

After the Storm: Inspecting for Water Damage

After you return to a flooded home, it is important to find out the extent of moisture damage and water migration patterns in order to plan for repair work. This fact sheet will provide information about the inspection process and tools used. It also offers guidance about types of materials that might be restorable vs. those that should be discarded.

It is important to begin the drying process quickly to reduce mold growth. The longer structural assemblies and building materials are exposed to water or high humidity, the deeper the moisture penetrates, and the longer and more difficult the drying process. Some materials will have undergone permanent damage that could have been avoided with a more rapid response.

Important Notes

- Before entering a flooded basement:**
 - ◆ Turn off electrical supply at the meter
 - ◆ Turn off gas or fuel supplies
 - ◆ If they are inaccessible, call the utility company
 - ◆ **Do Not Go In** until a qualified electrician or fire marshal says it is safe to do so
- Remove contaminated materials (like those saturated with sewage) **before** using high velocity fans for drying!
- Some demolition may be needed to achieve initial drying. If **asbestos, lead, or PCBs** are present, additional precautions are required.

Inspection Process

Think of the inspection process as a fact finding mission. Whether you do your own inspection or hire a water restoration professional, the following elements should be included.

First, look at the current state of the building and the effects of the flood. Try to find the places where the water came in. Information should be obtained about pre-existing problems, previous work, building materials, and how the space is used.

Next, look for evidence of water intrusion and map the migration pattern—where the water flowed. Start with a visual inspection. Instruments like moisture meters and thermal imagery can be used by professionals to find moisture in inaccessible places. These will be discussed later.

Now you will have information to make a preliminary determination about what kind of repairs will be needed, and whether additional specialists should be called in.



Inspection Instruments

Moisture Meters

Moisture meters are instruments that measure the moisture content of building materials. Most materials have a known moisture content (MC). For example, in the Northeast, the normal MC of wood is around 7% in the winter and 12% in the summer. A moisture meter can be used to measure the MC of wood framing timbers to see if they are dry enough to put up new sheetrock. If the studs measure more than 16% MC, do not hang new sheetrock! Failing to heed this warning will likely result in mold growing on the back side of the sheetrock and into the wall cavity.

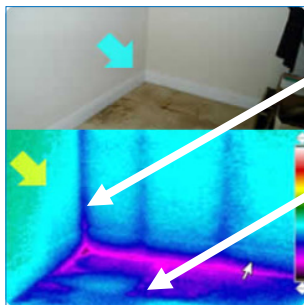
Moisture meters are designed to measure the MC in specific types of materials, like one for wood, another for sheetrock, and a third for concrete. Certain meters can be used for multiple material types. Be aware of this before buying this type of instrument.

Thermal Imagery, or Infrared Thermography

Thermal imaging is a rapid, non-destructive way to assess water damage in a building. Special cameras

using Infrared energy (IR) are used to view water damage in hidden locations in a building, like inside wall cavities and chases, behind exterior siding, and under roof assemblies. Wet material has a different temperature than surrounding dry material. These cameras detect the temperature difference and translate it into a picture, or thermal image.

Thermal imaging is a valuable tool in assessing water damage. This tool is best left to experienced professionals. Operating the camera is fairly easy, but it requires a great deal of skill and experience to interpret the images. It is also fairly expensive. If you plan on hiring a professional to perform this work, check their credentials and references carefully to be sure they are well qualified and have a good track record with moisture mapping using this tool.



Dark blue indicates damp studs and sub floor in this thermal image.

How To Use Moisture Information to Guide Restoration

The Institute of Inspection Cleaning and Restoration Certification (IICRC)'s S500, *Standard and Reference Guide for Professional Water Damage Restoration* has become the standard of care used by many health professionals and governmental agencies. According to this document, flood water contaminated with sewage is called category 3-black water.

The general recommendation has always been to discard all porous materials contaminated with black water. Questions have arisen about whether framing timbers and other building materials that have been contaminated by black water can be saved. Bacteria and viruses present in human and animal waste can potentially cause disease when they are alive. However, these organisms generally cannot survive outside of the body and will die within a few days. Contaminated building materials like framing timbers (studs) can be saved, cleaned, sanitized as long as the

moisture did not cause swelling, rotting, or structural failure. CT DPH recognizes that each case is unique. A professional assessment is encouraged if there are specific questions.

Note that after a flood, the following building materials cannot be restored— they must be thrown out:

- ◆ Particle board
- ◆ Oriented strand board (OSB) and plywood—if contamination penetrated into the material
- ◆ Sheetrock, ceiling tiles, other porous materials

The following materials might be restorable:

- ◆ Concrete
- ◆ OSB or plywood-maybe- if contamination is on surface only and those upper layers can be removed/ sanitized
- ◆ Wood and steel frame members- maybe
- ◆ Wood furniture— maybe, if the wood was sealed (paint, varnish, polyurethane, etc.), and contamination is on the surface.
- ◆ Pianos and pool tables— (a specialist should be hired)

How To Find A Water Restoration Professional

The State of Connecticut does not license or certify these professionals. However, several professional organizations offer certification. See below.

- ◆ Institute of Inspection, Cleaning and Restoration Certification: <http://www.iicrc.org/>
- ◆ Restoration Industry Association (Association of Specialists in Cleaning & Restoration): <http://www.restorationindustry.org/consumers>

Note that all home improvement contractors must be registered with the Connecticut Department of Consumer Protection (CT DCP). Go to CT DCP: <http://www.ct.gov/dcp> or call 860-713-6110 or 1-800-842-2649.

For more information, contact:
Connecticut Department of Public Health
Environmental & Occupational Health Assessment
Program
Tel: 860-509-7740
<http://www.ct.gov/dph/ieq>
<http://www.ct.gov/dph/mold>