed recommended guidelines for the establishment of a WETP-focused communication and coordination activity for the purposes of facilitating effective communication, coordination, and interaction among all of the awardees as the WETP WMD-specific program develops and expands.

The DOE Office of Environmental Safety and Health (EH) Lessons Learned Program has faced and met similar challenges in the past and was examined as a potential model. The dynamic and complex nature of the national WMD preparedness efforts requires that such an activity be developed by the WETP, both to serve the awardees and to provide a coordination point with other agencies and organizations.

It has become very evident that response personnel pay a heavy personal price associated with their participation in responses to such incidents. This central coordination point should also serve as a “stress management” information and resource center.

The WETP and its awardees have a long history of development and delivery of state-of-the-art training programs based upon the HAZWOPER and supporting standards. In response to the recent terrorist attacks involving destructive and biological agents, several of the awardees have developed supplemental training programs to prepare their training constituencies for future such attacks. The results of these initial efforts are only now emerging. It is envisioned that substantial additional training program development and delivery will occur in the near future to meet the preparedness needs of the training audiences represented by the

various awardees. These will be largely constructed upon the core training programs already being delivered. This WETP initiative represents a major and complex undertaking that necessitates effective communication and coordination among all of the awardees and the WETP in order to achieve cost-effective and timely response to the nation’s needs in this area.

### The Department of Energy Lessons Learned Program Example

The Lessons Learned Program in the Department of Energy has faced similar challenges involving organizational elements that are national in coverage and include hundreds of government and contractor organizations. That program has developed an effective communication, coordination, and information sharing approach, elements of which appear to be of value to the WETP in establishing a similar activity in support of the WMD Program initiative. The DOE Lessons Learned Program should be examined as a basis for the breakout group to develop a proposed guideline for the development of the WETP WMD communication, coordination, and information resource program. The WETP program needs to consider, however, additional elements beyond lessons learned per se in order to provide an information resource to the awardees in the WMD field as it develops and advances.

Responders to emergencies and destructive incidents face situations that are very stressful as well as hazardous. Responses to terrorist incidents, rather destructive or threatening as in the case of anthrax, add substantial additional stress. In cases such as the massive and protracted response to the Pentagon and WTC disasters, responders can and often are overwhelmed in complex and very personal ways. It

is evident that any future response to an act of terrorism must take the response worker stress matter far more seriously. Approaches to doing so, including the potential value and methods of pre-incident stress management preparedness training, should be considered. In addition, approaches to the timely and effective deployment of stress management practices in future incidents should be considered. Finally, the WETP WMD communication, coordination, and information resource program should serve as a repository for stress management resources, including information relevant to training programs. Criteria for assessing what stress management resources should be included in that program are needed as well.

While this breakout group was tasked with developing recommended guidelines for the establishment of a WETP-focused communication and coordination activity for the purposes of facilitating effective communication, coordination, and interaction among all of the awardees as the WETP WMD-specific program develops and expands, the discussion basically evolved based on what already exists through NIEHS-WETP.

Most participants offered thoughts on how communication is currently handled. Everyone felt that the WETP conference calls post-September 11 were very helpful, and that they should be continued. Participants further discussed the importance of having everyone notified and involved in these calls, as well as the importance of networking and the use of listservs for coordination and information dissemination purposes. There were no solutions or recommendations. It was noted that the IAFF has a listserv that they like.

Bruce Breslau explained DOE's Lessons Learned program and database to the group. Generally,

participants felt that it appeared to be a good model/useful tool. It was stressed how it could be taken and applied to the work that is being done/needs to be done by the WETP. The key to Lessons Learned (or any other model that is developed to share information) is supplying information to the database, getting the information out, and, most importantly, using it. Participants discussed how you get people to supply information. The issue of the "gatekeeper" was also discussed (i.e., means of quality control). While there were no recommendations/conclusions, it was stressed that it was more important to encourage information sharing than it was to be critical of the quality of information shared.

