



University of Vermont
Department of Physical Plant
Burlington, Vermont

WATER INTRUSION GUIDELINES

In accordance with:

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IIRC S520
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REVISED AND DISTRIBUTED BY:
THE UNIVERSITY OF VERMONT
DEPARTMENT OF PHYSICAL PLANT
TRAINING AND COMPLIANCE OFFICE

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I. Program Description

The purpose of this document is to provide guidance for UVM Staff and Faculty as well as response procedures for Training and Compliance (TCO) personnel to water intrusion events inside buildings. Although an expedient response is critical, taking short cuts can have undesirable consequences such as mold growth, mold discolored surfaces, and odor problems. Molds and fungi may cause allergic reactions in susceptible individuals as well as other potential health problems. This document provides a practical approach to handling water damage. These guidelines for addressing water intrusion issues are general and do not cover all possible situations. TCO should be consulted whenever there is a question that cannot be answered by these guidelines.

II. Categories of Waters Defined

Category 1 - Clean water from a sink overflow, broken water or steam line, or rainwater infiltration. This represents the lowest health risk to building occupants and clean-up crews. Building materials and furnishings damaged have the best potential for being salvaged. There is a **24 to 48** hour window of time for the response to damage. After this period of time, the amount of microbial growth begins to lower the water quality to that of category 2.

Category 2 - Storm drain backups, treated cooling water, some surface water, fire suppression systems, and discharges from equipment. Water in this category is in a large range between absolutely clean and absolutely contaminated. This water has a significant degree of contamination due to its source, from microbial growth, or from contamination after the initial release. Because of the additional contaminant in the water, materials damaged are much more difficult to salvage.

Category 3 - Highly contaminated water from sewers, drainage backups, and some surface water. This water will likely contain infectious viruses, bacteria, and parasites. It has the likelihood of causing disease or infection from direct or even indirect contact. This water may also contain toxic and allergenic materials.

III. Scope

Water intrusion events may impact various building construction materials such as, but not limited to, flooring materials, framing network, wallboard, insulation, and ceiling components. *For prompt corrective action of any water intrusion a work order to the Physical Plant needs to be submitted.*

Confirm with TCO that materials are negative for asbestos before disturbance. Please note that up to 24 sqft of wet materials, 10 sqft of moldy materials and approximately 5 gallons of water all can be handled by Physical Plant Zone Maintenance. If quantities exceed these amounts contact TCO through Service Operations Support.

Types of Water Intrusion Problems:

Roof Leaks, Pipe Breaks and Condensation:

- ✓ Water intrusion of this type usually results in water damaged ceiling tiles and damaged drywall. The first step in addressing the issue is to determine the source of the water problem.
- ✓ Water damaged ceiling tiles need to be replaced as soon as possible and never painted over to cover up water stains. Damaged tiles should not be left in place due to the high probability for mold growth. The wet or moldy tile should be removed and placed in a sealed bag to prevent the distribution of any spores. If greater than 10 sqft. of moldy ceiling tiles are involved, TCO should be contacted to assess the situation prior to initiating removal.
- ✓ Water damaged drywall will have to be assessed and possibly replaced. Wet carpet, if it has been wet for less than 48 hours, is wet due to category 1 water and if it can be completely dried as rapidly as possible, can usually be saved but this decision is made on a case by case basis.

Sewer Line Back-ups:

- ✓ Areas affected should have restricted access until the problem is addressed and the area cleaned.
- ✓ Once it is determined the problem has been corrected; clean-up of the affected area(s) can begin.
- ✓ Any porous item that has come into contact with sewage tainted water is considered contaminated and must be discarded. This includes carpet, drywall and ceiling tiles as well as other items such as books and paper products.
- ✓ Non-porous items can usually be cleaned and sanitized.

Moisture Intrusion through the Building Envelope:

- ✓ This problem will typically occur along exterior facing walls when some aspect of the wall's structural make-up has failed. Water will migrate through the wall over time from the exterior to the interior surface where paint damage will often result. Water trapped behind the paint film, wallpaper or items attached to the wall can lead to mold growth.
- ✓ These must be individually assessed so that a satisfactory corrective action can be formulated.

