

Understanding Potential Hazards and Mitigation Measures

The hazards may vary greatly from one incident to the next. Also, you may be deployed to a location that has not sustained any damage. Listed below are potential hazards that may be encountered in areas that have sustained severe damage, with corresponding mitigation measures you can take to protect yourself.

Potential Hazard	Mitigation Measures
Heat Stress and Dehydration	<p>✓ Drink Plenty of Fluids: During hot weather you will need to increase your fluid intake, regardless of your activity level. Don't wait until you're thirsty to drink. During heavy exercise in a hot environment, drink two to four glasses (16-32 ounces) of cool fluids each hour. Warning: If your doctor generally limits the amount of fluid you drink or has you on water pills, ask how much you should drink while the weather is hot.</p> <p>Don't drink liquids that contain alcohol, or large amounts of sugar—these actually cause you to lose more body fluid. Also avoid very cold drinks, because they can cause stomach cramps.</p> <p>✓ Wear Appropriate Clothing and Sunscreen: Choose lightweight, light-colored, loose-fitting clothing. Sunburn affects your body's ability to cool itself and causes a loss of body fluids. If you must go outdoors, protect yourself from the sun by wearing a wide-brimmed hat (also keeps you cooler) along with sunglasses, and by putting on sunscreen of SPF 15 or higher (the most effective products say "broad spectrum" or "UVA/UVB protection" on their labels) 30 minutes prior to going out. Reapply sunscreen as needed.</p>
Heat Emergencies	<p>✓ Pace Yourself: If you are not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually. There are three common heat-related emergencies: heat cramps, heat exhaustion, and heat stroke.</p> <p>Heat cramps involves heavy perspiration resulting in a loss of salts from the body. Symptoms include muscle cramps (usually in the legs and abdomen), exhaustion, and sometimes dizziness.</p> <p>Heat exhaustion is a form of shock brought about by fluid and salt loss. Heat exhaustion, if not treated, may develop into heat stroke. Signs and symptoms may include rapid, shallow breathing; weak pulse; cold and clammy skin; heavy perspiration; total body weakness; dizziness; and possible unconsciousness. Emergency care must be provided immediately.</p> <p>Heat stroke occurs when a person's temperature-regulating mechanism fails and the body cannot rid itself of excessive heat. The patient usually stops sweating. Other signs and symptoms may include dry, hot skin; loss of consciousness (possible coma); and seizures or muscular twitching. Emergency care must be provided immediately.</p> <p>✓ Know the Warning Signs: If exertion in the heat makes your heart pound and leaves you gasping for breath, STOP all activity. Get into a cool area--or at least into the shade--and rest, especially if you become light-headed, confused, or weak. Let someone know that you are not feeling well.</p>

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	<ul style="list-style-type: none"> ✓ Use a Buddy System: When working in the heat, monitor the condition of your co-workers and have someone do the same for you. Heat-induced illness can cause a person to become confused or lose consciousness.
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Cold Emergencies	<ul style="list-style-type: none"> ✓ Avoid Prolong Exposure to Cold Temperatures: Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat, or submersion in cold water. Frostbite causes a loss of feeling and color in affected areas and can lead to permanent damage. ✓ Know the Warnings Signs: Shivering, exhaustion, confusion, fumbling hands, memory loss, slurred speech, and drowsiness. At the first signs of redness or pain in any skin area, get out of the cold or protect any exposed skin—frostbite may be beginning. Any of the following signs may indicate frostbite: a white or grayish-yellow skin area, skin that feels unusually firm or waxy, or numbness. Never attempt to warm a frostbite area by rubbing. Seek emergency care as soon as possible.
Poisonous Snakes	<ul style="list-style-type: none"> ✓ Be Alert: After a flood, storms, or hurricane, snakes are forced into places where they usually are not found. Take the following precautions if you are deployed to an area where poisonous snakes are common. Be alert for snakes in unusual places. They may be found in or around homes, barns, outbuildings, driftwood, levees, dikes, dams, stalled automobiles, piles of debris, building materials, trash, or any type of rubble or shelter. Search the premises thoroughly for snakes before beginning any cleanup or rescue operations. Snakes may be under or near any type of protective cover. ✓ Wear Gloves and Use Tools: In rescue or cleanup operations, wear heavy leather or rubber high-topped boots, and heavy gloves. Wear trouser legs outside boots. Be extremely careful around debris. Use rakes, pry bars, or other long-handled tools when removing debris. Never expose your hands, feet, or other parts of your body in a place where a snake might hide.
Insects and Spiders	<ul style="list-style-type: none"> ✓ Know the Risk: Rain and flooding in a hurricane area may lead to an increase in numbers of mosquitoes, which can carry diseases such as West Nile virus or dengue fever. In most cases, the mosquitoes will be pests but will not carry communicable diseases. For more information on West Nile virus, see CDC's West Nile virus Web site. ✓ Protect Yourself: To protect yourself from mosquitoes, use screens on dwellings; wear long pants, socks, and long-sleeved shirts; and use insect repellents that contain DEET or Picaridin. When working around abandoned buildings or debris piles, stay on the lookout for spiders. If bitten by a spider, seek emergency medical attention.
Electrical Hazards	<ul style="list-style-type: none"> ✓ Exercise Extreme Caution: Assume all power lines are hot unless positive confirmation is received to the contrary from a qualified electrician or utility company representative. Do not drive through standing water if downed power lines are in the water. <p>If a powerline falls across your car while you are driving, stay inside the vehicle and continue to drive away from the line. If the engine stalls, do not turn off the ignition. Warn people not to touch the car or the line. Call or ask someone to call the local utility company and</p>