#### Critical Incident Stress Management

Marilyn Knight facilitated a discussion on crisis management. In dealing with crisis management, it was suggested that organizations consider forming a task force to address the issue with their own specific needs in mind. As everyone feels the multiple demands of getting things done, it was acknowledged that you cannot train everyone on everything. The task force concept allows for planning and anticipation so that in the moment of crisis you do not feel so overwhelmed. The task force should address/consider the following: deployment criteria, notification, the setting of on-site goals. In performing crisis management, plans should include demobilization daily. The importance of debriefing was stressed. Debriefing should take 1-2 hours by role and function. It should be conducted within 24-72 hours and should not be a part of any investigative process that is likely ongoing during an event involving a catastrophe/fatalities. It was further stressed that the plan should never involve debriefing supervisors and subordinates together. Examples of

work in the law enforcement arena were used. Of particular interest, a discussion occurred about the fact that Michigan's OSHA state plan program has established a peer response team. It may be useful to look at what is being done there.

The group did not produce a guideline on the topic of communication, coordination, and stress management. The breakout really served as the beginning point. Discussions in summary pointed out the following:

1. It is important to have an effective communication infrastructure.
2. There is a need to develop a cadre of awardees who understand the NCT/FRT.
3. There needs to be a database that has easy access/easy data entry. The information needs to be "pushed out."
4. An outreach plan needs to be developed.

If the above actions are undertaken, there will be an improved approach to dealing with the day-to-day operations, as well as having a system that is helpful when dealing with a catastrophic event.

## **CLOSING PLENARY SESSION**

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The Closing Plenary session included presentations by one of the breakout session co-chairs for each of the breakout sessions. The purpose was to provide a brief overview of the discussions, major issues identified, and consensus points that emerged in each of those sessions. As the plenary session included all of the workshop participants, it offered the opportunity for each participant to consider the workshop as a whole as contrasted to only the breakout session in which

the individual had participated. The breakout session presentations were followed by a general discussion among all of the participants.

The sections that follow provide an overview of the main issues put forth by each breakout session presenter. Each breakout session employed Power Point presentations to facilitate their presentation. These are provided in Appendix F.

## **First Responders**

The context for the First Responders breakout session was responses to terrorist incidents. Many of the participants in this breakout session had extensive experience at the WTC disaster site, which provided a rich source of practical perspective upon which to advance the group discussion. The closing plenary session presentation focused on several major sub-elements including major changes needed, training, PPE, new curriculum, and lessons learned.

As a result of what was learned in the WTC response, there was consensus that major changes are needed in emergency responses to terrorist incidents. These changes include:

- Responders need to think differently about responses to terrorist attacks. Such responses cannot be considered in terms of the "normal" response. Confined space entry provides a useful analogy: stop, slow down, think, look at the big picture, and proceed with caution as there may be secondary terrorist threats at the site. If the scene is a crime scene as well, additional procedures are required.
- Current training is inadequate to prepare First Responders (defined as fire, EMS, and law enforcement) for terrorist incident responses. In

addition, training is necessary for other response groups that may participate in the response particularly construction crafts, logistics, medical examiner, hospital, and volunteers - all of whom essentially serve as SSP to the emergency response group and the Incident Commander.

- Additional training is needed with respect to PPE, decontamination, and the Incident Command System (ICS). To the extent possible, such training needs to be hands-on and in a simulated full-scale setting. Particular attention needs to be devoted to dermal protective methods and equipment (CPC) as well. Hazard awareness and recognition, specific to terrorist incidents, should be an additional training aspect as such incidents present potential hazards not in the normal responders current training or response “play-book.” Respiratory protection training needs to be improved to include protracted responses beyond the customary deployment envelope of typical turnout gear and SCBAs.
- At the next higher level, training is needed to address additional aspects including interagency training particularly with law enforcement involvement, full scale/full dress out scenario training, and specific to unified commands involving the interface between the local responder and the Federal Response organizations under the FRP.
- Lessons learned in the recent terrorist attack responses included the following primary areas, most of which are integrated into the points preceding, all of which require additional attention:
  - Initial response. (Not a typical response.)
  - Search and Rescue. (PPE, decontamination, crime scene, etc.)
  - Incident command. (Not a normal response, interface with Federal agencies, who’s in-charge?, crime scene, etc.)