IV. Response and Communication by Training and Compliance Staff**1. Gather Information:**

- Survey the structure including pre-existing damage.
- Perform a moisture inspection and map the migration.
- Develop a preliminary determination.
- Confirm zone manager or supervisor is notified to fix or isolate problem as soon as possible.
- Eliminate the primary moisture source.

2. Determine extent of moisture and migration.

- Document extent of water migration within the structure, systems, and contents. (Photos as necessary).
- Inspect rooms adjoining wet areas.
- Use of Moisture Metering equipment
- Use thermal imaging devices to show flow patterns in hard to reach places
- Notify all applicable building contacts as needed.

3. Initiate cleanup/restoration.

- Remove surface water
- Establish a dry standard and a drying goal
- Based on availability of equipment and resources along with size and nature of the intrusion, TCO will whenever possible handle category 1 events.
- Service contractors should be used for any large area intrusions, category 2 and 3 releases, and as determined by the TCO staff.
- Ensure all TCO and/or contractors electrical equipment is supplied power through a GFI.
- Relocation of furnishings or other items in an effort to preserve unaffected or salvageable property.
- *Confirm Risk Management is notified for all losses over \$1000.00.*

4. Project Monitoring

- Drying equipment (fans and dehumidifiers) should be inspected once every 24 hours.
- Use moisture metering equipment to track and monitor progress. Results to be included in log.
- When performing restorative drying the moisture content of certain materials should be reduced to acceptable levels as shown below:

Material / Component	Moisture %
Drywall	12% or less
Hardwood Flooring	7-10 %
Framing Lumber	15-19 %

Table 1: Water Damage - Cleanup and Mold Prevention

Guidelines for Response to Clean Water Damage within 24-48 Hours to Prevent Mold Growth*

Water-Damaged Material	Actions
Books and papers	<ul style="list-style-type: none"> • For non-valuable items, discard books and papers. • Photocopy valuable/important items, discard originals. • Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet and backing - dry within 24-48 hours	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Reduce ambient humidity levels with dehumidifier. • Accelerate drying process with fans. • Replace if contaminated with Category 3 water.
Ceiling tiles	<ul style="list-style-type: none"> • Discard and replace. (Confirm Negativity for Asbestos)
Cellulose insulation	<ul style="list-style-type: none"> • Discard and replace.
Concrete or cinder block surfaces	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans, and/or heaters.
Fiberglass insulation	<ul style="list-style-type: none"> • Discard and replace.
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary. • Check to make sure under flooring is dry; dry under flooring if necessary.
Non-porous, hard surfaces (Plastics, metals)	<ul style="list-style-type: none"> • Vacuum or damp wipe with water and mild detergent and allow drying; scrubbing if necessary.
Upholstered furniture	<ul style="list-style-type: none"> • Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans, and/or heaters. • May be difficult to completely dry within 48 hours. If the piece is valuable, may wish to consult a restoration/water damage professional who specializes in furniture.
Wallboard (Drywall and gypsum board)	<ul style="list-style-type: none"> • May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace. • Ventilate the wall cavity, if possible. • Replace is unable to dry within 48 hours (Confirm Negativity for Asbestos) • Replace if contaminated with Category 3 Water. (Confirm Negativity for Asbestos)
Window drapes	<ul style="list-style-type: none"> • Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	<ul style="list-style-type: none"> • Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood floors.) • Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. • Wet paneling should be pried away from wall for drying.

* If mold growth has occurred or materials have been wet for more than 48 hours, consult Table 2 guidelines. Even if materials are dried within 48 hours, mold growth may have occurred. Items may be tested by professionals if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline. These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then Personal Protective Equipment and containment are required by OSHA. An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary. † If a particular item(s) has high monetary or sentimental value, you may wish to consult a restoration/water damage specialist.