RiskTopics

Post-disaster cleanup and recovery operations: How to keep workers safe

Promoting the safety and security of workers in the aftermath of any disaster requires planning and consideration of several issues.

Introduction

Salvage cleanup and recovery operations may become very hazardous to workers. Depending on the type of disaster, these operations potentially can expose workers to hazardous chemicals, fuel and oil spill hazards, heat stress, electrical hazards, structural safety risks, and other dangers. A major recovery operation will demand more than the capabilities of internal staff. It will likely require working with contractors and salvage specialists.

After the initial damage assessment and securing the facility, salvage operations may be undertaken. Salvage operations may range from securing undamaged equipment and goods to salvaging electronic equipment, documents, furniture, and other items. Care must be taken while working with any equipment that is water damaged to minimize electrical hazards to workers and damage to the equipment itself. Many salvage tasks require specialized skills and knowledge. Salvage of telecommunication equipment, electronic data, and documents is a highly specialized task that is best left to professionals.

A major disaster with a large footprint presents the likelihood of many challenges. The conditions may create a constantly changing situation and require monitoring of various sources for the current status and latest advice. Zurich Risk Engineering encourages interested parties to review the most up-to-date information provided by government agencies and private organizations/firms involved with such cleanup operations. Zurich Risk Engineering is providing the following general tips for worker safety during cleanup and recovery operations to be considered. They are general in nature, not all-inclusive, and may have to be modified based on your specific situation. Additional resources on hurricanes, flash floods, tropical storms, tornadoes, FEMA and the Red Cross are listed at the end of this RiskTopic.

Guidance

General safety guidelines/personal protective equipment

- Equip workers with a minimum complement of routine safety equipment, such as hard hats, safety glasses, heavy work gloves, and steel-toed safety shoes or boots. In addition, provide protective hearing gear when and if other equipment that may cause a significant noise exposure (e.g., chainsaws) is present.

- Workers should be prepared for the same types of conditions as when working at an outdoor construction site, except that the conditions and work will be extreme.
- All activities should be preceded by a pre-plan or toolbox meeting and be clearly communicated to all workers and contractors.
- Clean, cool, potable water should be available for workers.
- Workers should be encouraged to practice good personal hygiene, such as washing hands and face thoroughly before eating or at the end of a work shift. Commercially available disinfecting solutions may be useful in allowing workers to practice good personal hygiene.
- Flood and other disasters may result in hazardous material spills and leaks that can present significant environmental issues and injury potential for workers.
- Qualified personnel should evaluate the extent of, and the worker hazards/exposures associated with hazardous chemical spills. Training programs should take into account the hazards that are present.
- Additional protective equipment, such as respirators, chemical protective gloves or suits, etc., should be provided as needed. The selection of proper equipment should be made by a qualified safety professional.
- Much of the cleanup work on hazardous chemicals and oil spill debris will be considered hazardous waste cleanup. OSHA HAZWOPER 40-hour or similar hazardous materials training should be provided by competent personnel when appropriate.
- Workers should be trained in the proper use, cleaning, decontamination, and maintenance of personal protective equipment.
- The cleanup debris may have to be treated as hazardous waste and disposed of according to applicable regulations.

Heat/physical stress

- Much of the cleanup will be heavy work with the potential for high temperatures. This presents significant heat stress exposure for workers, particularly those using protective clothing.
- Workers should be encouraged to drink cool, clean water several times per hour to maintain electrolyte balance.
- Work should be scheduled so that workers have a reasonable work/rest regimen of at least 15 minutes of rest per hour of work. Longer rest periods should be scheduled in extremely hot temperatures because concentration and judgment can be adversely affected. Work schedules should consider this and allow adequate rest times and facilities for workers.
- Personnel wearing hazmat type A gear may be limited to only 20 minutes of work per hour in extreme temperatures.

Structural safety

- A visual inspection for structural safety should be completed by a competent, trained person before entering any type of structure.

- Emergency repairs of structural areas may have to be undertaken to secure the structural members, including walls, floors, stairs, ceilings, and roofs.
- Any severely damaged areas should be reviewed by a qualified structural engineer prior to entry or any work being performed.
- Watch for damage to structural members of the building that may be weakened by standing water or during the removal of debris.
- Isolate unsafe areas by use of physical barricades and other means (e.g., signage) to restrict access.

Tool safety

- Tools should be examined to be sure they are in good working order. Any damaged tool should be taken out of service.
- The electrical supply for power tools should be equipped with GFI protection.
- Appropriate guards and safety devices should be in place on all chainsaws, circular saws, drills, grinders, and other equipment.
- If gasoline or diesel generators or compressors are used, they should be placed in a manner to allow adequate venting of exhaust gases out of the work area to minimize the potential of creating a carbon monoxide exposure.