- Use of Skilled Support Personnel. (Coordination, better understand roles and capacities, etc.)
- Transition to post-emergency response cleanup. (A clear demarcation point or transition is essential.)
- Coordination, when in a Federal Disaster Declaration setting. (Incident Command-Unified Command issues, etc.)

## Skilled Support Personnel

Skilled Support Personnel are those personnel, identified within the OSHA HAZWOPER standard under section (q) Emergency Response, that may be deployed in an emergency response to provide specific skills and equipment that the emergency response organization typically does not possess. The classic example is the crane operator with a mobile crane moving over-turned cars in a train derailment or a vehicular accident involving hazardous materials. The OSHA standard does not define nor provide interpretation with respect to safety and health issues specific to such individuals, except in very broad terms making such the responsibility of the incident commander. *That standard never envisioned a WTC or Pentagon terrorist attack. Further, the transition from emergency response to cleanup presents serious challenges with respect to the SSP who may then become clean-up workers. As an additional point of potential concern when considering terrorist attacks in the transportation and petro-chemical industry sectors, the role of “Specialist Employees” in the standard is equally vague.*

The SSP breakout group presented a number of issues for consideration. These addressed, among others, improving the effectiveness of SSP in terrorist

incident responses, training instructional staff considerations, SSP training, biochemical training, training delivery methods, and suggested approaches for the WETP to serve the awardee participants in the WMD initiative. There was general consensus that construction trades could be pre-incident trained in anticipation of the need to respond to WMD incidents and that a registry of this prepared-to-respond work force would be appropriate.

Major points presented include:

1. The HAZWOPER standard at 29 CFR 1910.120/40 CFR 311 should be applicable at all terrorist incidence responses.
2. SSP are presently inadequately defined in the current OSHA standard at 29 CFR 1910.120(q)(4). (Addressing this matter would improve future WMD response planning and execution)
3. Specific recommendations that would improve the effectiveness of SSP in a terrorist incident response were identified. These included:
  - Cross training of the SSP trades including with incident command.
  - A clear and evident transition from response to cleanup.
  - Better definition and understanding of the role of the Federal Response agencies, particularly OSHA (OSHA should update the 1991 response role Policy and better define SSP in the HAZWOPER standard.)
  - Site control improvements (access control, roster, visitor control.)
  - Attention to non-English speaking workers.
  - Utilization of government contract language and pre-bid qualifications for cleanup contractors. (Assures that experienced contractors engage in this unique and hazardous work.)
4. Separating on-site training for emergency response (SSP) and post-emergency response workers is logistically difficult. Site-specific training might be considered as the point of differentiation, however, to ease this problem.
5. HAZWOPER core training should be considered as a requisite for SSP in WMD incident responses.
6. SSP can better aid the search, rescue, and recovery efforts. Training topics to facilitate this were suggested and presented (see following points.)
7. With respect to instructional staff necessary to meet the training needs identified, several approaches to improving their skills were identified. These included:
  - WMD incident response instructors should have direct experience.
  - Should be peer trainers.
  - Latest technologies and knowledge should be available.
  - NIEHS should fast-track WMD on-line resources to aid the instructional staff and training providers.
  - Military resources should be explored and evaluated.
  - "What-if" scenarios should be developed and made available to WETP WMD grantees.
  - Hands-on exercises are critical.
  - Stand-alone CBT approaches are not appropriate.
8. Minimum training for SSP in responses to terrorist incidents were proposed:
  - OSHA 10 course.
  - 29 CFR 1910.120 required as a requisite.