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	<p>emergency services.</p> <ul style="list-style-type: none"> ✓ Know the Damage Posed by Generators: If a portable generator is improperly sized, installed, or operated, it can send power back to the electrical lines (referred to as backfeed). Backfeed can seriously injure or kill repair workers or people in neighboring buildings.
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Contaminated Drinking Water and Food	<ul style="list-style-type: none"> ✓ Know the Source of Your Drinking Water: After flooding conditions or extended power outages, assume all water is contaminated unless you saw the bottle it came from. Municipal water supplies in severely storm-damaged areas are also likely contaminated. ✓ Wash Your Hands Frequently: Cleaning your hands often, using soap and water (or waterless alcohol-based hand rubs when soap is not available and hands are not visibly soiled), removes potentially infectious material from your skin and helps prevent disease transmission.
Floodwaters	<ul style="list-style-type: none"> ✓ Heed Flash Flood Warnings: Flash floods can come rapidly and unexpectedly. They can occur within a few minutes or hours of excessive rainfall, or when a dam or levee fails, or even due to a sudden release of water previously held by an ice or debris jam. ✓ Never Cross Floodwaters: Even if the water appears shallow enough to cross, do not attempt to cross a flooded road. Water can conceal dips, or worse, floodwaters can damage roadways. Remember, 6 inches of water will reach the bottom of most passenger cars, causing loss of control or possible stalling. One foot of water will float many vehicles. ✓ Don't Allow Skin Exposure: Leptospirosis and other disease may occur in individuals who wade, swim, or bathe in contaminated floodwaters.
Mold	<ul style="list-style-type: none"> ✓ Know How Exposure Affects Your Health: After natural disasters, such as hurricanes and floods, excess moisture and standing water contribute to the growth of mold in homes and other buildings. People with asthma, allergies, or other respiratory conditions may be sensitive to mold. Proper respiratory protection should be worn when you are exposed to areas containing mold.
Hazardous Materials	<ul style="list-style-type: none"> ✓ Use Personal Protective Equipment as Instructed: Disasters resulting in massive structural collapse can cause the release of chemical or biologic contaminants (e.g., asbestos or arthrospores leading to fungal infections). Persons with chronic pulmonary disease may be more susceptible to adverse effects from these exposures. If working in potentially contaminated areas, avoid skin contact or inhalation of vapors by properly using the protective clothing and respirators assigned to you by your supervisor or the Safety Officer ✓ Exercise Caution Moving Unknown Objects: Floodwaters can dislodge tanks, drums, pipes, and equipment, which may contain hazardous materials such as pesticides or propane. Do not attempt to move unidentified dislodged containers without first contacting the local fire department or hazardous materials team. ✓ Wash Your Hands: Frequently and thoroughly wash skin areas that may have been exposed to pesticides and other hazardous chemicals.

