Commissioner's Corner: Hurricane Response and Recovery

GENERAL HAZARDS TOOLBOX KIT

US VIRGIN ISLANDS
DEPARTMENT of LABOR
VIDOSH

Virgin Islands Division of Occupational Safety and Health

VIDOSH

OSHA requires employers to protect workers from anticipated hazard and provide a safe and healthful workplace.

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.

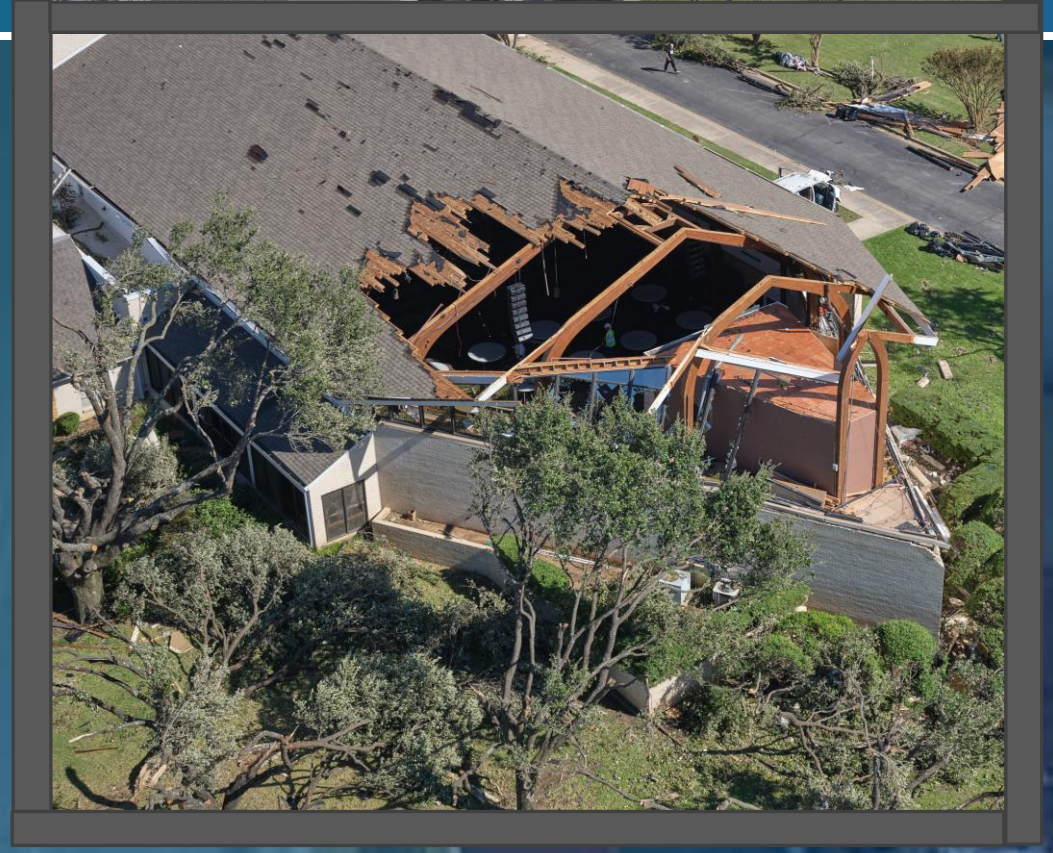
This Hurricane Response and Recovery Toolkit provides a general overview of topics related to current OSHA standards. It does not alter or determine compliance responsibilities in OSHA standards or the Occupational Safety and Health Act of 1970, or the equivalent State Plan standards and requirements. 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.

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 presentation, engineering controls, work practices and appropriate personal protective equipment (PPE) are described for most common hazards.