- NFPA 472 Specialist training should be reviewed for potential relevance.
  - Site-specific orientation before deployment at a specific site.
9. Additional training topics that were considered of value included:
- Confined spaces.
  - Blood borne pathogens.
  - PPE.
  - HAZCOM.
  - Hazard assessment.
  - Fire watch.
  - First aid/CPR.
  - Site safety, working around heavy equipment particular point of emphasis.
  - Physical threats-heat stress, fatigue, shift work.
  - Fall protection.
  - Psychological stress.
10. Training delivery methods recommended were:
- Utilize HAZWOPER certified instructors.
  - Integrate WMD modules into OSHA 10 course.
  - Utilize refresher training and integrate into core HAZWOPER training curricula.
11. With respect to biochemical training, the SSP group offered the following for consideration:
- Target audience for such training should be laborers, carpenters, the mechanical trades, and service workers.
  - Close interface is necessary with the public health sector.
  - Need to focus on the hazards, which differ between biological, chemical, and radiological, as do the remediation methods.
  - It was suggested that a larger pool of trainees would be needed due to apprehension with respect to the biological/chemical/radiological threats.

12. Suggested approaches that WETP should consider in developing information resources to support the WMD initiative:
- Website.
  - Ongoing workshops.
  - Designation of a point-of-contact for each awardee.
  - On-line collaboration approaches.
  - Reports to all parties and individuals involved in the WMD efforts.
  - NIEHS should do more to promote the awardee WMD response capabilities.
  - NIEHS/WETP should develop a national registry of workers with WMD training as a means to facilitate future responses to WMD incidents.

## Bio/Chemical Threat

Consensus points from this breakout session were:

- There is widespread confusion over terms and definitions in this particular area. An approach to reducing this would be through the HAZWOPER standard and NFPA standards such as 471, 472, and 473. Need agent, individual, public health, and monitoring and surveillance techniques available and in-place. Such is not now the situation.
- Radiological and nuclear agents should be considered under the biological/chemical category. (Author's note: The IAFF developed and delivered a radiological transportation incident emergency response training course for first responders on radiological waste transport routes for DOE. These materials might be reviewed as a starting point to address additional WMD radiological training.)
- The definition of target training audiences and their duties /responsibilities are critically important in terms of assessing accuracy and relevancy of training materials. For example, in some facilities

the operators or other workers may in fact be the first responders but may not be equipped to respond to these threats. Awareness training, at a minimum, should be conducted to address this matter.

- Training materials must be kept current, despite the problems that involves as this area is changing rapidly and will likely continue to do so as more experience is gained. The current Laborers-AGC Anthrax Training Program can serve as a useful basis or foundation for additional training materials development in the biological/chemical/radiological areas.
- There is a need for consistency and reliable authoritative sources of information for all of these threat categories that are very confused at the moment. There is concern, as well, over the dissemination of inaccurate or incorrect information on websites. NIEHS should interface with other Federal agencies in this area. Awardees should build contacts within state and local agencies.
- Develop a means to gather information from awardees and other sources by the end of the fiscal year for use in developing the WMD initiative baseline. Quickly develop a mechanism to bring the highest quality of accurate, up-to-date information to those awardees working on this issue.

## Transportation/Petro-Chemical Industry

This session examined the current approaches to developing preparedness within the petro-chemical and transportation industry sectors with respect to the special vulnerability of these industries as potential terrorist targets.

The transportation and petro-chemical industry sectors represent potential terrorist targets, yet no

terrorist attack on these sectors has occurred recently. As a consequence, this breakout group could not draw upon direct experience in response to such incidents. Yet, the threat is quite real as evidenced by recent Hazmat Transportation issuances released by the U.S. Department of Transportation (DOT).

This breakout group had to consider all the possible WMD threats: destructive, biological, chemical, and nuclear in addition to the release of industry-specific hazardous materials from production and transport activities. Attention focused on approaches that might be considered and taken with respect to the training that could be provided to their training constituency as an aid to meaningfully participating in the terrorism preparedness activities in these industry sectors.

The group discussion was primarily focused on training and resource needs. Participants first identified the most pertinent questions and issues that have arisen following the September 11 attacks, as they relate to the petro-chemical and transportation industries.

