General Recommendations for Working in All Impacted Areas

Introduction
Response and recovery work in hurricane-impacted areas presents safety and health hazards that should be properly identified, evaluated, and controlled in a systematic manner to reduce or eliminate occupational safety and health risks to response and recovery workers. This Matrix provides information on assessing and controlling the hazards common to most response and recovery work in hurricane-impacted areas. Although this document was developed from data and experiences arising out of response and recovery work following Hurricanes Katrina and Rita, this document may also be applied to response and recovery work following future hurricanes, floods, and other natural disasters.

Response and recovery workers in hurricane-impacted areas encounter hazards ranging from contact with live electrical equipment to animal bites. This Matrix outlines hazard-specific considerations for monitoring exposures, implementing engineering controls, establishing work practices, requiring the use of PPE, and providing necessary training. Employers can use the general recommendations outlined below and the task- and operation-specific activity sheets to evaluate the work their employees will do and to eliminate or control the hazards to which they may be exposed. This section concludes with a list of online resources that address health and safety concerns in a hurricane response zone.

Best Practices for Hurricane Response and Recovery Operations

Worksite Evaluation
Evaluate the work site to identify if safety or health hazards such as the following are present: fall, electrocution, noise, cut/laceration hazards; high ambient temperatures; hazardous substances; or infectious materials.

Work Practices
The following work practices provide for basic safety, sanitation, and good housekeeping. These practices minimize exposure to health hazards and contaminants during most activities.

- Establish and maintain evacuation routes and an alerting system to notify individuals in case an evacuation becomes necessary.
- Provide, maintain and inspect fire protection and suppression equipment for the fire hazards in the work area.
- Ensure that first aid supplies and services, and medical care are readily available.
- Drink water from sources proven to be safe for drinking.
- Do not consume food or beverages that were exposed to floodwaters or perishables that may have spoiled. Additionally, do not eat, drink, or smoke in areas containing debris, floodwaters, or sludge.
• Wash hands before eating, drinking, smoking, or using the restroom. If potable water is not available, use hand sanitizer or commercial sanitizing wipes.
• Minimize accumulation of trash and keep garbage in closed containers.
• Use insect repellent containing DEET or Picaridin to prevent insect bites.
• Minimize the creation or disturbance of dust and work upwind of dusty activities when possible.
• Provide prompt first aid for cuts and scrapes. Antibiotic resistant bacteria can result in severe injury and illness. Wash and sanitize cuts and scrapes without delay and report the injury to your supervisor. Bandage/cover cuts and scrapes and keep them from coming in contact with polluted or contaminated floodwater. Seek medical help at the first sign of infection.

Recommended Personal Gear

• Ensure you have personal information such as immunization record and blood type.
• Consider bringing the following gear:
  ▪ Rain gear,
  ▪ Changes of clothing appropriate for the location, weather, and assignment,
  ▪ Toiletries (in plastic rather than glass bottles),
  ▪ Alcohol-based hand sanitizer,
  ▪ Flashlight with spare batteries,
  ▪ Prescription medicine for expected length of stay (with considerable safety margin),
  ▪ Over-the-counter medications for minor illnesses (e.g., pain reliever, allergy medication, hydrocortisone cream; antibiotic cream; bandages),
  ▪ Sunscreen (SPF-15 or higher),
  ▪ Lip salve,
  ▪ Insect repellent,
  ▪ Cap or hat for sun and rain,
  ▪ Extra pair of glasses or contacts (If you wear contacts, anticipate dusty conditions at disaster sites), and
  ▪ Sun glasses.

Personal Protective Equipment

Assess the workplace hazards, select PPE that will protect employees from these hazards, and ensure that employees use the PPE selected. Equipment must be properly fitted to the employee. Train employees in the use, operation, and limitations of equipment, as well as how to put on and remove the equipment properly (i.e., donning and doffing techniques). Inspect equipment before each use and repair or replace as needed (e.g., when ripped, torn). Maintained and store PPE in a clean and sanitary manner. Maintain adequate supplies for timely replacement of lost, worn, or broken PPE. (Additional OSHA guidance on selecting and using PPE available on OSHA's PPE Safety and Health Topics webpage.

