



National Institute of Environmental Health Sciences Hurricane Response Initiative

Safety Awareness for Responders to Hurricanes: Protecting Yourself While Helping Others



Developed by HMTRI through cooperative agreement
2U45 ES006177-14 with NIEHS

WORKER EDUCATION & TRAINING PROGRAM



Overview

- Introduction
- Physical hazards
- Health hazards
 - Animal, snake and insect bites and poisonous plants
- Summary





Training Objectives

- Identify the hazards in the field
- Explain how to protect yourself from these hazards
- Increase safety and health awareness





Introduction



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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)



Workers' Rights (continued)

What are workers' responsibilities?

- 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



Injuries May Result From

- Vehicle accidents
- Struck by
- Falls
- Contusions
- Lacerations





Emergency in the Field

- For minor injuries or concerns go to:
 - Local hospitals or clinics
 - First Aid or nurse station
- In serious emergency call 911
 - Know your exact location
- Notify your supervisor or safety officer



Protect Yourself

- Walking over and handling debris that is unstable 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
 - If you will be performing direct patient care or otherwise expected to have contact with bodily fluids, get the Hepatitis B vaccine series
- Avoid contact with stagnant water
 - Wash and sanitize immediately if exposed
- Consider steel toe/shank non-slip footwear if available
- Use durable gloves when handling debris
- Use hearing protection for noisy environments



Hazard: Falls



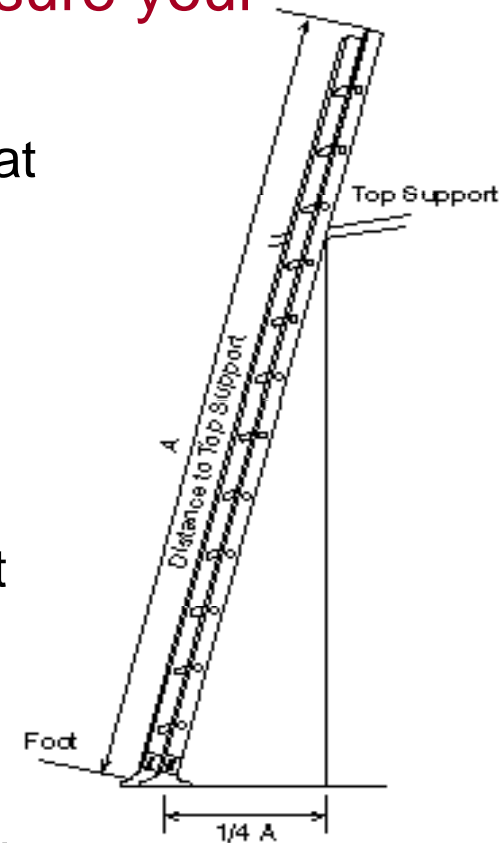
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Hazard: Ladders

Ladders can create a falling hazard. Make sure your ladder is secure:

- Position portable ladders so the side rails extend at least 3 feet above the landing.
- Secure side rails at the top to a rigid support and use a grab device when 3 foot extension is not possible.
- Do not apply more weight on the ladder than it is designed to support and make sure that the weight on the ladder will not cause it to slip off its support.
- Before each use, inspect ladders for cracked, broken, or defective parts.
- Use only ladders that comply with OSHA standards.





