



Safety Awareness for Responders to Hurricane Katrina:

Protecting Yourself While Helping Others



WORKER EDUCATION & TRAINING PROGRAM



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Protect yourself

If in doubt, contact your supervisor!

- Physical injury was a top diagnosis following Hurricane Andrew.
- Walking over and handling debris that is covered with water can cause cuts, scrapes, bruises, sprains, etc.
- Remain current with your vaccinations.
- Consider steel toe/shank footwear if available.
- If you will be performing direct patient care or otherwise expected to have contact with bodily fluids, get the Hepatitis B vaccine series.
- Know your medicines, allergies, and blood type.



Hazard: Heat stress Heat stroke is a killer

- Drink lots of water.
- Know the signs of heat-related illnesses.
- Monitor yourself and coworkers, use the buddy-system.
- Block out direct sun or other heat sources.
- Use cooling fans/air-conditioning and rest regularly.
- Wear lightweight, light-colored, loose-fitting clothes.
- Avoid alcohol, caffeinated drinks, or heavy meals.
- Get medical help for symptoms such as altered vital signs, confusion, profuse sweating, excessive fatigue.
- Take shelter in shaded areas and, for fire fighters, unbutton and remove bunker gear.





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Hazard: Sunburn

- Prevent overexposing skin and eyes to sunlight and wind.
- Use sunscreen and lip balm.
- Use protective eyewear.
- Limit exposure.

Sunburn reduces responder readiness and increases the likelihood of skin cancer

Hazard: Piles of debris and unstable work surfaces

- Don't walk on surfaces you aren't sure are stable.
- Use other ways to get to work surfaces, such as bucket trucks.
- Erect scaffolding on stable surfaces and anchor it to stable structures.
- Wear protective equipment provided, including safety shoes with slip resistant soles.
- Use fall protection with lifelines tied off to suitable anchorage points, including bucket trucks, whenever possible.





Hazard: Too much noise

- Use hearing protection whenever noisy equipment is used.
- Examples: saws, earth-moving equipment, Hurst tools.
- Hearing protection will prevent temporary hearing loss that can interfere when listening for cries, moans, and other sounds from victims buried in the rubble.

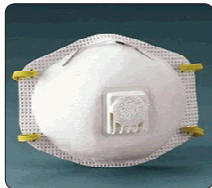




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Hazard: Breathing dust containing asbestos, silica and other toxins

- Protect yourself from breathing dust, wear NIOSH-approved respirators.
- If in doubt about respirators, see your supervisor.
- An N-95 or greater respirator is acceptable for most activities, including silica and portland cement dust.
- If asbestos is present, use a half-mask elastomeric respirator with N,R, or P-100 series filters.
- If airborne contaminants are causing eye irritation, full-face respirators with P-100 organic vapor/acid gas (OV/AG) combination cartridges should be used.
- Make sure you are fit-tested for a respirator and do a positive and negative seal check every time you wear your respirator. Wash it at least once a day.
- Surgical masks should **not** be used because they do not provide adequate protection.
- Replace filters when breathing becomes difficult or you detect an odor through organic cartridges.



N-95 Respirator




½ face respirator with P-100/OV/AG cartridges



Hazard: Confined Spaces

The following must be done before you enter a confined space. Your supervisor must:

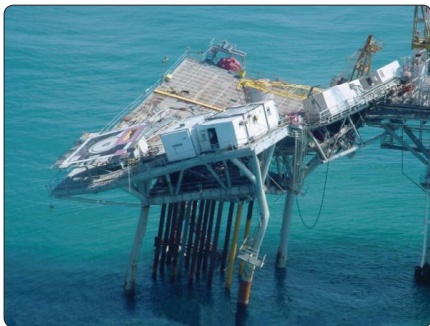
- Make sure you and the attendant are trained.
 - Ventilate and monitor for hazardous conditions.
 - Lock out or tag out all power equipment in the space.
- 
- Issue appropriate PPE, possibly including self-contained breathing apparatus (SCBA).
 - Establish barriers to external traffic such as vehicles and pedestrians.
 - Provide ladders or similar equipment for safe entry and exit in the space.
 - Provide good communications equipment and alarm systems.
 - Have rescue equipment and trained rescue personnel nearby.