General PPE recommended for all response/recovery tasks:

• **Foot protection:** ANSI-approved protective footwear for the activity being performed. Give special consideration to water protection in wet or flooded areas.
• **Eye protection:** Safety glasses with side shields. (OSHA has published additional guidance on the selection and use of face and eye protection; this is available on OSHA's Eye and Face Protection Safety and Health Topics webpage.
• **Head protection:** Hard hats or helmets in areas where overhead or electrical hazards exist.
• **Appropriate work clothing:** Clothing appropriate for protecting individuals from hazards in the general work environment that may cause cuts, abrasions, irritation, or overexposure to sunlight. Consideration should be given to heat and cold stress issues.

• **Hand protection:** Gloves specific to job hazards (e.g., heavy-duty leather work gloves for handling debris with sharp edges and/or chemical protective gloves appropriate for chemicals potentially contacted). See the OSHA fact sheet [23 KB PDF 2 pages] on the this topic for additional OSHA-published guidance on hand hygiene and glove use in hurricane-affected areas.

Provide the following additional PPE, as required:

• **Eye and face protection (specialty):** Goggles, full-face shields, or other suitable protection as needed to protect against flying objects and liquid splash hazards.

• **High-visibility apparel:** High-visibility safety apparel and headwear compliant with ANSI/ISEA 107-2004, along with other traffic safety measures, in areas where vehicles or heavy equipment are used. This is especially important when working in temporary roadway work zones. (See the OSHA fact sheet [21 KB PDF 2 pages] on this topic for additional OSHA-published materials on work zone traffic safety.)

• **Hand protection (specialty):** Appropriate gloves suitable for the tasks being performed (balancing dexterity with protection). Considerations include biological hazards (bloodborne pathogens), chemical hazards, and physical hazards (abrasions, cuts, punctures, and heat). Vibration-dampening gloves should be used when vibration hazards exist (e.g., during jackhammer use)

• **Work clothing and gear (specialty):** Lanyards, harnesses, and supports for fall protection, and chemical protective clothing where contact with chemicals may occur.

• **Leg protection:** Snake boots or snake gaiters to protect against snakebites in areas where snakes are indigenous. Chaps when using chain saws.

• **Respiratory protection:** The mandatory use of respirators requires compliance with the OSHA respiratory protection standard (29 CFR 1910.134), including the development of a written respiratory protection program that describes how respirators will be cleaned, maintained, and stored; a filter or cartridge change out schedule based on the work expected; and how employees will receive medical evaluations, training, and fit testing. Voluntary use of respirators must conform to Appendix D of 29 CFR 1910.134.

While it is the employer's responsibility to determine the appropriate respiratory protection for a given situation, the following general guidance can be used in making risk assessment decisions for hurricane response activities. When airborne contaminants exceed, or may reasonably be expected to exceed, allowable exposure limits, evaluate the hazard to determine exposure, and provide appropriate respiratory protection.

- Where nuisance levels (exposures below the PEL) of dust or mold are present, use of a NIOSH-approved N, R, or P95 filtering facepiece is recommended. Those with a layer of activated carbon provide an additional level of comfort for employees by controlling nuisance odors.
Where contaminants such as lead, asbestos, or silica are present, respirators appropriate for the anticipated level of exposure are required. These could include, at a minimum:

- N, R, or P100 air-purifying respirators for lead and asbestos, and N, R, or P95 air-purifying respirators for crystalline silica; N, R, or P100 will provide additional protection for documented over exposures.

- Where other contaminants exist, specific filters or cartridges appropriate to the contaminant must be used; combination cartridges and filters must be used, as necessary.

In all cases, surgical masks and dust masks that are not NIOSH-approved are not considered suitable respiratory protective devices.

Protection from drowning: Employees working on, over, or near water that presents a drowning hazard (e.g., because of the flow rate, the depth, or the presence of rocks) must wear appropriate personal floatation devices (PFDs), approved by the US Coast Guard. Additional devices—such as a lifesaving skiff and a ring buoy—must be provided in accordance with 29 CFR 1926.106.

- Hearing protection: Employees should wear earmuffs and/or earplugs when working around potential noise sources. Hearing protection must be worn when noise levels exceed 90 dBA.