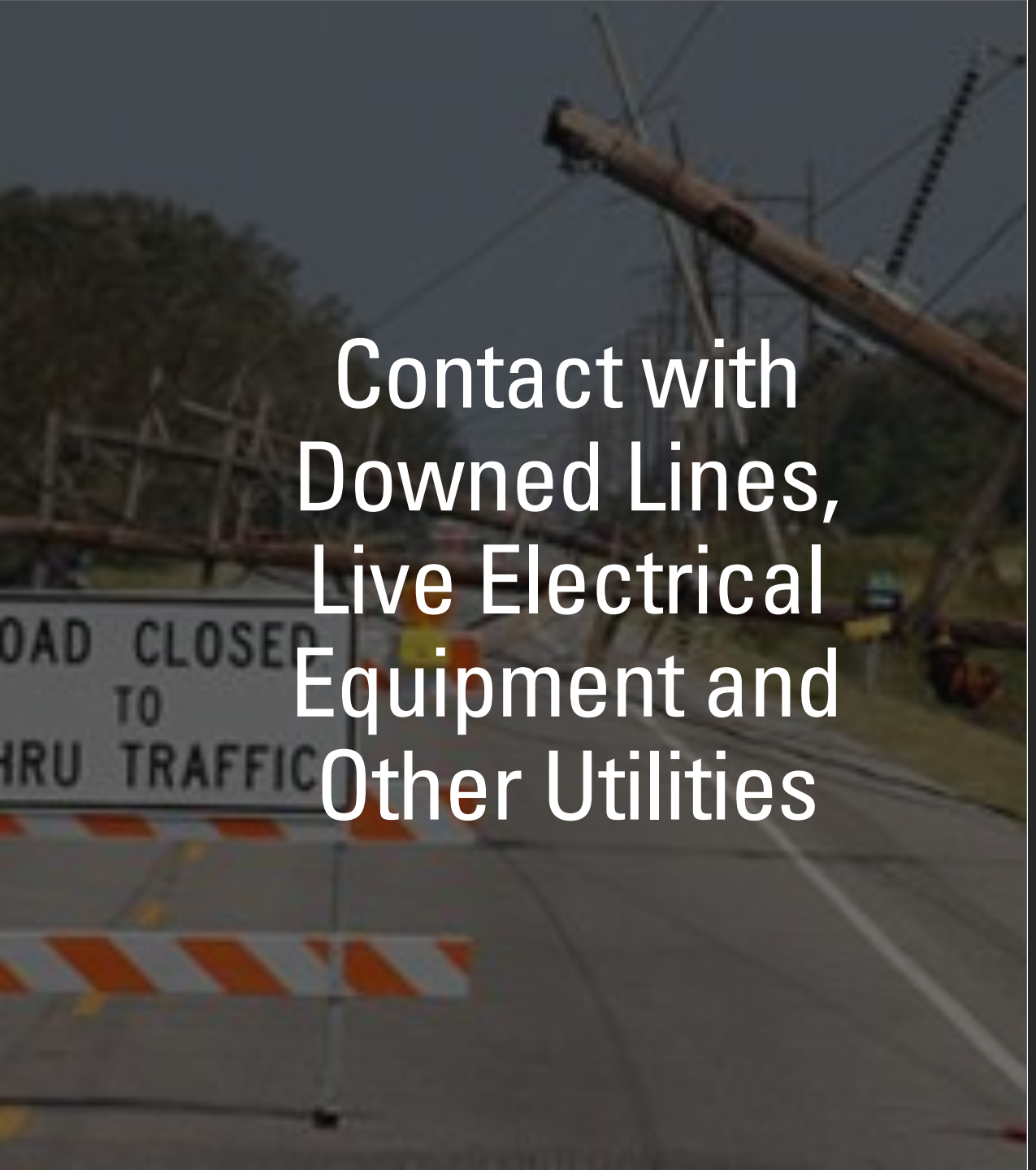
Response and Recovery Hazards Topics

- Structural Instability
- Contact with Downed Lines, Live Electrical Equipment and Other Utilities (i.e. Gas, Water)
- Lockout/Tagout
- Generator Safety
- Noise
- Fall From Heights through Openings
- Impact Hazard to Eyes and Face from Flying Objects
- Manual Handling of Materials/Weight
- Slips, Trips and Falls on Working Surfaces
- Cuts and Lacerations
- Discovery of Unknown Chemicals
- Hand Washing
- Clothing Tools and Equipment Decontamination
- Decontaminating PPE and Equipment Used with Hazardous Substances
- Fatigue and Stress
- Heat Stress and Sunburn



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

- Identify the location of any energized electrical power circuit that workers (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 workers 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.

Contact with Downed Lines, Live Electrical Equipment, and other Utilities

Deenergize circuits and use locks and/or tags to prevent circuits from becoming reenergized accidentally.

Guard live parts against accidental contact using approved cabinets or other approved enclosures.

Contact utility company to assist in locating, marking, and shutting off/purging utility lines that may pose a hazard or may be impacted.

Use ground-fault circuit interrupters on all outlets that are not part of permanent wiring.

Inspect electrical cords or cables for external defects 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.

TOOLBOX KIT:
Contact with Downed Lines, Live Electrical Equipment, and other Utilities

- **Electrical Hazards: Working Safely Around Downed Electrical Wires Fact Sheet** (OSHA FS 3941 - 2018) (**English**: PDF)
- Protect Yourself and Others from Electrical Hazards After a Disaster. **Centers for Disease Control and Protection (CDC).**

Lockout/Tagout

Implement an existing energy control program or develop a site-specific program that addresses how workers will be protected from unexpected start-up and/or release of stored energy during servicing and maintaining machines and equipment.

