



A Union of Professionals

WORK SHOULDN'T HURT

Cleaning up After a Major Storm

Cleaning up schools, workplaces and homes after major storms and flooding can be tricky. There are the obvious safety and health hazards associated with re-entering the building and cleaning it. And often, there are the wrenching emotional and economic decisions about what to save and what not to save.

This fact sheet primarily focuses on protecting yourself during a cleanup of a flooded or storm-damaged building with some tips on a cleaning approach and disposal of damaged material. It assumes that the building has been inspected for structural soundness and major electrical and gas safety. For more detailed information about re-entering a damaged home, workplace or school, please see the fact sheet [Re-entering Your Flooded Home](#) developed by the Centers for Disease Control and Prevention.



Water intrusion

Water has been known to be the single most long-term destructive substance in the indoor environment. Water promotes the growth of mold and other microorganisms that can be hazardous to occupants' health and can literally dissolve many building materials. Time is the enemy for flooded buildings. **Many building and personal**

Assess Your Health Status First Before Participating in Cleaning Efforts

Everyone wants to help speed the process of making homes and school buildings habitable. Workers and volunteers involved with cleanup operations should be aware of the potential dangers involved, including the impact on their personal health. Anyone with the following health conditions should *not* be involved in the cleaning effort:

- Allergies to mold;
- Asthma; and
- Chronic lung disease such as chronic obstructive pulmonary disease (COPD).

Poor air quality in combination with these medical conditions can agitate symptoms and have an immediate impact on your health. As much as possible, individuals with these conditions should allow their colleagues or family members to do this work. Healthy individuals should also understand that this work may pose a health risk for them; they should not be cavalier about engaging in cleaning and restoration projects.

materials that remain water-saturated for longer than 24-48 hours are beyond restoration.

The primary goal of any cleaning project involving water damage is to dry out the building as much as possible. Incomplete drying is the most destructive and unhealthy result of a restoration. Microorganisms will thrive posing a long-term health risk to all occupants.

The **American Federation of Teachers** is a union of 1.7 million professionals that champions fairness; democracy; economic opportunity; and high-quality public education, healthcare and public services for our students, their families and our communities. We are committed to advancing these principles through community engagement, organizing, collective bargaining and political activism, and especially through the work our members do.

Randi Weingarten
PRESIDENT

Fedrick C. Ingram
SECRETARY-TREASURER

Evelyn DeJesus
EXECUTIVE VICE PRESIDENT



Assess the job

The first step to take before cleaning is to know as much as possible about the water that caused the flood or water damage. Important things to find out include the possible presence of:

- Sewage water contamination in the building;
- Any oil or chemical contamination of the water; and
- Extensive mold growth in the building.

This determination will help you select the type of personal protective equipment to use during the cleaning process and the type of cleaning important in the area.

Cleaning principles: general steps

Manage the source of water.

Remove all excess water; if available, use wet/dry vacuums with HEPA (high-efficiency particulate air) filters. The HEPA filter will help reduce exposure to microorganisms in the air.

Dry out the environment as rapidly as possible. If the relative humidity is high, drying will probably require mechanical air movers (big fans), dehumidifiers and air conditioning if available.

Discard any materials that have been wet for an extended period of time. The following materials should probably be discarded if they have been saturated for more than 48 hours:

- Books
- Papers
- Clothing
- Stuffed animals
- Carpeting and carpet pads
- Building materials made with any cellulose such as drywall or gypsum board, ceiling tiles, particle board, pressed wood, dirty insulation, etc.
- Vinyl wallcoverings

The general rule is to remove and dispose of any materials that are porous and made of organic material such as cellulose. They provide an excellent food source for mold and other microorganisms. When in doubt, throw it away. These materials should be placed in plastic bags and discarded in the regular trash.

Clean and scrub all nonporous surfaces with soap and water.

Wear proper personal protective equipment.

After working with mold-contaminated material, remove and clean personal protective equipment; wash yourself thoroughly, including hair, scalp and nails.

Mold, microorganisms and mold-contaminated materials

Mold—dead or alive—is highly allergenic. When exposed, sensitive individuals can develop serious respiratory symptoms, skin reactions and asthma attacks. Some individuals may develop new mold allergies when exposed to heavy concentrations of spores. Even nonallergic individuals can suffer from significant eye, skin and respiratory symptoms after exposure to high concentrations.

Doctors have diagnosed occupational dust toxic syndrome (ODTS)—a flu-like illness with fever—in workers who have cleaned large areas heavily contaminated with mold. ODTS can occur after a single heavy exposure to dust contaminated with mold. If you are cleaning in heavily contaminated areas, and develop fever and malaise, see a physician immediately.

Professional restoration cleaners are highly recommended for large mold cleanups (more than 30 square feet of mold contamination). They generally will do some mold testing—surface or bulk sampling—to determine if there is residual mold present and retreat areas when results are positive.