The session also developed recommendations appropriate to the WETP awardees with constituencies in these industries for supplemental training to enhance their trainee participation and preparedness through refresher or additional training programs linked to their current core training. For example, awareness and operational level training might be enhanced to include additional security dimensions that are currently emerging from these respective industry sectors.

Breakout participants agreed that since September 11, there has been increased attention and interest in security issues relevant to the petro-chemical and

transportation industries. Requests for training had also increased for workers in these industries. Although the process of identifying key security concerns and training needs is still ongoing, participants discussed those they felt were most important and worthy of attention. It was agreed that truck security (for both transit and unattended vehicles) was a top priority, as is storage in railcars. Regarding the latter, regulatory loopholes currently leave this area uncovered.

The development and implementation of appropriate risk planning was also a major subject of discussion. Participants voiced the need to have evacuation/shelter plans in place, as well as a clear understanding of how regional plans fit in relation to federal emergency response programs. As for anthrax test strips and other biohazard monitoring methods, these are generally unavailable and also of obvious concern.

While there are currently a number of training resources available to meet new training needs, there was general consensus from the group that new curriculum is required, built upon the basic HAZWOPER core, to meet the particular challenges of terrorist and bio/chemical/radiological risks. While evaluation models currently exist for current core HAZWOPER programs, these too should be modified to some degree in order to make them WMD-specific. In doing so, the group suggested that consideration be given to expanding the Minimum Training Curriculum Criteria developed in the first NIEHS workshop in 1991, (now largely embodied within Appendix E to the OSHA HAZWOPER standard). If and when such new guidelines/criteria are formed, the group voiced the importance of applying one common set of guidelines

across the board, to avoid the confusion that can arise when information comes from several sources and authoritative bodies.

Other needs such as additional trainers and funding, updated technical resources, and foreign language training resources were also raised.

The group closed with suggestions of how to go about obtaining the additional training resources they had suggested. The first and foremost recommendation was the receipt of additional funding to meet the wish list of training needs proposed in the discussion group. Participants suggested the best way to approach requests for additional funding lay in a broad approach across federal agencies, rather than focusing on a single issue or industry approach. Communications dissemination is also key, through the use of Web links, existing staff/trainers, increased access to and use of on-line training, and the creation of an information repository accessible by all workers. The breakout group also agreed that additional workshops would be needed to flesh out the ideas initiated herein.

## **Communication, Coordination, and Stress Management**

This breakout group represented a diverse group of participants encompassing all of the awardee organizations. The focus of the group was on overarching issues intended to support the WETP WMD preparedness initiative and to address the major new issue emerging in the recent terrorist incident responses: stress, an issue not previously considered in the WETP training grant programs.

The group explored the robust DOE Lesson

Learned Program as a model to elucidate the issues involved in providing a comprehensive, effective, and accessible information resource to organizations with diverse missions, constituencies, and geographic dispersion as is characteristic of the WETP awardee programs.

The group also explored approaches to stress management through the experiences of Marilyn Knight who has been extensively involved in all of the recent terrorist incidents and other events of similar nature, if not of the magnitude of workers involved.

The consensus of the group was that an effective communication and coordination program was appropriate and feasible within the WETP program and that it is appropriate to begin development of a Crisis Management component within the WETP WMD Program. Further, it is feasible and appropriate to develop a pre-incident stress management training module that could be tailored to the individual awardee training target audience.

The following summarizes the points in the closing plenary session from this breakout group:

1. Sharing lessons learned:

- The DOE Lessons Learned database embodies a useful and useable approach for the awardees. This approach alerts users that information is available.
- Easy access and data entry is necessary and facilitates broader participation.
- Central locations to get information: This is an effective approach within the DOE complex, particularly with respect to workers gaining access who may not have computers at their workstation.

- Is accessible to workers and employers.

2. Communications:

- Need marketing plan/outreach to employers/ industry regarding WMD preparedness initiative.
- Need to interact with relevant organizations, particularly those serving as potential information resources and as dissemination sources.
- Key trainers contacting and working with industry to develop collaborative approaches.
- Should develop model plans:
  - Guidelines for development.
  - Key industry contacts.
  - Key federal agency contacts.
  - Clearinghouse could serve as outreach focal point to industry.