- Where such hazards exist, train workers on the energy control program, as required by 29 CFR 1910.147(c)(7).
- Control procedures should include the following:
  - Shutoff machines and equipment using established procedures.
  - Ensure that each authorized worker places a lockout or tagout device on each energy isolating device.
  - Relieve, disconnect, or restrain all potentially stored hazardous or residual energy.
  - Verify isolation using test procedures before beginning work.
  - Ensure that locks and tags are only removed by the authorized worker.
  - Prior to returning machine or equipment to normal operation, replace and reactivate all safeguards and remove all locks and tags.

TOOLBOX KIT:
Lockout/Tagout

- **Lockout/Tagout Fact Sheet**
  (OSHA FS - 2002) (**English:** PDF)
- **Lockout/Tagout: Control of Hazardous Energy Lockout-Tagout**
  (OSHA 3120 - 2002) (**English:** PDF)
- **Lockout/Tagout Webpage**: Control of Hazardous Energy (Lockout/Tagout) Safety and Health Topics Page (OSHA)

Generator Safety

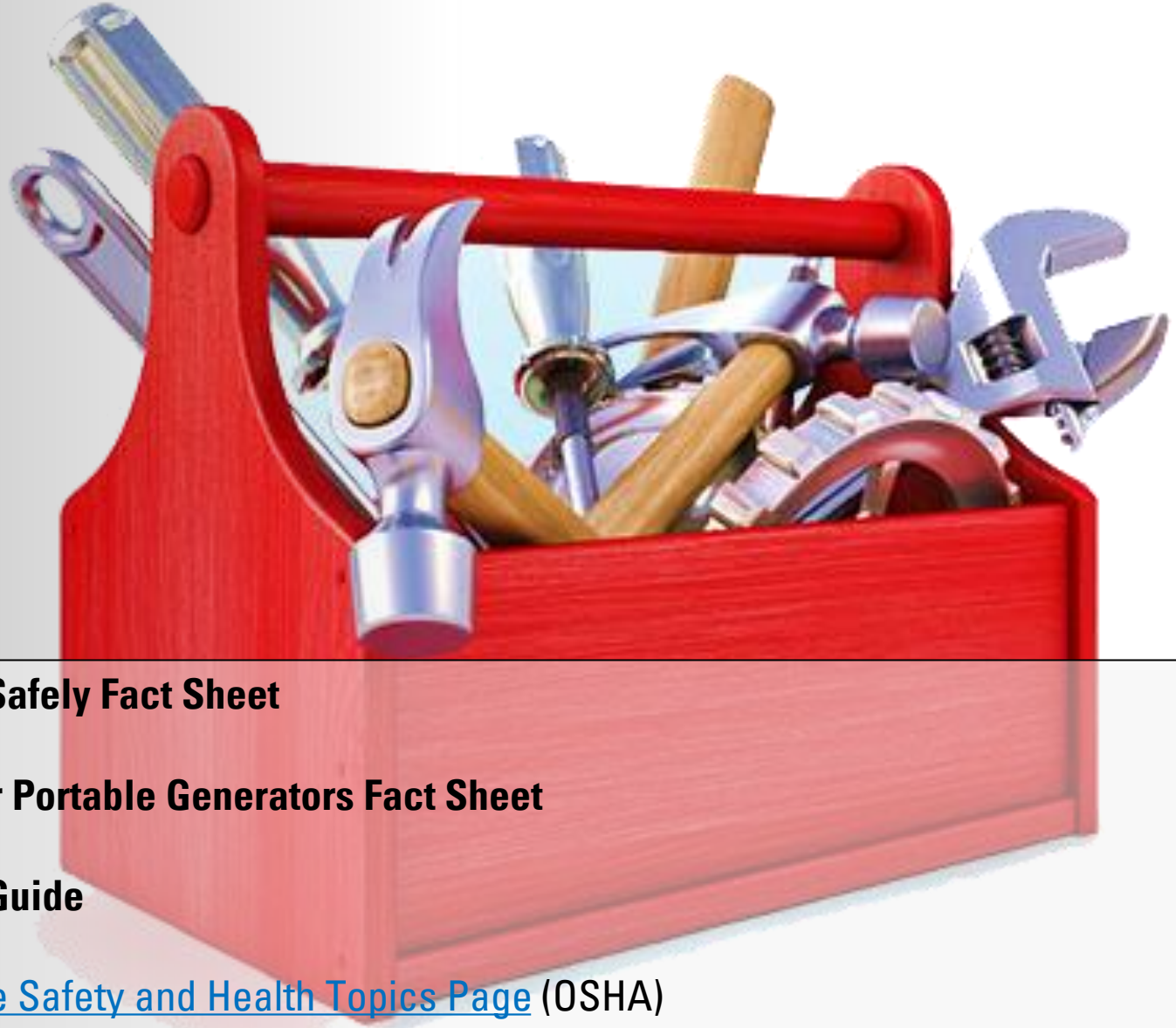
- The primary hazards to avoid when using a generator are carbon monoxide (CO) poisoning from the toxic engine exhaust, electric shock or electrocution, and fire. Follow the directions supplied with the generator.
- To avoid electrocution, keep the generator dry and do not use in rain or wet conditions. Operate it on a dry surface under an open canopy-like structure, such as under a tarp held up on poles. Do not touch the generator with wet hands.
- Be sure to turn the generator off and let it cool down before refueling. Gasoline spilled on hot engine parts could ignite.
- Keep these devices outdoors, away from doors, windows and vents that could allow carbon monoxide to come indoors.