Work at heights

- Certify a safe and steady, solid work area for all work at heights.
- Use tie-offs and other fall protection procedures if adequate guardrails are not present or other fall exposures exist.
- Inspect all ladders to make certain they are in good condition and monitor placement/use to confirm they are placed and used properly.
- In unusual circumstances or when in doubt, wait to perform work at heights until adequate man lifts, scaffolding, and/or other equipment is present.

Electrical hazards

- Electrical and gas utilities may have been shut off by emergency service personnel. Confirm worker safety before they are turned back on.
- Care should be taken around downed power lines until the local utility can verify they have been de-energized. All downed power lines should be treated as "live" until de-energized process confirmation is received.
- Caution should be taken with the potential for live electrical lines in standing water.
- Shorted wiring and interior electrical systems may inadvertently energize standing water in basements or other areas, posing a potential electrocution hazard.

- Existing or repaired systems should be equipped with GFI protection.
- The use of extension cords in wet areas should be avoided. In addition, any frayed or damaged electrical cords should be discarded.

Standing and moving water

- Care should be exercised when entering moving or standing water. Moving water can be dangerous even for good swimmers. Standing water can hide unexpected hazards, such as holes or tripping hazards.
- Floodwaters may contain human or animal waste products, as well as industrial or agricultural chemicals and petroleum products. Care should be taken to protect against skin, face, and eye exposure.
- While working near a body of water and in marshes, be aware of local conditions and hazards, such as insects, poisonous snakes, alligators, jellyfish, stingrays, and sharks.

Manual material handling

- Removal of debris should be done cautiously. Watch for movement or damage to building structural elements that may present a worker safety hazard.
- Practice proper lifting techniques – workers should use their legs, not backs, to lift, keep the load close to the body, and limit lifts to about 35-50 pounds.
- Use buddy lifts with two or more people for larger or awkward lifts.
- Walking and working surfaces may be wet or covered with sludge or other debris. Care should be taken to avoid slips and falls. The use of proper, non-skid footwear is important.

Disease prevention/first aid

- There is significant potential for disease from debris, waste, and standing and contaminated water.
- Verify that all workers have proper immunizations – see the Centers for Disease Control (CDC) website link below for suggested immunizations.
- Provide first aid kits and properly trained personnel. All injuries, no matter how minor, should be reviewed by a trained first aid professional and treated accordingly.
- Extra care should be taken in protecting broken skin, such as cuts or scrapes, to prevent disease transmission.
- Make sure a supply of clean water or disinfecting solutions to allow workers to practice good personal hygiene.
- Insects can be a vector for disease, so all workers should use insect repellent that contains DEET.
- Post-flooding circumstances may also create a risk of snake and other reptile bites from animals trapped in structures during flooding. Flood-displaced rats may bring disease exposure and the use of rat bait stations may be appropriate.

- Humid, moist areas are a prime breeding ground for mold and fungus growth. The sooner debris can be removed and the space dried, the less chance of excessive mold growth. Workers should be cautioned to exercise care when working with wet debris. All debris should be disposed of in an approved manner.

Confined spaces

- A typical confined space is an area large enough for human entry with limited means of egress not intended for routine occupancy and that has unusual hazards, such as lack of oxygen, potential chemical exposure, or mechanical hazards (such as mixer blades).
- Standing water with organic waste materials or chemicals may generate an unusual atmospheric hazard where you might not normally expect one to exist.
- Standing or moving water may have weakened structural members or moving materials, creating a potential collapse or engulfment hazard.
- All potential confined spaces should be reviewed by a qualified person. Air testing should be performed to confirm a safe atmosphere. Energy sources should be locked or blocked out. All of this should be done prior to entry into the space.

Resources for hurricanes, flash floods, tropical storms, tornadoes and other natural disasters

- American Red Cross
  https://www.redcross.org/
- Federal Emergency Management Agency (FEMA)
  https://www.fema.gov/
- Centers for Disease Control and Prevention – Hurricanes and Other Tropical Storms:
  http://emergency.cdc.gov/disasters/hurricanes/index.asp
- Centers for Disease Control and Prevention – For Immunization Managers
  http://www.cdc.gov/vaccines/imz-managers/index.html
- Occupational Safety and Health Administration – Hurricane Preparedness and Response:
  https://www.osha.gov/dts/weather/hurricane/index.html
- SBP – Disaster Resilience and Recovery
  http://sbpusa.org

July 2020

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RiskTopic_Postdisastercleanupoperations:Keepingworkerssafe07082020

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