

SAFETY BULLETIN

WATER DAMAGE CLEANUP SAFETY CHECKLIST

Prior to opening a business that has undergone extensive water and wind damage, inspections need to be conducted to determine if the building is salvageable. If the decision is made to proceed with recovery and remediation, building and life safety inspections must be completed before any restoration work is done to the facility.

I. FIRST STEPS

- ▶ Listen to local officials for updates and instructions.
- ▶ Identify tasks to be done, the hazards involved, and train employees on safe work practices.
- ▶ Be aware of potential chemical hazards during floods. Floodwaters might have moved containers of hazardous chemical solvents or other industrial chemicals from their normal storage places. Contact local authorities or the U.S. Environmental Protection Agency (EPA) National Response Center at [1-800-424-8802](tel:1-800-424-8802) to get guidance about safely disposing of containers of toxic or unknown substances or to report oil and chemical spills.
- ▶ Establish a plan for contacting emergency personnel in case of emergency.
- ▶ Re-evaluate your fire evacuation plan and suppression system that will be used during cleanup.
- ▶ Assess road conditions for closures and damage before employees drive for work. Make sure employees who drive on the job are qualified to do so.

II. SAFETY EVALUATION

The following should be evaluated by facility experts before employees are allowed to enter:

- ▶ structural integrity and missing structural items
- ▶ roadways, trenches & excavations for stability
- ▶ assessment of hidden moisture
- ▶ electrical system damage, including high voltage, insulation, and power integrity
- ▶ water distribution system damage
- ▶ sewer system damage
- ▶ fire emergency systems damage
- ▶ air handling system damage

III. PERSONAL PROTECTIVE EQUIPMENT & ILLNESS & INJURY PREVENTION

- ▶ Provide all employees with personal protective equipment, including hard hats, safety glasses, waterproof work boots with steel toes and insoles, and heavy-duty leather gloves.
- ▶ If employees will be working in floodwaters, provide life vests (in deep water) and waterproof gloves, boots, waders, or other gear to protect skin from chemicals, bodily fluids, and other contaminants.
- ▶ Wear chaps when using chainsaws.
- ▶ Provide all employees with high-visibility reflective vests that equipment operators and emergency vehicles can easily spot.

- ▶ Provide first-aid kits to care for minor cuts and scrapes. If employees cut themselves on sharp debris, provide first aid but quickly seek medical attention if there are signs of infection.
- ▶ Take frequent rest breaks, especially when lifting heavy, water-laden objects.
- ▶ Practice good lifting techniques to avoid overexertion and back injuries.
- ▶ Stay hydrated.

IV. DEBRIS MANAGEMENT

- ▶ Inform employees working in areas where debris is being collected and deposited of hazards they might encounter during recovery efforts.
- ▶ Develop and use a site plan for debris collection. Be aware that typical recycling and solid waste disposal often do not apply to disaster debris. Visit www.epa.gov for details on debris disposal, renovation, and rebuilding.
- ▶ Provide traffic flow details and train employees to stay clear of all motorized equipment. Explain to employees never to position themselves between mechanical equipment, blind spots, and fixed objects.
- ▶ Provide radio equipment and extra batteries to all spotters and equipment operators so that they can communicate warnings.
- ▶ Protect employees exposed to vehicular traffic during the cleanup operations by posting warning signs along roadways to warn drivers of work in progress. Use flaggers, traffic cones, and highway channeling devices to steer traffic away from employees working along the roadway.
- ▶ Require use of seat belts and rollover protection for all equipment where tip-over hazards are present.
- ▶ Ensure that all motorized equipment has working backup alarms so that nearby employees are aware of the equipment's movements.

V. WATER REMOVAL

- ▶ Water should be removed as soon as possible once the safety of the structure has been verified.
- ▶ Pump out standing water.
- ▶ Wet vacuum residual wetness from floors, carpets and hard surfaces.
- ▶ Clean wet vacuums after use and allow to dry.

VI. FLOODWATER PRECAUTIONS

- ▶ Be aware of possible biological hazards employees might encounter, such as dead animals. Floodwaters can contain high levels of raw sewage and other contaminants.
- ▶ Avoid exposure to floodwaters if employees have an open wound, or cover the wound with a waterproof bandage. If a wound develops redness, swelling, or drainage, seek immediate medical attention.
- ▶ Wash hands with soap and water that has been boiled or disinfected after contact with floodwater.
- ▶ Clean surfaces that have touched floodwater with soap and warm, clean water; rinse; then sanitize using a solution of 1 cup bleach and 5 gallons water.
- ▶ Sanitize clothing, tools, and equipment with soap and water after coming into contact with contaminated floodwater or chemicals. If you can't access clean water, use a solution of ¼ cup bleach and 1 gallon water – then allow materials to drain and air dry to help stop mold.
- ▶ To reduce cold-related risks when standing or working in water which is cooler than 75 degrees F (24 degrees C), wear insulated clothes and insulated rubber boots, take frequent breaks out of the water, and change into dry clothing when possible.

VII. WATER DAMAGE ASSESSMENT AND MOLD REMEDIATION

- ▶ Open the windows in the damaged areas of the building during remediation.