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Hazard: Chemicals released by Katrina

- Chlorine tank found in downtown Gulfport.
- 78,000 barrels of oil released at two spills.
- Diesel, gasoline, motor oil, chlorine, liquid oxygen, medical waste and corrosives have been found by crews.
- 22,000 facilities in the area have underground fuel tanks.
- Industrial and household products in all sizes and quantities.





Hazard: Potential chemical exposures

Symptoms: Eye, nose, throat, upper respiratory tract, and skin irritation; flu like symptoms; difficulty breathing; fatigue; loss of coordination; memory difficulties; sleeplessness; mental confusion. Chronic effects depend on the extent and the duration of exposure.

- **Fire Fighting:** Use self Contained Breathing Apparatus (SCBA) with full face piece in pressure demand or other positive pressure mode.
- **Entry into unknown concentration:** Use SCBA gear.
- **Rescue operations with vapors present:** Use gas mask with front mounted organic vapor canister (OVC) or any chemical cartridge respirator with an organic vapor cartridge, if enough breathing air is present.
- **Dusty environments and strong odors:** Use a combination particulate filter/organic vapor cartridge. Charcoal-impregnated N-95 respirators will reduce odors.



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Hazard: Standing Water

- EPA has found elevated levels of contamination associated with raw sewage and other hazardous substances in the flood waters in New Orleans.
- The EPA advises that human contact with water should be avoided.
- Workers should wear waders and waterproof gloves when coming into contact with flood water.
- If clothes come into contact with flood water, wash them in water and detergent separately from uncontaminated clothes and linens.
- **If skin comes into contact with flood water, wash thoroughly with soap and water.**
- If you have any open cuts or sores that will be exposed to floodwater, keep them as clean as possible by washing them with soap and applying an antibiotic ointment to discourage infection.
- **Make sure flood water does not get in your mouth.**





Hazard: Electrical, overhead power lines, downed electrical wires, cables

- Treat all power lines as energized until they have been de-energized and tested.
- Verifying that a line is not energized may not ensure your safety. Lines on both the load and supply sides of the work area must be grounded. Grounding is necessary to protect you from the hazards of feedback electrical energy from a secondary power source, such as a portable generator.
- Use ground fault circuit interrupters (GFCIs).





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Hazard: Carbon monoxide from gasoline- or propane-powered generators, heavy equipment, and tools

Symptoms: Headache, dizziness, drowsiness, or nausea; progressing to vomiting, loss of consciousness, and collapse, coma or death under prolonged or high exposures.

- Use CO warning sensors when using or working around combustion sources.
- Shut off engine immediately if you begin to develop symptoms.
- Do not use gasoline generators or portable fuel-driven tools in confined spaces or poorly ventilated areas.
- Do not work in areas near exhaust (CO poisoning even occurs outdoors if engines generate high concentrations of exhaust gases near workers). With symptoms of exposure, shut off the engine.



Hazard: Operating a chain saw

- **Operate, adjust, and maintain the saw according to manufacturer's instructions** provided in the manual accompanying the chain saw.
- **Properly sharpen chain saw blades and properly lubricate the blade** with bar and chain oil. Additionally, the operator should periodically check and adjust the tension of the chain saw blade to ensure good cutting action.
- **Choose the proper size of chain saw to match the job**, and include safety features such as a chain brake, front and rear hand guards, stop switch, chain catcher and a spark arrester.
- **Wear the appropriate protective equipment**, including hard hat, safety glasses, hearing protection, heavy work gloves, cut-resistant legwear (chain saw chaps) that extend from the waist to the top of the foot, and boots which cover the ankle.
- **Avoid contact with power lines** until the lines are verified as being de-energized.
- **Always cut at waist level or below** to ensure that you maintain secure control over the chain saw.
- **Bystanders or coworkers should remain at least 2 tree lengths (at least 150 feet) away** from anyone felling a tree and at least 30 feet from anyone operating a chain saw to remove limbs or cut a fallen tree.



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Hazard: Eye Injuries

Eye injuries can be caused by dust, flying debris and welding flash.

