Disaster Site Worker Safety and Health:
Hazard Recognition and Control



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Disaster Sites

Disaster sites should be thought of and treated like big uncontrolled construction sites.

Workers Are At Risk During Disaster Recovery

- 2005 produced three major hurricanes
  - Katrina and Rita in LA and MS
  - Wilma in FL
- Site cleanup and recovery activities from this hurricane season claimed the lives of 29 workers
- 31% involved workers being struck by objects
- 28% involved transportation incidents
- 17% involved fatal falls

Potential Disaster Site Hazards

- Physical Hazards
  - Unstable walking and working surfaces
  - Flammable and combustible liquids/vapors
  - Electrical hazards/Downed power lines
  - Flying and falling debris from construction
  - Moving vehicles and heavy equipment in work zones
  - Contact with aggressive animals
  - Cuts/abrasions from protruding objects
  - Open pits and trenches
  - Confined Spaces

Potential Disaster Site Hazards

- Chemical and Biological Hazards
  - Standing water/Waterborne disease
  - Leaking chemical storage tanks
  - Human and animal blood and tissue
  - Oxygen deficient atmospheres
  - Toxic chemical vapors, CO
  - Metal fumes (fires, torch cutting)
  - Asbestos
  - Lead and other heavy metals
  - Mold

Potential Disaster Site Hazards

- Other Health Hazards
  - Excessive and Persistent Noise
  - Ergonomic Issues
  - Extreme Heat or Cold
  - Sun Exposure
  - Heavy lifting
  - Violent encounters
  - Driving hazards
  - Fatigue
  - Stress (Physical and Mental)

Controlling Hazards - Hierarchy of Controls

The Hierarchy of Controls refers to the selective methods for controlling health and safety hazards in the workplace. It includes the use of four different methods, in preferential order…

Personal Protective Equipment (PPE)

- There is no single set of PPE that is a catch-all for disaster site recovery activities
- OSHA does have recommendations for PPE to be utilized as part of all disaster site recovery activities
- PPE should be used as a LAST RESORT control measure, after all other control methods have been exhausted
- Training of personnel on the appropriate use and care of PPE is required
- Purchasing considerations include tasks to be performed, physical nature of work, duration of use, multiple users, size of worker, working environment, etc.

OSHA Recommended PPE

- Personal Gear
  - Task/Weather-appropriate clothing (rain, cold, heat)
  - Hand sanitizer
  - Flashlight with spare batteries
  - Communication device (fully charged)
  - Sunscreen
  - Lip salve
  - Insect repellent
  - Sun/Rain hat
  - Sunglasses

OSHA Recommended PPE

- General Personal Protective Equipment
  - Foot Protection (ANSI-certified protective footwear appropriate for environment and task being performed)
  - Eye Protection (Safety glasses with side shields)
  - Head Protection (Type I, Class E and G hardhat)
  - Hand Protection (Work gloves appropriate for anticipated environmental and task-based hazards)
  - High Visibility Apparel (Class I or II Safety Vests)

A Note on Respiratory Protection

- Selecting appropriate respiratory protection is highly dependent on a number of different factors
- Employers who include the use of respiratory protection as part of their disaster site recovery PPE must implement a full respiratory protection program (see *29 CFR 1910.134*)
- The use of respiratory protection should always be partnered with some provision for ongoing monitoring of the work atmosphere
- A low cost and highly protective alternative to respiratory protection is prohibiting work in atmospheres that would require respiratory protection

Recognizing Potential Hazards

The most effective protective measure in your arsenal is not any type of PPE, but is instead the Job Hazard Analysis!

The Job Hazard Analysis is a tool used by occupational safety and health professionals to

- ✓ formulate a work plan based on specific tasks
- ✓ identify any potential hazards and
- ✓ decide how to choose and apply appropriate controls

Disaster Site Job Hazard Analysis – 6 Steps

1. List all the jobs that will be performed by your staff as part of disaster cleanup and recovery

   This is meant to be applied in a very broad sense. An example might be “Collect Water Samples in Homes”

2. Break each of the jobs down into simple tasks

   Each of the specific tasks should be listed, a lot of detail is not necessary. Consider all the tasks that will be part of the activity from the time the worker leaves the office until they return. Examples might include “Drive to affected homes, Walk from parking area to the home site, Enter affected homes, Enter basements, etc.”