The Blue Tarps



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Aerial Lifts



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QA Towers



No Cone or Barrier between traffic and QA Tower



A proper zone buffer between traffic and QA Tower



Hazard: Driving





Traffic Issues



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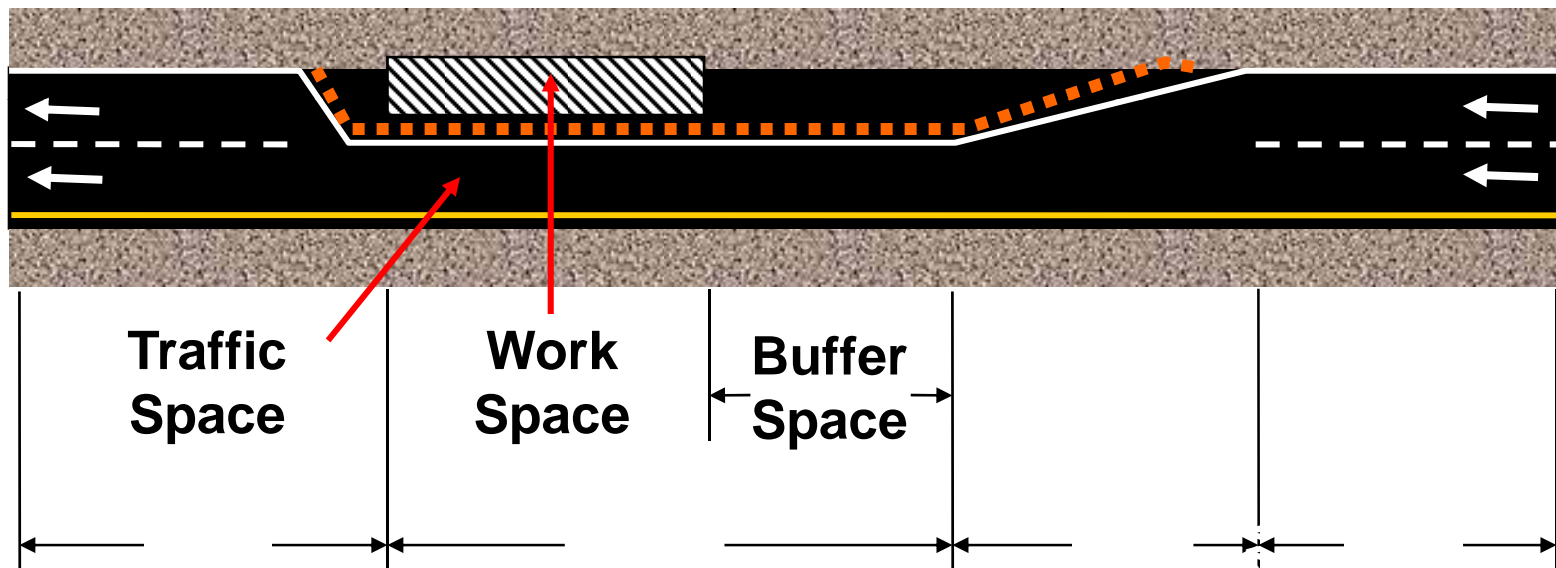
Work Zone Safety



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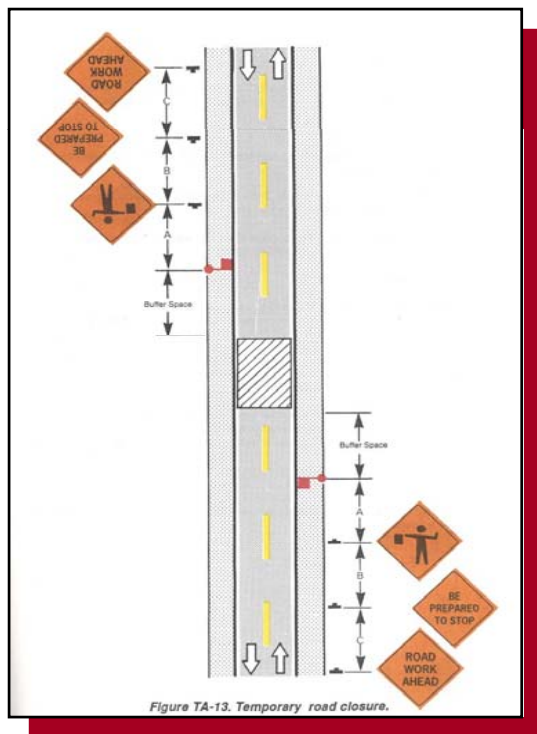


Component Parts of a Temporary Traffic Control Zone





Minimum Signs Recommended in the Manual on Uniform Traffic Control Devices (MUTCD)





Debris Truck Hazards



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Hazard: Electrical, Overhead Power Lines, Downed Electrical Wires, Cables

Jobs Affected

- Debris removal
- Tree pruning

Hazard Control

- Use appropriately grounded low-voltage equipment
- Stay clear of downed electrical lines
- Do not work within 10 feet of energized power lines if you are not a qualified worker
- Only qualified employees may guard or insulate the lines





Exposed Underground Power Lines



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Hazard: Operating a Chain Saw



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Operating a Chain Saw

- Wear the appropriate protective equipment
- Always cut at waist level or below
- Avoid contact with power lines
- Bystanders or coworkers should remain at least:
 - 2 tree lengths (at least 150 feet) away from anyone felling a tree.
 - 30 feet from anyone operating a chain saw to remove limbs or cut a fallen tree.





Hazard: Eye Injuries



- 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 must have special eye wear to protect against welding flash
 - Welding flash causes severe burns to the eyes and surrounding tissue
- Use only protective eyewear that has an ANSI Z87 mark on the lenses or frames



Hazard: Flying Debris/ Material Handling

- 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





Hazard: Debris Piles/ 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: Confined Space

What is a Confined Space?

- Limited access
- Not designed for normal occupancy
- Large enough for bodily entry
- Example: sewers/storm drains

Your Safety Officer Must Approve Confined Space Entry!!!!