- Use safety glasses with side shields as a minimum. An eye wear retainer strap is suggested.
- Consider safety goggles for protection from fine dust particles, or for use over regular prescription eye glasses.
- Light from a welding torch can cause severe burns to the eyes and surrounding tissue. Any worker using a welding torch for cutting needs, or anyone working near a welding torch, should use special eye wear for protection from welding light.
- Only use protective eyewear that has an ANSI Z-87 mark on the lenses or frames.



Non-prescription



Prescription





Hazard: handling a variety of sharp, jagged materials

- Make sure that you have an up-to-date tetanus shot (within the past 10 years).
- Wear personal protective equipment, including hard hats, safety shoes, eye glasses, and work gloves.
- Immediately clean out all open wounds and cuts with soap and clean water. Apply an antibiotic ointment to discourage infection. Contact a doctor to find out whether more treatment is needed (such as a tetanus shot). If a wound gets red, swells, or oozes, seek immediate medical attention.





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Hazard: Heavy equipment, including cranes, bucket trucks, skid-steer loaders

- Stay aware of the activities around you, particularly the swing radius of cranes.
- Do not walk under or through areas where cranes and other heavy equipment are being used to lift objects.
- Do not walk behind equipment, operators may not see you.
- Do not climb onto or ride loads being lifted or moved.

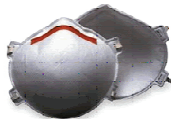




Hazard: Mold

After hurricanes and floods, the water creates the perfect environment for mold to grow in homes and other buildings. Exposure to mold can cause wheezing and severe nasal, eye and skin irritation.

- Avoid breathing dust (fungal spores) generated by wet building materials.
- Use an N-95 NIOSH-approved disposable respirator as a minimum when working with small areas of moldy or damp materials. More protection may be needed for extended work.
- Wear long gloves that reach the middle of your forearm. If you are using a disinfectant, a biocide such as chlorine bleach, or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane, or PVC. Avoid touching mold or moldy items with your bare hands.
- Wear goggles that do not have ventilation holes.
- Consider discarding all water-damaged materials. Articles that have visible mold should be thrown away. **When in doubt, throw it out.**
- After working with mold-contaminated materials, wash thoroughly, including your hair, scalp, and nails.



N-95 Respirator



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Hazard: Trench foot (immersion foot)

- Trench foot, also known as immersion foot, occurs when the feet are wet for long periods of time. It can be quite painful.
- Symptoms include a tingling and/or itching sensation, pain, swelling, cold and blotchy skin, numbness, and a prickly or heavy feeling in the foot. The foot may be red, dry, and painful after it becomes warm. Blisters may form, followed by skin and tissue dying and falling off.
- To prevent trench foot, when possible, air-dry and elevate your feet, and exchange wet shoes and socks for dry ones. To treat trench foot:
 - Thoroughly clean and dry your feet.
 - Put on clean, dry socks daily.
 - Treat the affected part by applying warm packs or soaking in warm water (102° to 110° F) for approximately 5 minutes.
 - When sleeping or resting, do not wear socks.
 - Obtain medical assistance as soon as possible.



Hazard: Blood-borne disease

- Use impervious gloves when handling human remains.
- Replace gloves if punctured or torn.
- Do not handle human remains if you have skin cuts or punctures.
- Use goggles or face shield and mask for handling human remains, recovering deceased. Make sure to cover your nose and mouth.
- Transport human remains in closed, leak-proof, labeled containers.

Hazard: Handling Bodies of Victims

- There is no direct risk of infectious disease from being near human remains for people who are not directly handling dead bodies.
- Human remains may contain blood-borne viruses such as hepatitis viruses and HIV, and bacteria that cause diarrheal diseases, such as shigella and salmonella.
- For personnel exposed to blood and body fluids:
 - Use gloves when handling bodies or body fluids.
 - Use eye protection, gowns, and masks when large quantities or splashes of blood are anticipated.
 - Wash hands frequently.
 - Use body bags to reduce the risk of contamination.



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Hazard: Food-borne disease

Identify and throw away food that may not be safe to eat.