- ▶ Remove porous items that have been submerged or have visible mold growth or damage.
- ▶ Salvage prepackaged supplies in paper wraps that are not damaged, exposed to water or extreme moisture, or in a molded environment
- ▶ Discard items if there is any question about integrity or mold exposure
- ▶ Dry essential paper files and records (professional conservators may be contacted for assistance)
- ▶ Remove and discard items that cannot be washed and disinfected (such as, carpeting, carpet padding, rugs, upholstered furniture, pillows, foam-rubber items, books, wall coverings, and paper products).
- ▶ Remove and discard drywall and insulation that has been contaminated with sewage or flood waters.
- ▶ Minimize dispersion of mold spores by covering the removed items and materials with plastic sheeting (dust-tight chutes leading to dumpsters outside the building may be helpful).
- ▶ Dispose these items as construction waste.
- ▶ Seal off the ventilation ducts to and from the remediation area and isolate the work area from occupied spaces, if the building is partially occupied.
- ▶ Thoroughly clean all hard surfaces (such as flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks, and other plumbing fixtures) with hot water and laundry or dish detergent.
- ▶ Dry the area and remaining items and surfaces.
- ▶ Evaluate the success of drying and look for residual moisture in structural materials (Moisture detection devices [e.g., moisture meters] or borescopes could be used in this evaluation.)
- ▶ Remove and replace structural materials if they cannot be dried out within 48 hours.

VIII. INSPECT, REPAIR, DISINFECT WHERE APPROPRIATE, OR REPLACE FACILITY INFRASTRUCTURE

- ▶ HVAC system (motors, duct work, filters, insulation) inspection, disinfection, repair and replacement
- ▶ Water system (cold and hot water, sewer drainage, steam delivery, chillers, boilers)
- ▶ Steam sources (if piped in from other places e.g., utility companies it will impact autoclaves)
- ▶ Electronic communication systems (telephones, computers)
- ▶ Electrical system (wiring, lighting, paging and patient call systems, emergency generators, fire alarms)
 - » Check motors, wiring and insulation for damage
 - » Inspect equipment for moisture damage
 - » Clean and disinfect equipment following manufacturers' instructions
 - » If electrical circuits and electrical equipment have gotten wet or are in or near water, turn off the power at the main breaker or fuse on the service panel. If you must enter standing water to access the main power switch, then call an electrician to turn it off.
 - » Never turn power on or off or use an electric tool or appliance while standing in water.
 - » Do not connect generators to your business's electrical circuits without the approved, automatic-interrupt devices. If a generator is on line when electrical service is restored, it can become a major fire hazard and it may endanger line workers helping to restore power in your area.
 - » Report hazards such as downed power lines, frayed electric wires, or gas leaks to utility providers. Assume that all wires and power lines are energized, especially if there has been a power outage and you don't know when the utility provider will restore power.
 - » Beware of overhead and underground lines, especially when moving ladders or equipment near them. Train equipment operators, spotters, and employees to keep equipment more than 10 feet away from overhead power lines.
 - » Find locations where employees – or their power tools – could contact energized electric circuits. Turn off electrical systems, follow lockout/tagout procedures, and have a qualified electrician inspect equipment before resuming work.

- » Avoid walking through floodwaters – they can be electrically charged or hide dangerous debris or ground that was washed away.
- » Use a wooden (not metal) pole to check flooded areas for pits or protruding objects.
- » Exhaust from electric generators is toxic. Put generators outdoors and away from doors, windows, and vents.

For more information, see Protect Yourself and Others from Electrical Hazards After a Disaster(<https://www.cdc.gov/disasters/electrical.html>).

- ▶ Hazardous chemicals/radioactive storage
 - » Call the fire department to inspect or remove chemicals, propane tanks, and other dangerous materials.
 - » Wear protective clothing and gear (for example, a respirator if needed) when handling hazardous materials.
 - » Wash skin that may have come in contact with hazardous materials.
 - » Wear insulated gloves and use caution if you have to remove a car battery. Avoid any acid that may have leaked from a car battery.

For information about possible dangers posed by chemicals, see the [Chemical Emergencies](#) page.

IX. HYGIENE AND INFECTIOUS DISEASE ISSUES

- ▶ After completing the cleanup, wash with soap and water. If there is a boil-water advisory in effect, use water that has been boiled for 1 minute (allow the water to cool before washing). Or you may use water that has been disinfected for personal hygiene use (solution of 1/8 teaspoon of household bleach per 1 gallon of water). Let it stand for 30 minutes. If the water is cloudy, use a solution of 1/4 teaspoon of household bleach per 1 gallon of water.
- ▶ If you have any open cuts or sores that were exposed to floodwater, wash them with soap and water and apply an antibiotic ointment to discourage infection.
- ▶ Seek immediate medical attention if you become injured or ill.
- ▶ Wash all clothes worn during the cleanup in hot water and detergent. These clothes should be washed separately from uncontaminated clothes and linens.

X. REVIEW REQUIREMENTS FOR REOPENING FACILITIES

- ▶ Requirements needed prior to opening a facility
 - » potable water
 - » adequate sewage disposal
 - » adequate waste management
- ▶ Have all areas to be opened been thoroughly dried out, repaired, and cleaned?
- ▶ Does the number of air exchanges in areas of the facility meet recommended standards?

The following sources were used to compile this communication:

<https://www.cdc.gov/disasters/cleanup/facts.html> | https://www.cdc.gov/disasters/reopen_healthfacilities_checklist.html
<http://www.tdi.texas.gov/pubs/videoresource/fshurricaneclera.pdf>

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