When hurricane recovery tasks or operations are covered by OSHA's General Industry Standards, OSHA requires that individuals who have standard threshold shifts use hearing protection when noise levels exceed 85 dBA. A useful "rule of thumb:" if you cannot hold a conversation in a normal speaking voice with a person who is standing at arms length (approximately 3 feet), the noise level may exceed 90 dBA. (See OSHA's Noise and Hearing Conservation Safety and Health Topics webpage for additional OSHA-published information on noise and hearing conservation programs.)

Specialized PPE ensembles and procedures are required for protecting employees involved in activities that expose them to other hazards for which additional protection and procedures are needed (e.g., structural firefighting, confined-space entry, response to hazardous materials releases, asbestos abatement, lead abatement, welding, cutting, and burning). Evaluate working conditions, provide any additional training to address the hazard, and assign appropriate PPE in accordance with applicable standards (e.g., OSHA, NFPA).

Recommendations for General Hazards Commonly Encountered during Hurricane Response and Recovery Operations

Certain hazards are commonly encountered in most hurricane response and recovery activities and require protective measures to control or mitigate their effects. In this section, engineering controls, work practices, and appropriate PPE are described for these common hazards. Hazards that are unique to specific hurricane response and recovery activities and their associated protective measures are separately addressed in the individual activity sheets.
Structural Instability

- Limit access/set up controlled access zones until the structure's stability and structural integrity are known.
- Conduct all necessary activities from outside damaged structures to the extent feasible.
- Ensure that a competent person evaluates the structure's stability when access is necessary. A competent person is able to recognize existing and predictable hazardous conditions and has the authority to take prompt corrective measures to eliminate the hazardous conditions.
- Install temporary structural support (shoring, bracing) adequate to protect response and recovery workers.

Contact with Downed Lines, Live Electrical Equipment, and Other Utilities (e.g., gas, water)

- Identify the location of any energized electrical power circuit that employees (or their tools and equipment) could contact; post signs and advise individuals of the location, hazards, and protective work practices.
- Assume that electrical lines are energized until proven otherwise. Lines and other conductors may become reenergized without warning as utilities are evaluated and restored after a disaster. Ensure that employees are protected from electric shock by deenergizing and grounding circuits they might contact.
- Inspect the work area for downed conductors and do not go near, drive over, or otherwise come in contact with them.
- Downed electrical conductors can energize other objects, including fences, water pipes, bushes, trees, and telephone/CATV/fiber optic cables.
- Unless they are deenergized and visibly grounded, maintain proper distance from overhead electrical power lines (at least 10 feet) and/or provide insulating barriers.
- Deenergize circuits and use locks and/or tags to prevent circuits from becoming reenergized accidentally.
- Use ground-fault circuit interrupters on all outlets that are not part of permanent wiring.
- Guard live parts against accidental contact using approved cabinets or other approved enclosures.
- Inspect electrical cords or cables for external defects (such as loose parts, deformed or missing pins, or damage to outer jacket or insulation) and for evidence of possible internal damage (such as pinched or crushed outer jackets). Do not use damaged cords and cables.
- Use extension cords approved for the intended use (e.g., use heavy duty extension cords on work sites).
- Do not approach any gas leaks; if a gas leak is detected, secure spark-producing devices (e.g., engines, tools, electronic, and communications equipment) and evacuate the area until the leak is secured.
- Contact utility company to assist in locating, marking, and shutting off/purging utility lines that may pose a hazard or may be impacted; ensure that lines have been purged as needed before beginning work.
OSHA and NIOSH maintain Web pages that address electrical hazards. These pages include:

- OSHA Fact Sheet—Working Safely Around Downed Electrical Wires [21 KB PDF 2 pages]
- NIOSH How to Protect Yourself and Others from Electrical Hazards Following a Natural Disaster.