- Throw away food that may have come in contact with flood or storm water.
- Throw away food that has an unusual odor, color, or texture.
- Throw away perishable foods (including meat, poultry, fish, eggs, dairy and leftovers) that have been above 40° F for 2 hours or more.
- Discard food containers with screw-caps, snap-lids, crimped caps (soda pop bottles), twist caps, flip tops, snap-open, and home canned foods if they have come into contact with floodwater because they cannot be disinfected.

Store food safely.

- While the power is out, keep the refrigerator and freezer doors closed as much as possible.
- Add block ice or dry ice to your refrigerator if the electricity is expected to be off longer than 4 hours. Wear heavy gloves when handling ice.



Hazard: Water-borne disease

Communicable disease outbreaks of diarrhea and respiratory illness can occur when water and sewage systems are not working and personal hygiene is hard to maintain as a result of a disaster.

- Local authorities will tell you if tap water is safe to drink or to use for cooking or bathing.
- If the water is not safe to use, follow local instructions to use bottled water or to boil or disinfect water for cooking, cleaning, or bathing.
- **Wash your hands often.**
- Because some water-borne diseases can be contracted through contact with contaminated standing water, it is important to follow the guidelines outlined in the Standing Water Hazard slide.
- **Seek medical attention immediately** if you develop **ANY** of the following symptoms:
 - high fever
 - vomiting
 - jaundice
 - nausea
 - diarrhea
 - flu-like symptoms



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Hazard: Insect-borne diseases

- **Mosquitoes** – Mosquitoes can carry diseases such as West Nile virus or dengue fever. Use screens on dwellings, and wear long pants, socks, and long-sleeved shirts. Use insect repellents that contain DEET or Picaridin (make sure you follow the directions written on the label).
- **Fire Ants** – Flood water will often destroy fire ant mounds and the fire ants will look for a new place to live (this can be indoors or outdoors). When fire ants are disturbed, they become very aggressive and bite. Fire-ant bites are painful and cause blisters. They can cause severe allergic reactions in sensitive people. To avoid being bitten, stay alert for fire ants and stay away from them if you see them. Wear long pants, socks, and long-sleeved shirts to protect your skin. If you are bitten, stings can be treated with over-the-counter products that relieve pain and prevent infection. **If a sting causes severe chest pain, nausea, severe sweating, loss of breath, serious swelling or slurred speech, the person should be taken to an emergency medical facility immediately.**



Hazard: Animal-borne diseases

Flood waters have displaced wild and domestic animals. It will not be uncommon to come into contact with animals you wouldn't under normal circumstances. Dead and live animals can spread diseases such as Rat-Bite Fever and Rabies.

- **Beware of wild or stray animals.** Avoid wild or stray animals. Call local authorities to handle animals. Get rid of dead animals according to local guidelines. Wear and clean proper protective clothing when handling carcasses.
- **Avoid contact with rats or rat-contaminated dwellings.** In addition to Rat-bite fever, contact with rodents, rodent droppings, and dead rodents may result in other infectious diseases. If you cannot avoid contact with rats, wear protective gloves, practice regular hand washing.
- **If you do get bitten or scratched by an animal, seek medical attention immediately, even if it is a domestic animal.**



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Hazard: Snakes

- **Be on the alert for snakes** swimming in the water to get to higher ground and hiding under debris or other objects. If you see a snake, back away from it slowly and do not touch it.
- **If you or someone else is bitten by a snake:**
 - Remember the color and shape of the snake, which can help with treatment of the snake bite.
 - Keep the bitten person still and calm. This can slow down the spread of venom if the snake is poisonous.
 - Seek medical attention as soon as possible. Dial 911 or call local Emergency Medical Services (EMS).
 - Apply first aid if you can not get the person to the hospital right away.
 - » Lay or sit the person down with the bite below the level of the heart. Tell him/her to stay calm and still.
 - » Cover the bite with a clean, dry dressing.



Poisonous Water Moccasin



Hazard: Traumatic Stress

- Pace yourself and take frequent rest breaks.
- Watch out for each other. Co-workers may not notice a hazard nearby or behind.
- Be conscious of those around you. Responders who are exhausted, feeling stressed, or even temporarily distracted may place themselves and others at risk.
- Maintain as normal a schedule as possible: ***regular eating and sleeping are crucial.***
- Make sure that you drink plenty of fluids such as water and juices.
- Try to eat a variety of foods and increase your intake of complex carbohydrates (for example, breads and muffins made with whole grains, granola bars).
- Whenever possible, take breaks away from the work area. Eat and drink in the cleanest area available.