NOISE

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.)

- 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. Keep unnecessary response and recovery workers out of areas near noisy operations.
- Locate work areas such as observation towers, office trailers, and break areas away from noisy operations. Provide enclosed cabs on heavy equipment.
- Collect noise monitoring data to determine if workers 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.
- 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.

TOOLBOX KIT:
Generator Safety & Noise



- **Generator Safety: Using Portable Generators Safely Fact Sheet** (OSHA FS-3286 - 2005) (**English:** PDF)
- **Generator Safety: Grounding Requirements for Portable Generators Fact Sheet** (OSHA FS - 2005) (**English:** PDF)
- **Construction: Noise in Construction - Pocket Guide** (OSHA 3498 - 2011) (**English:** PDF)
- **Noise Webpage:** Occupational Noise Exposure Safety and Health Topics Page (OSHA)
- **Temporary Worker Initiative (TWI) Bulletin No. 9 - Noise Exposure and hearing Conservation** (OSHA 3953 - 2018) (**English:** PDF)

Fall from Heights and Through Openings

Limit Access

Limit access/set up controlled access zones.

Use Systems

Use fall protection systems: guardrails, safety nets, or fall arrest systems. A personal fall arrest system includes harnesses, lanyards, lifelines, connectors, anchorages, and anchor points.

Cover or guard

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."

Impact Hazard to Face and Eyes 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.**

TOOLBOX KIT:
Fall from Heights & Face and Eye Protection

- **Disaster Response: Protecting Workers from Slips, Trips and Falls QuickCard** (OSHA 3907 - 2017) (**English:** PDF)
- **Ladder Safety: Reducing Falls in Construction: Safe Use of Extension Ladders Fact Sheet** (OSHA FS 3660 - 2013) (**English:** PDF)
- **Selecting and Using Face and Eye Protection Webpage:** https://www.osha.gov/personal-protective-equipment (OSHA)

Manual Handling of Materials/Weight

- Use safe ergonomics and 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.