**Noise**

- Place generators, compressors, and other noisy equipment at a distance or behind a barrier.
- Move noisy operations to isolated areas or away from other tasks or operations.
- Locate work areas such as observation towers, office trailers, and break areas away from noisy operations.
- Keep unnecessary response and recovery workers out of areas near noisy operations.
- Provide enclosed cabs on heavy equipment.
- Collect noise monitoring data to determine if employees are exposed to noise levels that exceed 90 dBA.
- Use hearing protection as required when working around potential noise sources such as heavy equipment, debris chippers, chainsaws, and jackhammers. Hearing protection must be worn when noise levels exceed 90 dBA. (When hurricane recovery tasks or operations are covered by OSHA’s General Industry Standards, OSHA requires that individuals who have standard threshold shifts use hearing protection when noise levels exceed 85 dBA.)
- A useful "rule of thumb:" if you cannot hold a conversation in a normal speaking voice with a person who is standing at arms length (approximately 3 feet), the noise level may exceed 90 dBA.
- Implement a hearing conservation program when noise levels exceed permissible levels in the workplace.

OSHA has a Noise webpage that provides employers and employees with additional information and useful online resources on noise and hearing conservation.

**Fall from Heights and Through Openings**

- Limit access/set up controlled access zones.
- Use fall protection systems: guardrails, safety nets, or fall arrest systems (as needed). A personal fall arrest system includes harnesses, lanyards, lifelines, connectors, anchorages, and anchor points.
- Cover or guard holes and openings as soon as they are created. Covers must support two times the weight (body, equipment, materials) that may be imposed. Permanently mark covers over holes “Danger – Opening.”

**Asbestos**

- Consider the potential for Asbestos Containing Materials (ACM). Structures built before 1980 are more likely to contain ACM.
- Other materials that may contain asbestos include: vinyl floor tile, home siding & shingles, transite (including cement piping), flame retardant materials (e.g., gloves, curtains) and roof flashing.
• If building is suspected or known to contain asbestos-containing thermal system insulation, ensure a qualified individual, such as a competent person, a person certified as an asbestos inspector by the State, or a safety and health professional, inspects the building and evaluates the condition of the material prior to any remediation or cleanup of ACM or PACM by other response and recovery workers.

**Impact Hazard to Eyes and Face from Flying Objects**

• Use safety glasses with side shields to protect eyes from flying fragments, objects, large chips, and particles.
• Wear safety goggles, which form a protective seal around the eye, to protect against flying fragments, objects, large chips and particles when these could get under or around safety glasses (e.g., wind gusts).
• Use face shields when impact from flying objects, such as glass chips, could damage skin (due to their size, shape, velocity). Face shields protect a larger area of the face, but do not protect eyes from strong impacts. If a face shield is selected, eye protection (e.g., safety glasses or goggles) must be worn under the face shield.
• All eye and face protection should meet ANSI Z87.1 performance requirements.
• OSHA has a webpage that provides information and online resources for selecting and using face and eye protection.

**Manual Handling of Materials/Weight**

• Use safe lifting practices; keep the weight as close to you as possible; and involve extra people or mechanical devices (e.g., dollies or hoists) as needed.
• Take frequent rest breaks when lifting heavy or water-laden objects.
• OSHA has a webpage that provides information and online resources on ergonomics and manual handling of materials and weights.

**Discovery of Unknown Chemicals**

• If hazardous chemical containers are found or leaking materials are detected, take self-protective measures (i.e., move to a safe distance upwind) and contact hazardous material response personnel (e.g., Environmental Protection Agency (EPA) or U.S. Coast Guard (USCG) personnel) for evaluation of the risk and removal before continuing work in the area.

**Cuts and Lacerations**

• Keep work areas and travel paths free of trip hazards when employee activities (or work areas) involve sharp items/debris.
• When cuts or lacerations occur, provide first aid and seek medical attention promptly if cut/laceration becomes infected.
• Use heavy-duty work gloves and sturdy clothing when shifting or moving materials.
• To prevent contact with contaminated water or blood/body fluids, cover cuts and lacerations with bandages and use fluid-proof gloves (e.g., latex, nitrile, rubber) and clothing to prevent penetration to the underlying skin. Cover fluid-proof gloves with heavy-duty work gloves if there is a potential for cuts and abrasions (e.g., moving debris).
• Report any exposure to blood or body fluids to your supervisor.