HAZARDS

- Oxygen deficiency
- Entrapment
- Engulfment
- Hazardous atmosphere



Structural Integrity



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Hazard: Heavy Equipment

- Be alert to 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 lifting objects
- Do not climb onto or ride loads being lifted or moved
- Use outriggers when operating equipment on unstable ground
- Do not ride in or on buckets, forks or blades of heavy equipment





Heavy Equipment

- Forklifts
- Bobcats
- Loaders
- Backhoes
- ATVs





Chippers-Grinders

- Loud noise
 - Use hearing protection
- Flying debris
 - Stay back 300 feet
- Moving parts
 - Do not reach into a machine
 - Do not use machine unless trained and authorized





Health Hazards



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Hazard: Heat Related Illness

<u>Heat Stress</u>	<u>Heat Exhaustion</u>	<u>Heat Stroke</u>
Headache	Headache	Headache
Thirst	Dizziness	Dizziness
Profuse sweating	Confusion	Restlessness
Muscle aches	Nausea	Confusion
	Sweating-pale, clammy skin	Hot, flushed dry skin
	Cramps, legs & abdomen	Body temp above 104°F
	Rapid, weakening pulse & breathing	Unresponsive/disoriented



Hydration is Critical!!

- Drink plenty of fluids
- Drink when you're thirsty. Drink sports drinks, instead of water, if possible.





Hazard: Sunburn

- Prevent overexposing skin
- Sunglasses, if used, must be ANSI approved for use as safety glasses
- Use sunscreen and lip balm
- Use protective eyewear
- Limit exposure





Hazard: Noise

- Wear appropriate hearing protection in noisy work environments
 - Examples: saws, earth-moving equipment, pneumatic tools





Hazard: Inhalation of Dust Containing Asbestos, Silica and Other Toxins

- **Jobs affected**
 - Debris removal & dumping
 - Loading trucks
 - Demolition
- **Protection**
 - Appropriate respiratory protection



Hazard: Carbon Monoxide Inhalation

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

Areas affected from gasoline- or propane-powered generators or heavy machinery:

- Near operating equipment
- Near generators
- Fire pits
- Debris reduction sites
- Burning and compacting



Hazard: Chemicals

- 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 tank
- Industrial/commercial chemicals
- Household chemicals





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.

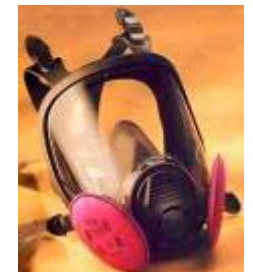
Jobs affected

- Debris removal
- Site clean-up



Protection

Hazard specific as identified by supervisor or safety officer





Hazard Communication



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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.





Hazard: Blood-borne Disease

- Use latex or similar gloves when handling human remains
- Replace gloves if punctured or torn
- Protect yourself from injured persons' blood and bodily fluids
- Do not handle human remains if you have skin cuts or punctures





Hazard: Food-borne Disease

- **Identify and throw away food that may not be safe to eat:**
 - Food that may have come in contact with flood or storm water
 - Food that has an unusual odor, color, or texture
 - 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 items
 - These cannot be disinfected if they have been in contact with floodwater
- **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

Raw sewage bubbles up from a man-hole cover along U.S. Highway 90 in Gulfport. Cities along the Mississippi Gulf Coast are slowly trying to get electricity to sewage treatment plants and lift stations in the wake of Hurricane Katrina.



**Wash Your Hands Often With Soap!!
and Use Water-Free Sanitizers**



Hazard: Animals and Insects

- **Protect yourself from mosquitoes:**
 - Use screens on dwellings
 - Wear long pants, socks, and long-sleeved shirts
 - Use insect repellents that contain DEET or Picaridin
- **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
- **Fire ants**





Hazard: Snakes

- Be on the alert for snakes that may be hiding in unusual places after flooding
 - Wear snake chaps
 - If you are bitten, seek immediate medical attention





Hazard: Poisonous Plants

Poison Ivy

- Train workers on hazardous plant recognition
- Use gloves and wear long pants and long-sleeved shirts when possibility of contacting poisonous plants



at the beach



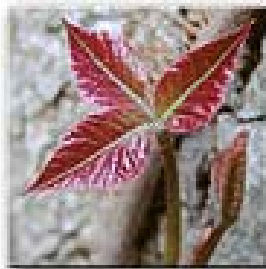
it climbs



it creeps



summer



spring



fall



it's a bush



where it grows



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.



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.



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.



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

- **Sanitation and personal hygiene**
 - Always wash your hands with soap
 - Use hand sanitizers frequently
 - Exercise good housekeeping
 - Only drink from proven potable water sources



Additional Information

- This training program is based on recommendations from FEMA, NIEHS, NIOSH, OSHA, CDC and the USACE
 - You can find a link to their fact sheets and other important information at the National Clearinghouse for Worker Safety and Health Training website, www.wetp.org.



Summary

- The hazards and issues are dynamic and require vigilance and flexibility
- The key to a safe response is attention to the safety issues of your work environment
 - The physical hazards are similar to any construction or demolition site
 - The health hazards include the hazards associated with the environment