Responding to Water Damage and Preventing Mold Growth

Overview
While mold is naturally occurring in the environment, excessive mold growth (e.g., fungal amplifications) in indoor spaces can cause structural and property damage, as well as lead to allergic reactions and other adverse health effects in building occupants. Since mold requires moisture to grow, it is important that leaks and other sources of moisture are repaired as soon as they are discovered. It is also imperative that building materials and other items that become water damaged are addressed as soon as possible (i.e., within 48 hours) using the guidelines in this Update in order to prevent excessive mold growth.

Applicability
This Update is intended to prevent fungal amplifications in buildings (both in occupied spaces and spaces under construction) by outlining the proper cleanup procedures for different types of water damage. These guidelines do not apply to areas where there is evidence of existing mold contamination. The procedures in this Update are separated into categories based on the type of water damage (i.e., clean vs. dirty water) and the amount of time (greater / less than 48 hours) that the materials have been wet.

Definitions
Clean Water includes steam, water known to be from a potable source (e.g., sinks, showers, sprinklers) and rain water.

Dirty Water is known or suspected to contain sewage, chemical or biological pollutants. Ground and flood waters should be considered dirty water when the exact source is unknown.

Responsibilities
Environmental Health and Safety (EHS) provides guidance on remediating (cleaning) water damaged areas and performs assessments to determine the potential for fungal amplification and the need for environmental testing or sampling.

Engineering and Maintenance (E&M) repairs or contains water infiltrations in a timely manner and cleans or replaces materials damaged by water using these guidelines.

Capital Planning / Project Managers ensures that contractors promptly remediate water damage in a manner consistent with these guidelines.

Building Occupants notify E&M of leaks and/or water damage as soon as they are discovered. Occupants at off-site locations (not serviced by E&M) must notify both the building manager for the location and EHS upon discovery of water damage.

Procedure
NOTIFICATIONS
Upon discovery of a leak or flood which has resulted in water damage, building occupants must contact E&M at 212-746-2288 immediately to address the source of water infiltration and EHS at 646-962-7233. Occupants at off-campus facilities not serviced by E&M must notify the building’s service provider for their space to address the source of water infiltration and EHS to assess the damage and assure that remediation activities are appropriate. If the event occurs in an unoccupied space (i.e., under construction), the Project Manager, or other responsible person, must notify EHS.

Note: Clean-up and repair activities in areas that include or impact NewYork-Presbyterian Hospital (NYP) space or any joint NYP and WCM space (i.e., covered under Article 28 of the New York State Public Health Laws) must be coordinated with NYP Epidemiology/Infection Control.
SAFETY PRECAUTIONS

Prior to commencing clean-up activities, the work area should be reviewed for potential safety hazards such as electrical hazards or unsafe structures. In addition, building materials that were either damaged as part of the water event or will need to be disturbed as part of the clean-up should be assessed for hazards such as asbestos or lead based paint and whether the water is clean or dirty. Contact EHS for assistance in assessing workplace safety hazards.

CLEAN WATER PROCEDURES

Once the source of the water has been identified and repaired, immediate action should be taken to identify all impacted areas and to minimize the spread. This may include actions to collect or contain the water such as damming or diverting it. Once the spill has been contained, all excess water should be extracted with pumps or wet-dry vacuums and drying encouraged by using dehumidifiers and fans/blowers. In addition to these measures, the following guidelines should be followed to address water damaged materials when the source of the damage was clean water and there is no evidence of mold growth.

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<th>Materials</th>
<th>Dry Within 48 Hours</th>
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| Carpet and backing, upholstered furniture and concrete or cinder block surfaces |  ▪ Remove water with water extraction vacuum.  
▪ Reduce ambient humidity levels with dehumidifier.  
▪ Accelerate drying process with fans. |
| Ceiling tiles and insulation |  ▪ Discard and replace. |
| Hard surface, porous flooring (Linoleum, ceramic tile, vinyl) |  ▪ Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.  
▪ Check to make sure underflooring is dry; dry underflooring if necessary. |
| Non-porous, hard surfaces (Plastics, metals) |  ▪ Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary. |
| Wallboard (drywall and gypsum board) |  ▪ 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. |
| Wood surfaces |  ▪ 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. |
| Books and papers |  ▪ 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 |  ▪ Carpets that are in good condition, show no evidence of mold growth (staining or odor) and do not have a porous underlayment/backing can be steam cleaned or shampooed with a disinfecting cleaner, dried and HEPA vacuumed.  
▪ Carpets that cannot be dried adequately or show evidence of mold growth must be discarded and replaced. |
| Upholstered furniture |  ▪ May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture. |
| Wallboard (drywall and gypsum board) |  ▪ Notify EHS of the condition.  
▪ Use a moisture meter to identify and mark all areas of water damage remaining after 48 hours.  
▪ Depending on the location, the extent of the water damage and the environmental conditions, it may be necessary to remove and replace all water damaged wallboard. |

DIRTY WATER PROCEDURES

Water damage caused by any source of water must be remediated as quickly and as thoroughly as possible in order to prevent fungal amplifications. However, when the water is contaminated, further actions are required than those listed in the previous section in order...
to minimize the risk of exposure to infectious or hazardous agents. If you know or suspect the source of water is contaminated with sewage, chemical or biological pollution, the guidelines below should be followed.

**Sewage / Biological – Work Procedures**

Cleanup of areas where there is significant water damage caused by sewage leaks or backups must have the following controls in place:

- Employees engaged in cleanup must have received both the Bloodborne Pathogens and Hazard Communications trainings.
- Employees engaged in cleanup must be equipped with the proper Personal Protective Equipment (PPE). Proper PPE includes waterproof gloves, boots and eye protection at a minimum. Contact EHS for assistance with selecting appropriate types of PPE.
- Cleanup methods must be selected that minimize the potential for exposure via the nose, mouth, and open wounds or by inhalation of aerosols or dusts. The work area should be contained in a manner that prevents the cross contamination of other areas.
- No eating or drinking in the contaminated area.
- Wash hands thoroughly after removing gloves and before leaving the work area.

**Sewage / Biological – Cleanup Procedures**

Once the source of the leak has been repaired and regardless of the amount of time in which materials have been wet, the following cleanup methods should be used in addition to those listed in the previous section:

- Discard (in a controlled manner) and replace all contaminated carpets, ceiling tiles, upholstered furniture and sheetrock.
- Clean all hard surfaces using a mild detergent and disinfect by rinsing with a 1/10 bleach to water solution.

**Chemical Procedures**

If you know or have reason to suspect that there is chemical contamination, contact EHS immediately for an assessment.

**POST CLEANUP PROCEDURES**

As soon as possible after the completion of any required remediation actions, the responsible person must notify EHS who will assess the area(s) to determine the potential for fungal amplification and the need for environmental testing or sampling.

**References**

U.S. Environmental Protection Agency, Mold Remediation in Schools and Commercial Buildings Available at: [http://www.epa.gov/mold/pdfs/moldremediation.pdf](http://www.epa.gov/mold/pdfs/moldremediation.pdf)

University of Minnesota, Department of Environmental Health and Safety, Managing Water Infiltration into Buildings. Available at: [http://www.dehs.umn.edu/iaq_fi.htm](http://www.dehs.umn.edu/iaq_fi.htm)