Disaster Site Job Hazard Analysis – 6 Steps

3. List the different environments and situations in which the job tasks will be performed

Consider the environment present at the worksite.

Is it under construction? Is it secured? Is there a lot of equipment moving around the site?

Are there flood waters present? Are there trenches or other excavations? Are there a lot of downed power lines?

Also consider other environmental conditions, such as temperature, precipitation, sunlight/darkness, wind, etc.

Disaster Site Job Hazard Analysis – 6 Steps

4. List the hazards that could be encountered as a result of each task

Consider all different types of hazards that may be present on the site.

Consider hazards in place caused by the disaster event as well as additional hazards that will be created both by the work of your employees and the work of any other cleanup and recovery workers in the area.

Disaster Site Job Hazard Analysis – 6 Steps

5. List the controls that should be implemented to reduce or eliminate employee exposure to those hazards

Utilize the Hierarchy of Controls to reduce or eliminate the potential for worker exposure to recognized and/or anticipated hazards.

Elimination/Substitution – determine potentially hazardous processes or procedures that can be eliminated or substituted for less hazardous ones

Engineering Controls – placing some permanent/fixed barrier between the worker and the hazard of concern

Work Practice Controls – process/procedural training, permit-required confined spaces, work-shifts and rest periods

Personal Protective Equipment – utilized only as a last resort

Disaster Site Job Hazard Analysis – 6 Steps

6. Prioritize each task

How important is it that this task be completed at all?

How important is it that the task be completed now?

Can the task wait until the environment is more controlled?

What is the risk level to the worker performing this task?

Are potentially hazardous exposures to the worker appropriately controlled?

Job Hazard Analysis

Sample Scenario: An outreach worker drives into an unfamiliar community at 4 PM in winter to make a home visit.

Note: This is provided as an example, not as a recommendation.

Organization__XYZ_____ Job__Home visit_____ Completed by_Team A__ Date_____/___/_____	Situation/Environment (Where is the task done?)	Identified Hazards (Are there *chemical, biological, ergonomic, physical, psychological, hazards*?)	Controls Elimination or substitution, Safe work practices/policies, Personal protective equipment? Prioritize. Who will do what when?
Tasks #1 Drive to and from neighborhood	In car in unfamiliar neighborhood at dusk.	Collision, breakdown, poor visibility, fear	Call rather than drive: 1 Worker. Starting today. Maintain car: 2 Worker. Supervisors remind now. Plan route: 4 Team Policy. Discuss next week. Go earlier: 3 Team Policy. Discuss next week. Wear seatbelt: Supervisor. Spot check now. Have cellphone, work as team: 5 Put in budget.
#2 Walk to and from house with materials	In cold on icy steps	Slippery surfaces, risk of assault	Wait for thaw: - Dress appropriately: 7 Call ahead: 6
#3 Serve the client and others present	In home	Home chemicals +meds sharp needle, cough, awkward heavy lift, dog, threatening behavior	Use no unmarked substances: 10 Use safer needles: 9 Be vaccinated: 8 Wear respirator: Supervisor checking if need. Call ahead: 6 Survey at meeting. Have buddy and phone: 5

Training

A basic level of training for disaster recovery workers should include:

- Training on your agency's emergency response procedures and disaster recovery activities
- Training on the appropriate use of standard Personal Protective Equipment (PPE) such as gloves, hearing protection and eye protection (*29 CFR 1910.132-133*)
- Recommended: OSHA 10-hour Construction Awareness training

Training

Additional training is required for workers who will:

- Use a respirator (see OSHA requirements – *29 CFR 1910.134*)
- Use additional or higher level Personal Protective Equipment (PPE) such as electrical-rated PPE, chemical-resistant PPE, etc.
- Enter confined spaces such as silos, trenches or utility vaults
- Use hazardous chemicals
- Come in contact with human or animal tissue or fluids

For more information:

OSHA Hurricane eMatrix
http://www.osha.gov/SLTC/etools/hurricane/index.html

OSHA Job Hazard Analysis Workbook
http://www.osha.gov/Publications/osha3071.pdf

OSHA Respiratory Protection eTool
http://www.osha.gov/SLTC/etools/respiratory/index.html

OSHA Eye and Face Protection eTool
http://www.osha.gov/SLTC/etools/eyeandface/index.html

OSHA Construction Safety eTool
http://www.osha.gov/SLTC/etools/construction/index.html