**Slips, Trips, and Falls on Working Surfaces**

• Establish travel paths or walkways through work areas. Keep them clear to minimize trip hazards. Remove dropped objects from pathways immediately.
• Ensure that additional equipment brought to the location does not create or pose additional slip, trip, and fall hazards.
• Keep electric cords and cables and pneumatic lines out of travel paths and walkways. If this is not feasible, protect the cord to avoid creating trip hazards and to prevent damage to the cords, cables, and lines.
• Establish barriers and/or mark areas around known hazards such as holes and overhead hazards.
• Take extra care when stepping onto unstable or uneven surfaces, and onto surfaces where the hazard cannot be seen (e.g., underwater surfaces).
• Clean up spilled material as soon as practical to avoid creating a slip hazard.
• Install steps and ramps and properly maintain them. Include slip-resistant treads and smooth handrails that will not cause punctures or lacerations.
• Provide sufficient lighting to safely illuminate work areas.
• OSHA has a Web page that provides information and online resources on walking and working surfaces.

**Personal Hygiene and General Decontamination**

**Hand Washing**

• Wash hands for at least 10 seconds with soap and water (if available). This includes all surfaces such as the wrists, palms, backs of hands, fingers, and fingernails.
• If soap and/or water are not available, use alcohol-based products made for washing hands, such as hand sanitizer or sanitizing wipes. Wash all hand surfaces by gently rubbing. Allow hands to air dry.
• Clean the dirt from under your fingernails.
• Rinse the soap from your hands.
• Dry your hands completely with a clean towel. If towels are not available let your hands air-dry. When drying your hands using a towel, pat your skin rather than rubbing it to avoid chapping and cracking.
• Discard any disposable towels in the trash.
• OSHA provides a Hand Hygiene and Protective Gloves in Hurricane-Affected Areas fact sheet [23 KB PDF 2 pages].

**Clothing, Tools, and Equipment Decontamination**

• Clean contaminated clothing, tools and equipment (that can be decontaminated using water) with soap and clean water (if available). If only contaminated water is available, use a solution of the following ratio:
  ▪ 1/4-cup bleach.
Decontaminating Equipment

- 1 gallon of water.
- Immerse equipment or tools in the cleaning solution for 10 minutes or, for larger objects, wipe objects with the solution and let stand for 10 minutes.
- Allow tools or equipment to drain and air dry.
- Immerse clothing in the cleaning solution for 10 minutes and gently swirl clothing every few minutes.
- Wring out as much moisture as possible from clothing before rinsing items.
- Allow clothes to thoroughly dry before using again.
- OSHA provides a general decontamination fact sheet [22 KB PDF 2 pages].

Decontaminating PPE and Equipment Used with Hazardous Substances

- Minimize contact with hazardous substances (e.g., do not walk through areas of obvious contamination).
- Use remote sampling, handling, and container opening techniques where possible.
- Wear disposable outer garments and use disposable equipment where appropriate.
- Select a method of decontamination that is effective for the likely contaminate, the PPE material(s), and the type or level of PPE being worn. For many substances, washing with soap and rinsing with water will be effective. For some materials (e.g., dusts and particulates), consider vacuuming first and then washing and rinsing PPE.
- For emergency response and hazardous waste clean-up operations, select and mark the area where decontamination will occur. Ensure that it is upwind of the operation and immediately adjacent to the work site or “hot zone.”
- Decontaminate and remove all PPE. Start with the PPE that is most contaminated and work towards the equipment that is the least contaminated. Do not remove respiratory protection until all outer garments are decontaminated and removed.
- Decontamination may be completed in stages, which may require a large decontamination area. If this is the case, the area should be covered with plastic sheeting or another waterproof barrier to reduce the amount of cross-contamination from foot traffic, wash/rinse splash and other decontamination steps.
- Discard all PPE and accumulated decontamination wash/rinse solutions in accordance with local, State, or Federal requirements.
- Once PPE is decontaminated and removed, wash areas covered by PPE. For example, if only hand protection was used, then washing and rinsing the hands would be sufficient. If the individual used Level B protection and was fully covered in dermal and respiratory protection, then the individual would need to shower.
- For certain contaminants, such as asbestos and lead, decontamination procedures are well defined and must be followed. They generally adhere to the steps noted above, but may require that the decontamination area be designed and constructed in a specific manner.
- See OSHA’s webpage on Asbestos and on Lead (General Industry and Construction).
- See the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Chapter 10, for additional information on decontaminating PPE and equipment.
Fatigue and Stress

- Provide adequate sleep, meal, and rest breaks to minimize accidents due to fatigue and stress.
- Conduct higher-hazard or new activities during daylight hours using well-rested employees.
- Consider that individuals may experience signs or symptoms of critical incident stress and provide appropriate services such as pre- and post-deployment briefings and access to behavioral health professionals.
- Provide resources and information that address psychological first-aid issues and assistance.