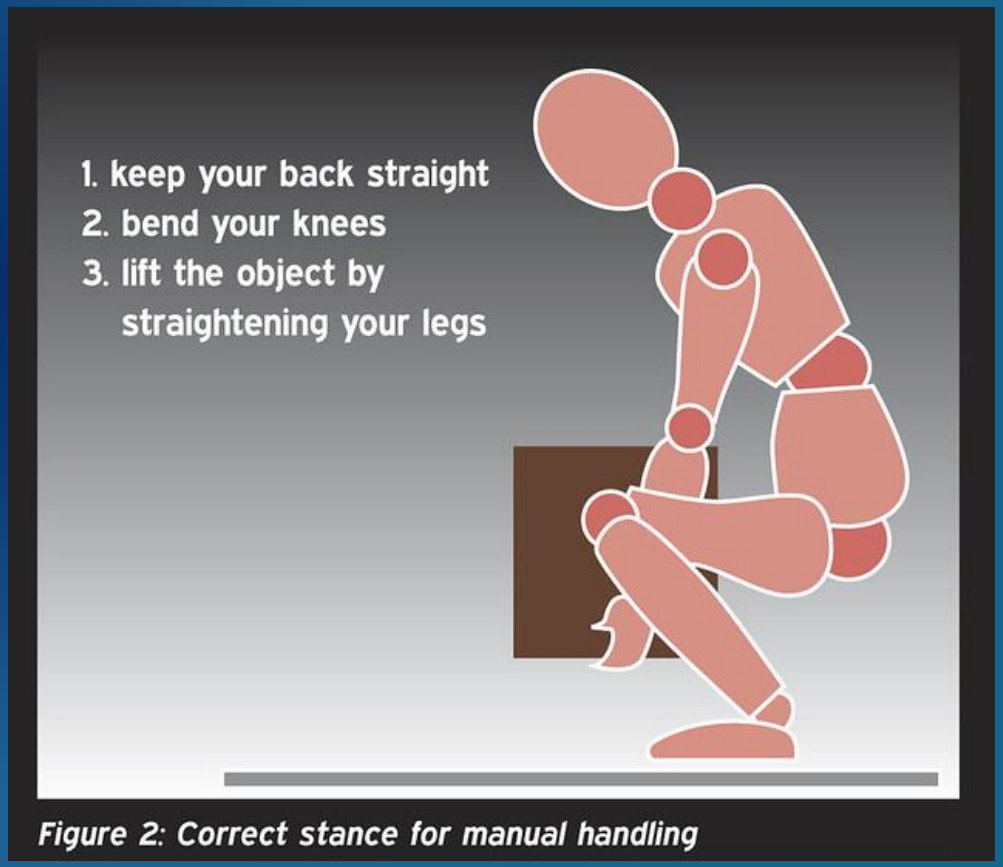
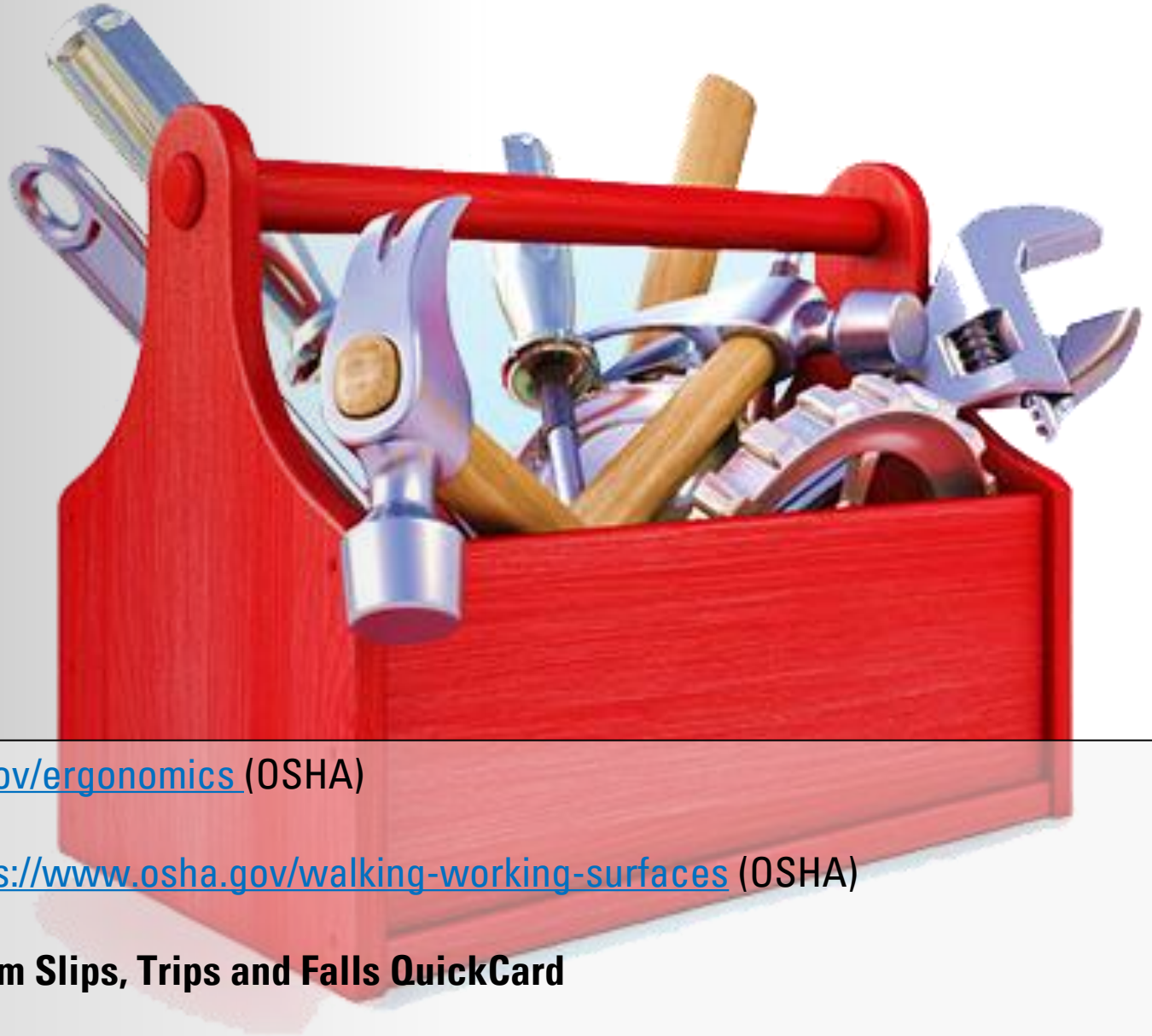


Figure 2: Correct stance for manual handling

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.
- Provide sufficient lighting to safely illuminate work areas.

