

**NIEHS – OSHA Katrina Response Initiative**

## Safety awareness for responders to Hurricane Katrina: protecting yourself while helping others



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## Objectives of this training - At the end of this short session, you should be able to:

- Describe some of the hazards that you may face
- Explain how to protect yourself from these hazards
- List the symptoms that indicate you may be suffering psychological stress from your work
- Explain how to get medical or psychological help, if you need it
- Find other sources of information on health and safety

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## Additional information

- This training program is based on recommendations from NIOSH, OSHA, CDC and the U.S. Army
- You can find a link to their fact sheets and other important information at the National Clearinghouse for Worker Safety and Health Training, [www.wetp.org](http://www.wetp.org)

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## Background

- State and federal agencies are deploying in support of hurricane relief efforts
- Environmental and occupational health hazards are a potential threat to deployed personnel




**Hurricane Katrina left the Louisiana and Mississippi coastlines in ruin. Up to 1 million people are without power, safe food, and safe water.**

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## Physical Environment

- The Land
  - Mostly flat, coastal, some areas below sea level
- The Climate (September)
  - High Humidity
  - 90+ ° F day
  - 70 ° F night
  - Potential for additional storms



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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 tetanus vaccination – revaccinate for a dirty wound if current vaccination is over 5 years old
- 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

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**Hazard: Heat stress**  
**Heat stroke is a killer**

- 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
- Drink lots of water, about 1 cup every 15 minutes
- 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 firemen, 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.

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**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




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**Hazard: Too much noise**

- Use hearing protection whenever noisy equipment is used
- Examples: saws, earth-moving equipment, Hurst tools
- This 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, it can contain toxic material
- **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 OV/AG combination cartridges should be used
- Make sure you are fit-tested for a respirator, it must fit properly to protect you
- Surgical masks should **not** be used because they do not provide adequate protection

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**Hazard: Confined Spaces**

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

- 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 nearby



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**Hazard: Potential chemical exposures**

*Symptoms:* Eye, nose, throat, upper respiratory tract, and skin irritation; flu like symptoms; central nervous system depression, 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.
- **Dusty environments:** Use combination HEPA/Organic Vapor Cartridge.

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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



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

- Use appropriately grounded low-voltage equipment.
- Stay clear of downed electrical lines

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**Hazard: Carbon monoxide from gasoline- or propane-powered generators or heavy machinery**

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

**General Recommendations:**

- Use CO warning sensors when using or working around combustion sources.
- Shut off engine immediately if symptoms of exposure appear.

**Warning!** Do not use gasoline generators or portable fuel driven tools in confined spaces or poorly ventilated areas.

**Warning!** Do not work in areas near exhaust (CO poisoning occurs even outdoors if engines generate high concentrations of CO and worker is in the area of the exhaust gases). With symptoms of exposure, shut off the engine.

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**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 from dust and flying debris**


- 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
- Any worker using a welding torch for cutting needs special eye wear for protection from welding light, which can cause severe burns to the eyes and surrounding tissue
- Only use protective eyewear that has an ANSI Z87 mark on the lenses or frames

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**Hazard: Flying debris, particles, handling a variety of sharp, jagged materials**

- 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 eyeglasses.
- When welding, use special eye protection
- Only use protective eyewear that has an ANSI Z87 mark on the lenses or frames.
- Wear personal protective equipment, including hard hats, safety shoes, eye glasses, and work gloves.
- Do not walk under or through areas where cranes and other heavy equipment are being used to lift objects.
- Make sure that you have an up-to-date tetanus immunization (within the past 10 years)




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

- Operate equipment correctly and safely.
- Stay aware of the activities around you
- Do not exceed the load capacity of cranes and other lifting equipment.
- Do not walk under or through areas where cranes and other heavy equipment are being used to lift objects.
- Do not climb onto or ride loads being lifted or moved.



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**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 moldy or damp materials.
- 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.

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**Hazard: Mold (continued)**

- Wear goggles that do not have ventilation holes. Avoid getting mold or mold spores in your eyes.
- 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 the hair, scalp, and nails.
- If the safety of food or beverage is questionable, throw it out. Only drink safe drinking water that has been bottled, boiled, or treated until there is confirmation that the community water supply is safe for consumption.

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**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 the nose and mouth to protect the skin of the face and the mucous membranes
- Transport human remains in closed, leak-proof, labeled containers

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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 and leftovers) that have been above 40 degrees Fahrenheit (F) for 2 hours or more.
  - Food containers with screw-caps, snap-lids, crimped caps (soda pop bottles), twist caps, flip tops, snap-open, and home canned foods should be discarded 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.

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## Hazard: Water-borne disease

- Listen to and follow public announcements
- 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



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## Hazard: Handling Bodies of Victims

- Unburied human remains not a disease threat
- Cadavers in the water supply rarely transmit diseases.
- Increased number of filth flies can increase shigellosis.
- Mortuary staff, and body retrieval teams risk exposure to hepatitis B virus (HBV) and HIV
- 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: Animals and insects

- To protect yourself from mosquitoes, use screens on dwellings, and wear long pants, socks, and long-sleeved shirts and using insect repellents that contain DEET or Picaridin.
- To control mosquito populations, drain all standing water left in open containers, such as flower pots, tires, pet dishes, or buckets, outside your home.
- 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.
- Be on the alert for snakes that may be hiding in unusual places after flooding. If you are bitten, try to identify the snake so that if it is poisonous, you can be given the correct antivenin. Do not cut the wound or attempt to suck the venom out. Contact your local emergency department for further care

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## 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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## 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 relieving 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

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## 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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## 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.

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## Other Protective Measures

- Follow the Incident Command System

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## 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
- Water life vest
- Earplugs
- Bottled water
- Sun screen
- Rain Gear
- Pocket Knife (not in checked luggage)

**For more information, call 1-800-321-OSHA or log onto [www.osha.gov](http://www.osha.gov)**

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## 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: <http://www.cdc.gov/niosh/emhaz2.html>
- CDC web site entitled "Hurricanes, what you should know" <http://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>

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