3. Crisis management:

- Develop linkages between WMD and disaster plans. (Identify triggers or criteria for deployment of crisis management resources. Identify other networks or models as well.)
- There is an immediate need for crisis management counseling for the WTC workers.
- Consider stress inoculation, build it into the training programs.

4. Crisis management interventions, beyond pre-incident stress management/awareness training:

- On-site support.
- Defusing.
- Demobilization.
- Debriefing. (Individuals separately.)
- Individual.
- Follow-up.

## Summary of Workshop Discussions

It is evident that the terrorist attack on the WTC and the sheer magnitude of the resulting catastrophic structural failures and large number of casualties stressed the emergency response system to levels not previously anticipated. The many deficiencies identified, when viewed from the context of the emergency response system, suggest that several improvements can be made upon which to base increased preparedness for any future event of similar magnitude.

- **OSHA Guidance should be enhanced:**

The language in the HAZWOPER standard with specific respect to SSP at 1910.120(q)(4) is essentially useless with regard to operational aspects in the field in massive destructive terrorist incidents such as at the WTC, Pentagon, and Oklahoma City. This lack of both detail in the standard and the relevant interpretations of the standard present serious hindrances to the Incident Commander responsible for the SSP engaged in such responses. The issue of SSP not only applies to responses such as the WTC and the Pentagon, but also to responses involving transportation Hazmat incidents, including those that may be terrorist in origin in the future. Similar problems appear to exist for those personnel identified at 1910.120(q)(5) Specialist Personnel. OSHA should develop enhanced guidance with respect to these aspects of the HAZWOPER standard. Such guidance is critically needed as this time due to the constraints under which OSHA must function at WMD incidents, being unable to enforce occupational standards and serving only in the capacity of advisors and in providing technical assistance.

- **OSHA needs to update the Policy under which the agency operates in declared disasters**

### **and OSHA must become an active participant in the National Terrorism Preparedness Program:**

The 1991 Policy (CPL 2.94) governing OSHA's role in national disaster responses is seriously outdated and needs to be updated based upon the experience in the recent terrorist incidents. Further, OSHA is not even mentioned in the two recent terrorist incident planning guidelines issued by FEMA. In fact, worker safety and health is not addressed but assumed to be the responsibility of the local authorities. These authorities need planning and operational guidance on these matters. OSHA should be the Federal agency developing such guidance and providing assistance to local and state emergency planning and response organizations. In that capacity, OSHA should be a visible participant in the Federal Terrorism Preparedness initiative.

- **Response should be conducted in full compliance with the Hazardous Waste Cleanup and Emergency Response standard at 29 CFR 1910.120 and 40 CFR 311:**

This standard is a comprehensive standard directly appropriate and applicable to destructive terrorist incidents. It is based upon a proactive worker protection approach intended to assure that all response personnel are protected at an established minimum level until such time as comprehensive monitoring data and professional judgment dictate a change, either more protective or less so. In addition, the standard provides a comprehensive integrated framework to address nearly all the worker and public protection issues including monitoring, medical surveillance, personal protective equipment, decontamination, training, site safety and health plans, control zones, site access, responsible safety and health officials, contractors and subcontractors, and several other equally important aspects.

- **Transition should be timely and clear from search and rescue to recovery, demolition, cleanup, and removal:**

While there does not appear to be firm guidelines with respect to the termination of the search and rescue phase, it is generally held that beyond 12-15 days there is essentially no likelihood of recovery of living victims. The transition from search and rescue to recovery, demolition, cleanup, and removal is a critical transition, which requires prior planning and effective execution on the scene. While the actual termination point will be site specific, the transition should be timely and clearly executed based upon appropriate detailed coordination and handoff from the Incident Commander to the recovery-cleanup responsible entity. A clear and transparent transition has additional aspects of importance as well. It is generally accepted that rescue workers can function on a 12 hours on-12 hours off, 7 days/week for a period of around two weeks. Protracted search and rescue activities begin to take a toll in both physical and mental terms, which leads to increased risk taking and injuries in addition to potential adverse physiological consequences.