Heat Stress

- When possible, acclimatize response and recovery workers to hot and humid environments by gradually increasing their work period or workload over the course of several days.
- Reduce physical exertion levels by providing extra individuals.
- Schedule heavy work for cooler periods of the work shift (e.g., early mornings, cool/overcast days).
- When possible, provide temperature-controlled cabs for equipment operators.
- When possible, and where appropriate, use fans/ventilation to provide air movement for cooling.
- Take frequent rest/water breaks in areas that are shaded or air conditioned.
- Drink 4 to 8 ounces of water or sports drink every 20 minutes while working in hot, humid conditions.
- Limit fluids to no more that 1 _ quarts per hour when working in hot, humid conditions. Do not drink more than a total of 12 quarts of fluid in 24 hours.
- Limit the intake of caffeinated and alcoholic beverages.
- Wear light-colored clothing.
- Know the signs and symptoms of heat stress; use the buddy system to monitor one another for these signs/symptoms.
- If someone shows signs of heat stress (exhaustion or stroke), request immediate medical attention, move the individual to a cooler area in the shade, loosen or remove restrictive or heavy clothing, provide cool drinking water, and fan and mist the person with water.
- Consider the use of personal cooling devices. Examples of cooling devices include cooling vests or suits that use circulating water or ice packs, and venturi cooling systems for air-supplied respirators or encapsulating suits.
- OSHA and NIOSH maintain webpages that discuss heat stress.

Cold Stress

- Monitor ambient conditions (ambient temperature and wind velocity) and plan work activities so that outside work is conducted during the warmer parts of the day or rescheduled for days that are predicted to be warmer.
- When possible, move work indoors or to an area that is protected from the wind/precipitation.
- Wear layers of clothing that are windproof and waterproof. Consider keeping additional clothing with you and changing into dry clothing as soon as possible after work clothing becomes wet.
- Take frequent rest breaks in warm, sheltered spaces.
• Drink plenty of fluids to prevent dehydration and limit the intake of caffeinated beverages.
• Know the signs and symptoms of cold stress (pain and numbness in extremities, excessive fatigue, severe uncontrollable shivering, drowsiness, irritability) and use the buddy system to monitor one another for these signs/symptoms.
• If someone shows signs of cold stress (frostbite or hypothermia), request immediate medical attention, move the individual to a warmer area in a sheltered space, remove cold or wet clothing, provide warm fluids, and monitor the person.
• OSHA has several documents that discuss cold stress, hypothermia, and protective measures:
  ▪ The Cold Stress Equation.
  ▪ Cold Stress.

Animal Bites, Stings, and Aggressive Behavior

• Use insect repellent containing DEET or Picaridin on exposed skin and wear long-sleeved pants and shirts.
• Discuss hazardous wildlife (e.g., alligators, poisonous snakes) concerns with personnel familiar with these matters (e.g., game wardens, animal control officers).
• Inspect areas for nests and stray animals.
• Remove all nearby sources of stagnant or standing water.
• Assume that all snakes are poisonous and that all animals are rabid.
• Be on guard for stray or wild animals, as they can exhibit unpredictable or aggressive behavior.
• Unless properly trained, do not attempt to take custody of animals—watch them from a safe distance while contacting animal rescue/control personnel.
• Be cautious about where you place your hands and feet. Do not put your hands in holes or under objects (e.g., lumber, scrap metal, overturned boats) without checking to see if snakes, insects, or other animals are present.
• Do not sit or lie down in areas where snakes, insects, or other animals could be present (e.g., wood piles, high vegetation).
• Wear proper foot gear, such as high-top leather boots and leather gloves when handling materials where snakes, insects, and other animals may have nested (e.g., firewood, lumber, rocks, construction debris).
• Inspect and shake out clothing and shoes before getting dressed.
• Deer ticks are carriers of Lyme disease. When working in high grass, cover exposed skin with long sleeves and pants as weather permits. Report all tick bites to medical personnel.