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Hazard: Traumatic Stress (*continued*)

- Recognize and accept what you cannot change—the chain of command, organizational structure, waiting, equipment failures, etc.
- Talk to people when YOU feel like it. You decide when you want to discuss your experience. Talking about an event may be reliving it. Choose your own comfort level.
- If your employer provides you with formal mental health support, use it!
- Give yourself permission to feel rotten: You are in a difficult situation.
- Recurring thoughts, dreams, or flashbacks are normal—do not try to fight them. They will decrease over time.
- Communicate with your loved ones at home as frequently as possible.



Hazard: Traumatic Stress (*continued*)

What you can do at home:

- Reach out—people really do care.
- Reconnect with family, spiritual, and community supports.
- Consider keeping a journal.
- Do not make any big life decisions.
- Make as many daily decisions as possible to give yourself a feeling of control over your life.
- Spend time with others or alone doing the things you enjoy to refresh and recharge yourself.
- Be aware that you may feel particularly fearful for your family. This is normal and will pass in time.
- Remember that “getting back to normal” takes time. Gradually work back into your routine. Let others carry more weight for a while at home and at work.



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Hazard: Traumatic Stress (*continued*)

What you can do at home:

- Be aware that recovery is not a straight path but a matter of two steps forward and one back. You will make progress.
- Appreciate a sense of humor in yourself and others. It is OK to laugh again.
- Your family will experience the disaster along with you. You need to support each other. This is a time for patience, understanding, and communication.
- Avoid overuse of drugs or alcohol. You do not need to complicate your situation with a substance abuse problem.
- Get plenty of rest and normal exercise. Eat well balanced, regular meals.



Other Protective Measures

Key items to have:

- Insect repellent with Deet or Picaridin
- PPE – For information on what equipment you need for protection, contact your local OSHA office or NIOSH
- Personal flotation device
- Earplugs
- Bottled water
- Sun screen
- Rain Gear
- Pocket Knife (put in your checked luggage)

For more information, call 1-800-321-OSHA or log onto www.osha.gov.



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Workers' Rights

What are employers' responsibilities?

- The Occupational Safety and Health Act requires employers to provide a safe and healthful workplace free of recognized hazards and to follow OSHA standards. Employers' responsibilities also include providing training, medical examinations and recordkeeping.

For more information about OSHA, go to www.osha.gov.
or call **1-800-321-OSHA (6742)**

- Follow the employer's safety and health rules and wear or use all required gear and equipment.
- Follow safe work practices for your job, as directed by your employer.
- Report hazardous conditions to a supervisor.
- Report hazardous conditions to OSHA, if employers do not fix them.



Credits

This presentation was adapted from:

- a NIOSH Guide called “Suggested Guidance for Supervisors at Disaster Rescue Sites.” More information is available at their site:
www.cdc.gov/niosh/emhaz2.html
- CDC web site entitled “Hurricanes, what you should know”
www.bt.cdc.gov/disasters/hurricanes/index.asp
- U.S. Army Center for Health Promotion and Preventive Medicine PowerPoint:
<http://chppm-www.apgea.army.mil/news/PMMforKatrina.ppt>

Spanish translation was provided by the Center to Protect Workers’ Rights



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Why this book was created

This booklet was created by the National Clearinghouse for Worker Safety and Health Training under a contract with the NIEHS Worker Education and Training Program (WETP) and printed by the Operating Engineers National Hazmat Program under a WETP grant. WETP has trained over a million emergency responders and hazardous waste workers since 1987 to do their jobs safely. WETP is a part of the Department of Health and Human Services, which is a cooperating agency under the Worker Safety and Health Support Annex of the National Response Plan. The Annex was activated on September 11, 2005. As part of the coordinated federal effort, WETP created this booklet and a companion orientation briefing for responders. Both are available at: www.wetp.org.



Notes



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