TOOLBOX KIT:
Ergonomics & Slips, Trips and Falls



- **Ergonomics Webpage:** https://www.osha.gov/ergonomics (OSHA)
- **Walking/Working Surfaces Webpage:** https://www.osha.gov/walking-working-surfaces (OSHA)
- **Disaster Response: Protecting Workers from Slips, Trips and Falls QuickCard** (OSHA 3907 - 2017) (**English:** PDF)

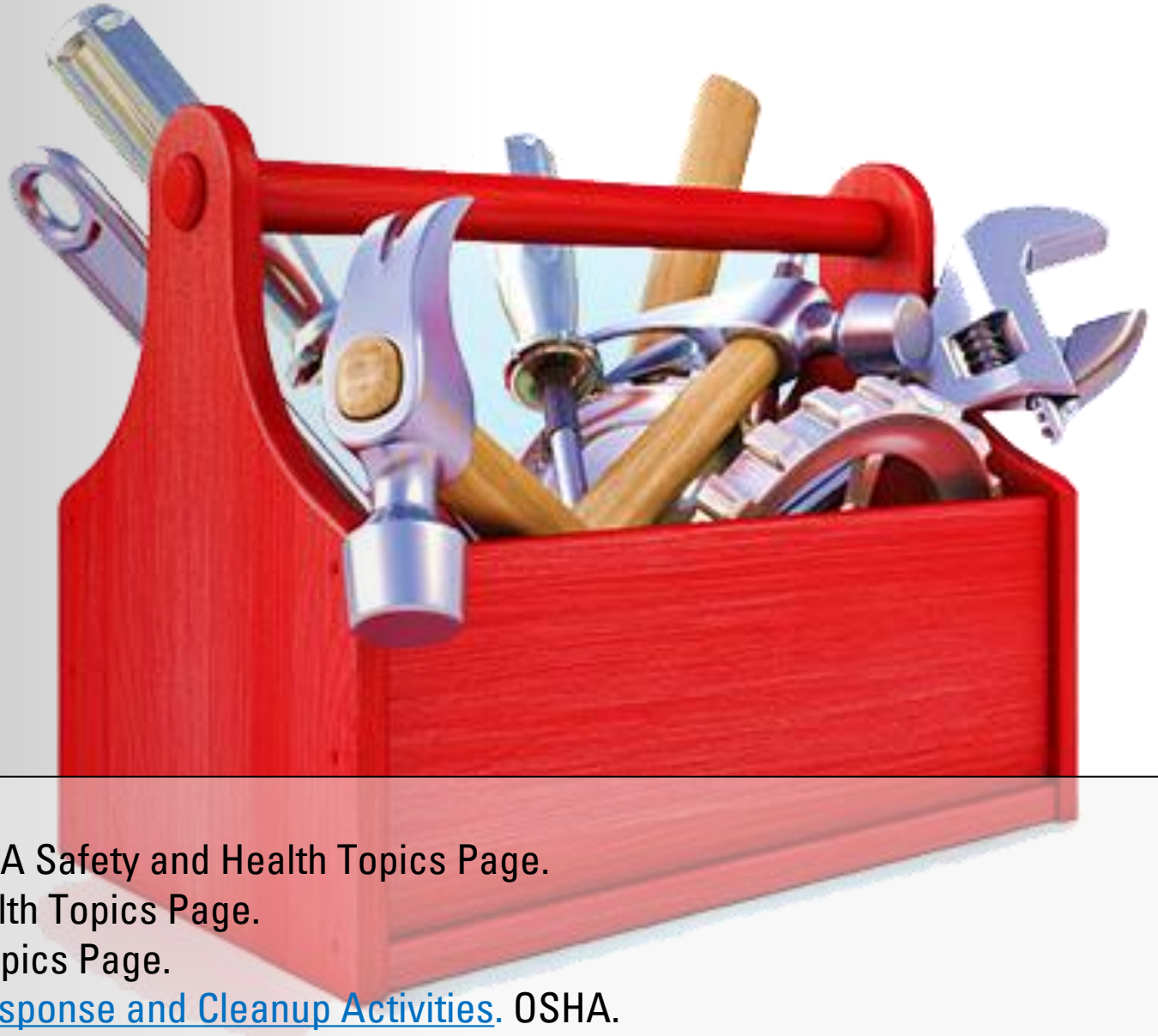
Cuts and Lacerations

- Keep work areas and travel paths free of trip hazards when worker 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.

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.
- Evaluate the need to revise protective clothing, respirator, and glove selection.
- If personnel are likely to witness or discover a hazardous substance release such as a large spill of fuel, oil, corrosives, or other chemicals, train them under the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 CFR 1910.120(q)(6) or 29 CFR 1926.65(q)(6).

