

Search and Rescue Operations

Following a catastrophe, rescue workers and emergency responders are the first to arrive on the scene, often in unfamiliar surroundings and adverse weather conditions, ready to save lives and secure the environment to help protect the lives of those to follow. Rescue workers and emergency responders may be involved in emergency medical operations involving victim rescue or body recovery around piles of rubble and other debris, collapsed structures or near structural steel.

Potential Hazards for Rescue Workers and Emergency Responders

- Exposure to blood or body fluids, or pathogens from sewer system breaks.
- Damaged utility services, including downed electrical cables, overhead power lines, broken gas lines, steam and water mains, or compressed gas cylinders.
- Piles of construction and other types of debris, including over-hanging debris.
- Airborne smoke and dust (asbestos, crystalline silica, etc.) and possible eye and skin injuries from dust and flying debris.
- Confined spaces (limited openings from entry or exits), possible hazardous atmospheres, including possible flammable or toxic environments.
- Slips, trips or fall hazards from holes, protruding rebar, etc.
- Dangers due to proximity to heavy machinery, e.g., cranes, loaders, debris-hauling trucks, etc.
- Handling a variety of sharp, jagged materials.
- Potential for secondary collapse of unstable structures.
- Excessive noise from rescue/ventilation or other heavy equipment, including generators.

General Precautions

Personal Protective Equipment

- **Hand Protection.** When handling potentially infectious materials, use appropriate barrier

protection including latex and nitrile gloves (powder-free latex gloves with reduced latex protein content can help avoid reaction to latex allergies). These gloves can be worn under heavy-duty gloves which will, in turn, protect the wearer from cuts, puncture wounds, or other injuries that break the skin (caused by sharp environmental debris or bone fragments). A combination of a cut-proof inner layer glove and a latex or similar outer layer is preferable.

- **Foot Protection.** Footwear should similarly protect against sharp debris.
- **Respiratory Protection.** Use respiratory protection to combat effects from breathing dust and hazardous atmospheres which might contain some, or all, of the following: freon, carbon monoxide, hydrogen sulfide, asbestos, carbon dioxide, ammonia, and welding gases.
- **Hearing protection.** Hearing protection is extremely important, particularly around saws, earth-moving equipment and hydraulic tools.
- **Eye Protection.** Protective eyewear (safety glasses with side shields, at a minimum), is necessary personal protective equipment.
- **Fall Protection Equipment.** Use fall protection equipment, with lifelines tied off to suitable anchorage points (e.g., bucket trucks), whenever possible.

Other Considerations

- Be aware of electrical and gas hazards, e.g., downed wires and cables or broken gas lines. Incident commanders should be notified before continuing.

- If working in confined spaces, ensure that at least one person remains outside the space to monitor operations and assist in an evacuation, if necessary. Reliable communications and rescue equipment, along with functioning alarm systems, are imperative.
- Watch for heavy equipment operation, including the swing radius for cranes and other equipment with arms. Each piece of heavy equipment should have a spotter when operating near emergency responders and skilled support workers.

Recommendations

- Monitor for signs of heat/cold stress, such as altered vital signs, confusion, excessive sweating, and fatigue. Adjust work schedules, rotate personnel, and add additional workers to work teams. Refrain from food and beverages in areas exposed to toxic materials.
- N-95 or greater respiratory protection is acceptable for most activities with dust exposure, including silica and cement dust. Use

full face respirators with P-100 organic vapor/acid gas combination cartridges if airborne contaminants are causing eye irritation.

- Emergency responders should wear high-visibility and/or retro-reflective garments or vests to assure that they are readily identifiable by other rescue and support workers.
- Decontamination of workers and equipment before leaving the site is important to prevent adverse health effects, contain any hazards to the site, and prevent secondary contamination of off-site facilities (e.g., fire stations or worker's homes) or additional equipment (e.g., ambulances).

Additional Information

- For more information, visit OSHA's Web site at www.osha.gov.
- The National Fire Protection Association (<http://www.nfpa.org>) has issued a standard on protective clothing and equipment suitable for the urban search and rescue environment.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For more complete information:



U.S. Department of Labor

www.osha.gov

(800) 321-OSHA

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