- **Appropriate protection must be planned for and provided to the rescue personnel:**

In incidents involving massive destruction and casualties, the first emergency responders are fire, police, and EMS personnel. Their SCBAs and turnout coats are soon discarded in the rescue effort due to the limited life of the SCBA units and the heat stress and encumbrance problems with the turnout gear. First-on-the-scene emergency response personnel need to be trained in and provided appropriate protective gear, particularly respiratory protection, to afford them appropriate protection during the rescue phase operations. The development activities

currently being undertaken by NIOSH in response to the NIOSH/RAND Conference in NYC in early December 2001 and addressed by Expert Plenary Panelist Dower (See Appendix E) will address many of these issues.

Major urban centers particularly should consider identifying nearby sources of appropriate respiratory and other protective equipment for the initial response phase of a major destructive disaster response to be provided to response personnel such as first responders, SSP and similar individuals often termed “volunteers.” The WTC initial response was plagued by a serious initial shortage of such equipment, particularly respirators.

- **Applicable worker protection standards must be enforced:**

Guidance needs to be developed to assist the Incident Commander in ensuring compliance with the applicable occupational safety and health standards should State or Federal OSHA agencies choose not to enforce such standards during a protracted search and rescue phase or subsequent cleanup phase. In addition, during the search and rescue phase where SSP are participating, such as heavy equipment operators and riggers, the Incident Commander should have guidance with respect to developing specific operational plans to assure the adequate and appropriate protection of such support personnel. This is of particular importance as the Federal Response Plans place responsibility for safety and health (and training) on the local jurisdiction.

- **Command, Control, Communications, and Coordination should be improved:**

The ICS is a well established and proven approach developed by the fire service over many

years and utilized by Federal Disaster Response Teams in declared federal emergencies to facilitate communication and coordination between the federal response agencies and the local responsible organization. The response to the WTC was so massive that within a couple of days there were several NYC organizations, NY State agencies, federal agencies and construction personnel (SSP) numbering over 5,000 on the scene. Command, control, communication, and coordination were extremely difficult. Those responsible for incident command systems and the transition to the Unified Command System (UCS) structure at such incidents are reevaluating the implementation, execution, and transition issues within ICS and UCS plans with the WTC incident in mind.

- **An effective injury/illness surveillance system must be established:**

In any major disaster, the National Response Plan requires that the local entity receiving federal assistance take specific actions, including establishment of an injury and illness incidence reporting system. The current system does not permit the clear identification of injuries or illnesses that meet the definitions of occupationally reportable injuries and illnesses in the OSHA record keeping and reporting standards. Such information, particularly during the course of a protracted terrorist incident response, is essential to the safety and health professional in order to observe emerging trends and undertake appropriate intervention measures. Current and such systems under development or revision, such as the Department of Health and Human Services/Center for Disease Control (DHHS/CDC) recommended DEEDS system, need to be reviewed and updated accordingly.

- **Skilled Support Personnel need better protection:**

Emergency response SSP play a crucial role in any catastrophic incident response and most particularly in those incidences involving casualties where there is the expectation that survivors may be recovered. There is scant attention to the protection of these personnel in either the existing OSHA and EPA standards, the applicable consensus standards such as those from NFPA, or in most emergency response plans. Emergency response plans and protocols should be reevaluated with specific respect to provisions to assure the appropriate protection of SSP who may become participants in a response. Pre-incident training of SSP is worthy of consideration in major urban centers. In order to facilitate the future deployment of WMD preparedness-trained workers under the WETP grants, NIEHS/WETP is considering approaches to establishing a national registry of such trained workers.

- **Training input needs to be continuous:**

The scientific/medical/technical aspects of WMD response are rapidly evolving. The knowledge base that will underlie all types of WMD training is not mature and stable, compared, for example, to hazardous waste operations, lead, asbestos, and radiological/nuclear materials in industrial, commercial building and waste site settings. Thus, the WMD training materials need to be developed in such a manner that they can be kept “evergreen.” Attention to the related aspects of training delivery are necessary as well, including updates to instructors and train-the-trainer training materials in order to assure an integrated and timely change/update process.