TOOLBOX KIT:
Discovery of Unknown Chemicals



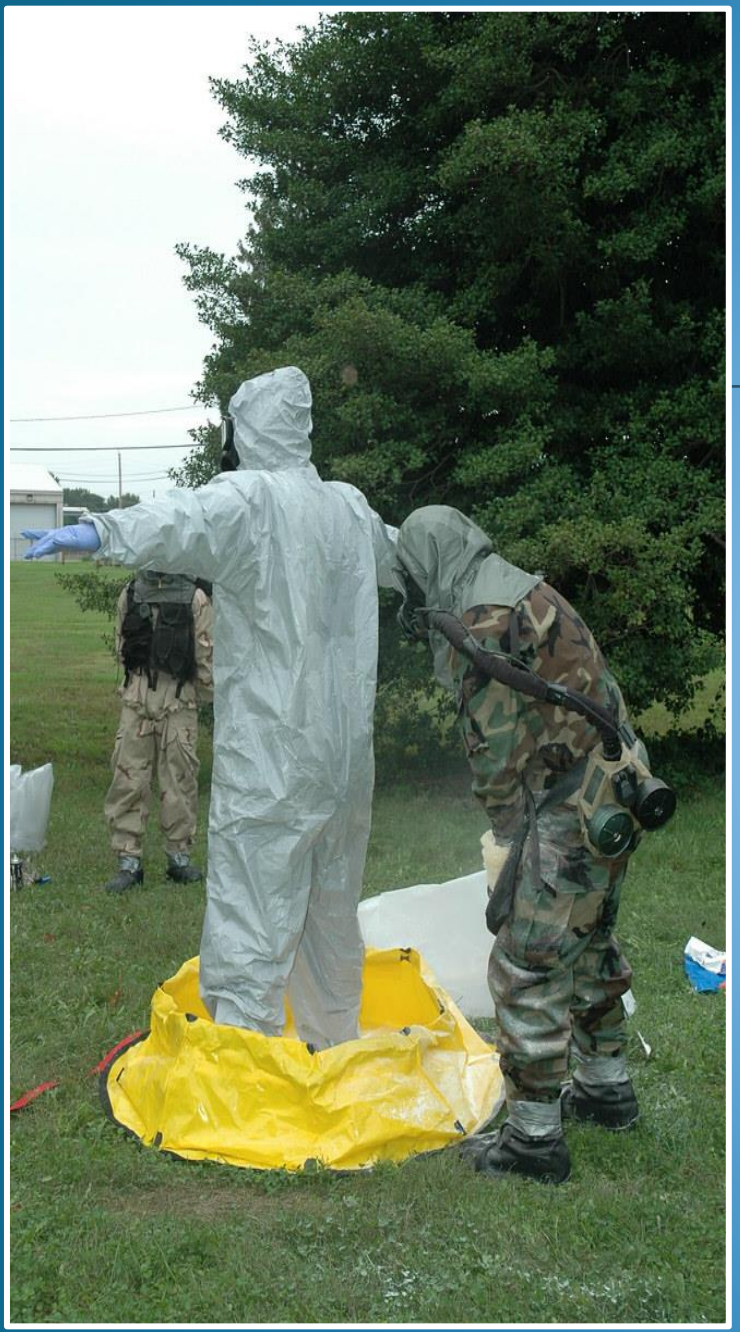
- Chemical Hazards and Toxic Substances. OSHA Safety and Health Topics Page.
- Hazard Communication. OSHA Safety and Health Topics Page.
- Hazardous Waste. OSHA Safety and Health Topics Page.
- The Application of HAZWOPER to Worksite Response and Cleanup Activities. OSHA.

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.

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.
  - 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.



Decontaminating PPE and Equipment Used with Hazardous Substances

- Wear disposable outer garments and use disposable equipment where appropriate.
- 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.

TOOLBOX KIT:
Hand Hygiene, Decontaminating PPE, Clothes and Equipment

- **Hand Hygiene and Gloves in Hurricane-Affected Areas Fact Sheet** (2005) (**English:** PDF)
- **Hand Hygiene QuickCard™** (OSHA 3262 - 2005) (**English:** PDF)
- **Decontamination Fact Sheet** (OSHA FS - 2005) (**English:** PDF)
- **Decontamination QuickCard™** (OSHA 3264 - 2005) (**English:** PDF)
- https://www.osha.gov/sites/default/files/publications/all-in-one.pdf. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

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 workers.
- 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 ½ 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.

Heat Stress

- 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.