Contact with Poisonous Plants

• Train response and recovery workers on hazardous plant recognition.
• Keep rubbing alcohol accessible, as it may remove the oily resin from plants such as poison ivy up to 30 minutes after exposure.
• When appropriate, safely clear vegetation from areas personnel are working and living (e.g., construction trailers, base camps).
• Use gloves and wear long pants and long-sleeved shirts when possibly contacting poisonous plants.
• Use a barrier cream formulated to protect against poison ivy/oak.
Sunburn

- Wear suntan lotion with a sun protection factor (SPF) of 15 or greater. Reapply as necessary to ensure protection throughout the work shift.
- When possible, wear a wide brim hat to protect exposed skin on face, head, and neck.
- When possible, set up work area in a shaded location.
- When possible, schedule tasks when individuals will not be exposed to direct sunlight such as during the early morning or late afternoon.

General References

The following references (EPA, CDC, NIOSH, NIH, NIEHS) may be consulted for additional information on safety and health issues during hurricane response and recovery activities.

- Cleanup Hazards. OSHA Fact Sheet. (2005) 25 KB PDF, 2 pages.
- Flood Cleanup. OSHA Fact Sheet. (2005), 22 KB PDF, 2 pages.
- U.S EPA Website on Response to 2005 Hurricanes: Section on Potential Environmental Health Hazards When Returning to Homes and Businesses. U.S. Environmental Protection Agency.
**Purpose and Use of This Matrix**

Work conditions change drastically after hurricanes and other natural disasters. In the wake of a hurricane, response and recovery workers will face additional challenges, such as downed power lines, downed trees, and high volumes of construction debris, while performing an otherwise familiar task/operation.

In this Hazard Exposure and Risk Assessment Matrix, OSHA provides information on many of the most common and significant additional hazards that response and recovery workers might encounter when working in an area recently devastated by a hurricane. This Matrix highlights a number of tasks and operations associated with disaster response and recovery.

**How to Use This Matrix**

This Matrix includes general recommendations as well as best practices for specific tasks and operations being conducted in a hurricane response and recovery zone. The recommendations and activity sheets cover anticipated hazards, suggested controls, and applicable personal protective equipment (PPE) for hurricane response and recovery workers.

Response and recovery workers may be employed by Federal, State, local, and private employers such as the armed forces and other Federal entities, and State and local police and fire departments, which may not be covered by Federal OSHA requirements. The information contained in the Matrix includes both requirements and best practices to assist in protecting all response and recovery workers. It is anticipated that employees who will be performing tasks under the adverse conditions of response and recovery work will have been effectively trained in job-specific safety procedures and in the safe use of tools, machinery, and personal protective equipment specific to their work.

*This document will be updated as necessary. While this document was specifically developed for response and recovery efforts for Hurricanes Katrina, Rita, and Wilma, it has application to future hurricane and flood responses.*

**Limitations of the Matrix**

The Matrix does not provide an in-depth analysis of OSHA standards and regulations and cannot address all hazards. It does not increase or diminish any OSHA requirement or employer obligation under those requirements. It is intended as a guide and quick reference for employers and response and recovery workers. The Matrix captures major activities involved in hurricane response and recovery, highlights many of the hazards associated with them, and recommends "best practices." Employers must evaluate the specific hazards associated with the job/operation at the site where the work is being performed.

**Disclaimer**

Employers are responsible for providing a safe and healthful workplace for their employees. OSHA’s role is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.
The Hazard Exposure and Risk Assessment Matrix for Hurricane Response and Recovery Work provides a general overview of particular topics related to current OSHA standards. It does not alter or determine compliance responsibilities in OSHA standards or the Occupational Safety and Health Act of 1970, or the equivalent State Plan standards and requirements. Because interpretations and enforcement policy may change over time, you should consult current OSHA/State Plan administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements. Employers should modify their procedures as appropriate when additional, relevant information becomes available.

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