At a minimum, anyone who is engaging in mold cleanup should have the appropriate training and equipment as recommended by the U.S. Environmental Protection Agency and other federal agencies. The more mold to be cleaned up, the more training needed.

Cleaning strategies for mold

The first step for cleaning mold is to dry the building out and discard any building material and personal items (described above) that have been wet for longer than 24-48 hours, or any materials with visible mold growth. The difficult task will be to keep the relative humidity level in the building or house below 60 percent—a level that inhibits mold growth. This may be impossible to do in very humid conditions without air conditioning and/or aggressive dehumidification.

Personal protective equipment is recommended for all mold jobs—large and small. At a minimum, workers should wear:

- Goggles that do not have ventilation holes (so that mold spores will not get into the eyes);
- An N95 NIOSH-approved disposable respirator (a paper respirator that can be found in most hardware stores);
- Long gloves that reach the middle of the forearm (made of natural rubber, neoprene, nitrile, polyurethane or PVC);
- Long-sleeved shirts and long pants; and
- Coveralls (plastic or Tyvek disposable suits are preferable) if mold contamination is more than 30 square feet.

Use of methods to reduce dust in the area—misting (not soaking) areas before removing the mold.

Clean nonporous surfaces such as block walls with detergent and water. Soapy water will kill living and dead spores. Should disinfection be required, use of household bleach (sodium hypochlorite) sparingly or an EPA-registered disinfectant (preferably a disinfectant with hydrogen peroxide). Overexposure to bleach or disinfectants may trigger existing asthma or cause a new case of asthma. Using high concentrations of bleach can also put the people cleaning at risk of toxic chemical exposure.

Vacuum work areas with a HEPA vacuum and clean with a damp cloth.

Inspect and clean any duct work in a heavily mold-contaminated school, workplace or home (preferably done by a professional).

Inspect and clean unit ventilators (i.e., clearing drain pans; cleaning and disinfection of coils); filters should be changed if they are wet and dirty.

Inspect central heating, ventilation and cooling systems (air-handling units) before mold growth (coils and drain pans), and wet/dirty filters should be changed.

NOTE: Frequent rest breaks (at least 15-20 minutes each hour) may be called for if you are wearing a respirator. An N95 respirator or any negative pressure respirators put an additional strain on the cardiac and respiratory systems. Heat stress may become a problem if the building is not air conditioned or well-ventilated.

Extra precautions for sewage-contaminated water

Water contaminated with sewage or organic sewage material deposited by floodwaters requires additional considerations; pathogenic microorganisms hazardous to

human health may be present. For this reason, sewage water cleanup is best done by professionals.



Cleaning up sewage treatment water calls for these added measures:

Wet extraction methods to completely remove the sewage materials and all water used for cleaning up.

Disinfection with any one of the following U.S. EPA registered disinfectant such as:

- Quaternary ammonium compounds (0.4 to 1.6 percent), such as Ecolab Mikro-Quat
- Household bleach (sodium hypochlorite) diluted to 10 percent, such as Clorox
- Hydrogen peroxide (3 to 6 percent)
- Phenolics (0.5 to 5 percent), such as Ecolab Mikro-Bac II

Users must exercise caution in mixing disinfectants that may cause hazardous reactions. For instance, mixing chlorine-containing solutions such as bleach with ammonia will produce extremely toxic vapors.

These disinfectants will only work if they have the appropriate **“contact time”** with the contaminated surface. Most of these disinfectants require a minimum of 15-minutes contact time. Many also lose their ability to kill bacteria and microorganisms very rapidly. For instance, household bleach and quaternary ammonium compounds are quickly inactivated by contact with sewage material. Only the phenolics will leave a residue that suppresses microbial growth. However, phenolics are very corrosive and irritating.

It is important that users of these potentially toxic disinfectants wear the proper respiratory protection; users may need to wear a properly fitted respirator with an organic cartridge. Selecting the right gloves and other

protective clothing is also essential. If available, users should consult a safety data sheet for the disinfectant; it will give specific information on appropriate respirators, gloves and other protective measures for the product. Commercial products will also have important information on the labels.

Toxic contaminants in the cleanup

water

If you suspect that the flood or stormwater is contaminated with gasoline, oil or other chemical contaminants, you should not participate in the cleanup. Only well-qualified professionals should engage in chemical cleanup work. Chemical cleanups require that workers wear properly fitted special respirators equipped with chemical cartridges designed for the toxic contaminants. Other types of specialized personal protective equipment are required as well.

Evaluating the cleaning job

After a school, workplace or home is reoccupied, surveying occupants for sickness, allergy and sensitivity is probably one of the best ways to measure the success of the cleaning project. A high rate of these health complaints should trigger a reassessment and cleaning of the building.

Inspecting the building for visible mold growth and “musty” odors weeks and months after the cleanup will also alert occupants that there is a need for additional cleaning and remediation.

For more information, contact the health and safety team at 4healthandsafety@aft.org. [June 2022]