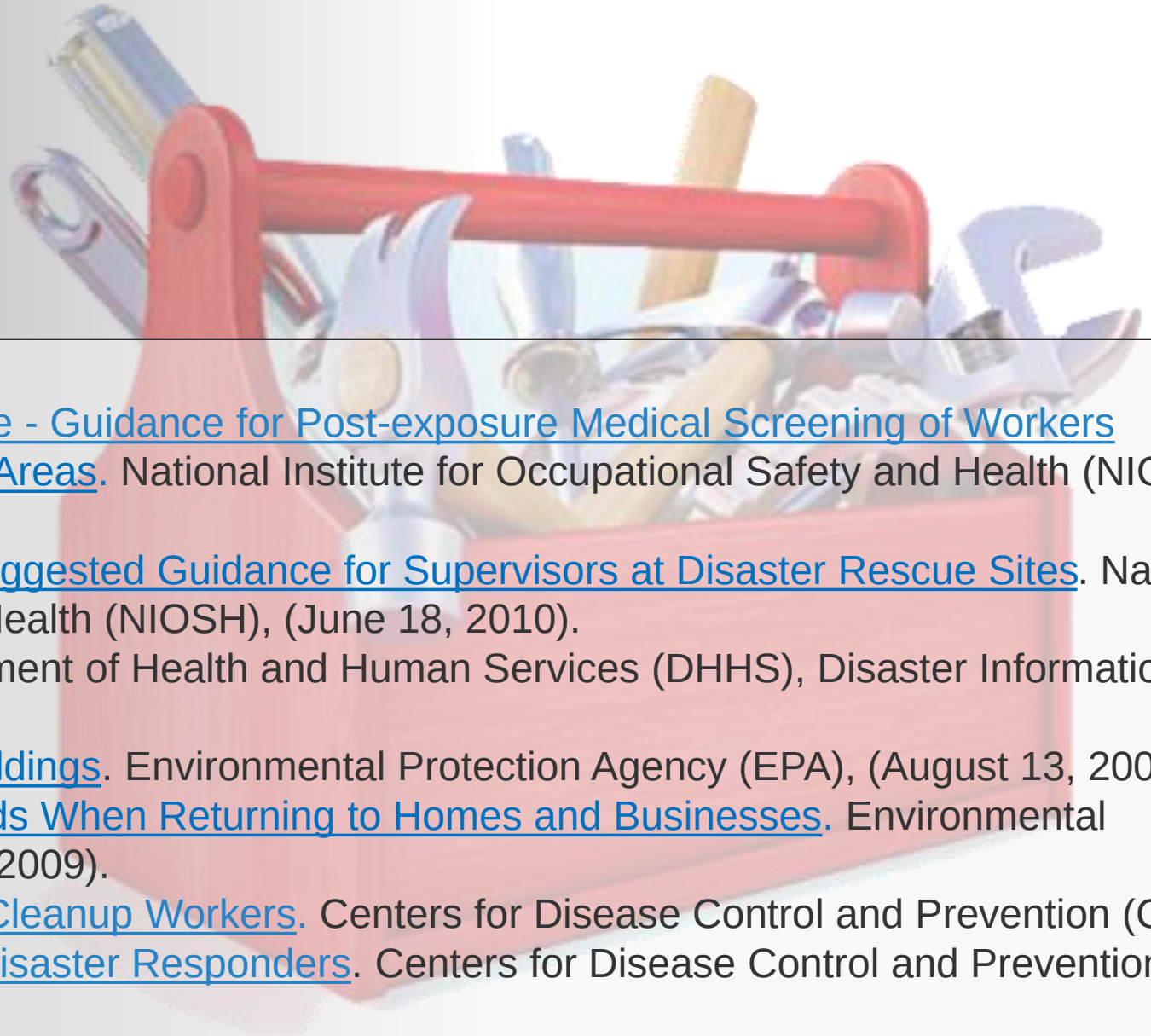
TOOLBOX KIT:
Heat Stress

- https://www.osha.gov/heat OSHA Heat Illness Prevention web page.
- https://www.cdc.gov/niosh/topics/heatstress/ CDC/NIOSH Heat stress webpage.

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.

TOOLBOX KIT:
General References



- Storm, Flood, and Hurricane Response - Guidance for Post-exposure Medical Screening of Workers Leaving Hurricane Disaster Recovery Areas. National Institute for Occupational Safety and Health (NIOSH), (June 18, 2010).
- Emergency Response Resources - Suggested Guidance for Supervisors at Disaster Rescue Sites. National Institute for Occupational Safety and Health (NIOSH), (June 18, 2010).
- Hurricanes and Typhoons. US Department of Health and Human Services (DHHS), Disaster Information Management Research Center.
- Dealing with Debris and Damaged Buildings. Environmental Protection Agency (EPA), (August 13, 2009).
- Potential Environmental Health Hazards When Returning to Homes and Businesses. Environmental Protection Agency (EPA), (August 13, 2009).
- Safety Information for Response and Cleanup Workers. Centers for Disease Control and Prevention (CDC).
- Immunization Recommendations for Disaster Responders. Centers for Disease Control and Prevention (CDC), (September 10, 2008).