- **Rigorous peer review process should be applied:**

Those developing WMD training curricula should establish a mechanism for rigorous peer review of the materials. There are currently no standards on many key points within the various disciplines associated with the WMD threat.

## ADVANCING THE WETP WMD INITIATIVE

The purpose of this workshop was to serve as an initial basis upon which the WETP could advance development of the HAZWOPER-based WMD response training initiative. In order to do so, the results of the workshop deliberations have been used to frame a preliminary path forward to meet that purpose. The following represent next steps that could be undertaken by the WETP.

### 1. **Schedule periodic WMD initiative update and coordination workshops.**

This is particularly important for several reasons including the dynamic nature of the current WMD preparedness and planning efforts being undertaken by numerous federal agencies, as a quality control/assurance function specific to WMD training initiatives by the awardees, updates on emerging information such as biological or chemical threat data, and issues associated with coordination and integration with key federal entities such as the NRT and FEMA.

### 2. **Commission the development of a core pre-incident stress management training module.**

This module should provide a basic pre-incident stress management awareness training module for all grantees engaged in development of training programs specific to the WMD preparedness initiative.

### 3. **Develop a specific action plan for WMD response Skilled Support Personnel training and availability.**

Appoint an ad hoc workgroup to develop recommended guidance for training criteria, pre-requisite training requirements criteria, and a

NIEHS-WETP specific registry of a national cadre of pre-WMD response trained SSP.

### 4. **Schedule monthly conference calls with all awardees engaged in the WMD preparedness initiative.**

Due to the rapidly developing nature of the national terrorist disaster preparedness efforts, this would serve to keep the WETP-WMD Team up-to-date and offer a forum for identification of emerging issues, successes, barriers, and the like. Perhaps it would be useful to hold quarterly meetings of this group as well. Such could be structured along the lines of the successful EPA-Labor Superfund Safety and Health Task Force. Indeed, joint meetings with the Task Force might have substantial merit, as the Task Force has undertaken a WMD initiative as well.

### 5. **Undertake a dedicated effort to establish and maintain contact and coordination with appropriate other federal entities.**

The WETP WMD initiative can provide a national cadre of trained WMD response expertise in several WMD sectors. The extent to which this expert resource may be utilized depends in large part upon the extent to which the key federal agencies and individuals in charge of responses to terrorist incidents are aware of the resource. In addition, this effort should include contact and coordination with agency members of the NRT as a means to gain additional information and insight upon which to guide development of WMD initiative elements associated with transportation and petro-chemical industry sectors and the inclusion of radiation and nuclear incidents as an expansion of the biological/chemical agent element.

### 6. **Establish a dedicated workgroup to develop criteria for an “information resource center” supporting the WMD initiative.**

It is apparent that the WMD preparedness and response efforts are very dynamic at this time. As a consequence, some preparedness training efforts are being based upon questionable data and information. In addition, authoritative information with respect to specifics of importance to worker training, such as biological agent characteristics and detection methods, is difficult to obtain let alone validate. The WETP should consider establishment of an information and resource center to support the WMD initiative. Such a center might include authoritative WMD information and sources, a resource listing of pre-qualified organizations that can provide crisis management services to awardee served workers in future WMD responses, a central coordination center for WMD initiative-developed training products, and a single information contact point for external entities among others. The workgroup should be tasked with developing recommended criteria for such a center. The DOE Lessons Learned program might serve as a departure point for this effort.

## Appendices

Please Note: Appendices are located online at [www.wetp.org](http://www.wetp.org).

- A. Workshop Planning Committee
- B. Workshop Participants List
- C. Workshop Agenda
- D. Opening Plenary Presentations
- E. Expert Plenary Panelist Presentations
- F. Closing Plenary Presentations
- G. Resources
- H. Summary of Lessons Learned Initiatives