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Damaged Structures	<ul style="list-style-type: none"> ✓ <u>Assume Damage Structures Are Unstable:</u> Floodwaters, tornadoes, earthquakes, or other forces of nature can rearrange and damage natural walkways, as well as sidewalks, parking lots, roads, and buildings. Never assume that water-damaged structures or ground areas are stable. ✓ <u>Don't Enter Damaged Buildings Until They've Been Inspected:</u> Don't work in or around any damaged building until it has been examined. Assume all stairs, floors, and roofs are unsafe until they are inspected. Leave immediately if shifting or unusual noises signal a possible collapse. <p>Buildings marked with florescent spray paint are bearing symbols made by Urban Search and Rescue (US&R) Teams. (See the separate resource linked to this course, titled US&R Victim Marking System, for printable information on interpreting the symbols.)</p>
Injuries or Rashes	<ul style="list-style-type: none"> ✓ <u>Wear Sturdy Footwear and Gloves:</u> The risk for injury during and after a natural disaster is high. Persons who anticipate the need to travel in affected areas should be advised to wear sturdy footwear to protect their feet from widespread debris present in these areas. High-top leather boots with protective toes are recommended when working in hazardous conditions. Never reach into debris piles without hand protection. ✓ <u>Take Care of Cuts and Wounds:</u> Tetanus is a potential health threat for persons who sustain wound injuries. Any wound or rash has the potential for becoming infected, and should be assessed by a health-care provider as soon as possible. Any wounds, cuts, or animal bites should be immediately cleansed with soap and clean water. A good preventive measure is to keep your tetanus booster shot up to date, or to get a tetanus booster at the incident location, if available. ✓ <u>Back Injuries:</u> Cleanup workers are at risk for developing serious musculoskeletal injuries to the hands, back, knees, and shoulders. Special attention is needed to avoid back injuries associated with manual lifting and handling of debris and building materials. To help prevent injury, use teams of two or more to move bulky objects and use proper lifting techniques and devices.
Agricultural Hazards	<ul style="list-style-type: none"> ✓ <u>Beware of Confined Spaces on Farms:</u> Molding or fermenting agricultural materials in confined spaces may generate large amounts of toxic gases that could cause lung damage or death if inhaled. Never enter a confined space containing potentially toxic gases unless you have received sufficient training and possess the proper personal protective equipment. ✓ <u>Avoid Respiratory Hazards:</u> Wet hay, grain, silage, compost, and other organic/agricultural materials often grow large amounts of bacteria and mold during the warm summer weather. Breathing these organisms and the organic dust produced may cause lung disease. If you are required to work in these types of areas, proper respiratory protection must be worn.

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Driving	<ul style="list-style-type: none"> ✓ <u>Convey Your Plans:</u> Tell the contact person at your destination or your supervisor your estimated time of arrival and destination. Arrange for the contact person/supervisor to initiate a search along your intended route if you don't arrive within a pre-specified time limit. ✓ <u>Follow Pre-Planned Routes:</u> If you are given instructions to take certain routes do not deviate. What may look like a shortcut could end up being very hazardous. Report all changes of plans. ✓ <u>Know the Hazards:</u> When driving in storm-impacted areas, watch with caution for confused deer, loose livestock, flooded low areas, washed-out culverts and bridges that may have undercut foundations, inoperable traffic lights, downed power lines, and debris in roadways. ✓ <u>Use Common Sense:</u> Know your route ahead of time. Do not use cell phones when driving. When possible, drive only during daylight hours in storm-impacted areas. Check the tires, fuel level, and condition of the vehicle before you leave. ✓ <u>Carry Emergency Supplies:</u> Do not begin travel unless you have enough gas, water, nonperishable food, necessary prescriptions, extra clothing, etc., to be entirely self-sufficient for 24 to 48 hours. ✓ <u>Monitor Conditions:</u> Continuously listen to local radio stations (not satellite stations, rebroadcast stations, CD's, tapes, etc.) for weather alerts, evacuation notifications, washed-out roads, and gasoline status information.
Desperate Survivors	<ul style="list-style-type: none"> ✓ <u>Report Needs:</u> Unless you have the supplies and training to help survivors, report location and needs. Avoid stopping except in secure locations. If you are forced to stop, remain calm and be compliant with requests. ✓ <u>Do Not Endanger Yourself:</u> Do not put yourself in danger by trying to defend your belongings or vehicles. Get out of the situations as quickly as possible.
Communications	<ul style="list-style-type: none"> ✓ <u>Have a Backup Plan:</u> Outside of incident radio coverage area, carry a cellular phone but do not depend on cell coverage being available even in cities. Develop a backup communications plan.