Mold Remediation Guidelines

Mold remediation keeps humans from harmful mold exposure in addition to preventing damage to building materials and furnishings. The purpose of these guidelines is to allow remediation managers to assess the extent of mold damage and determine whether the remediation should be managed by in-house personnel or outside professionals. The remediation manager can also use the guidelines to help design a remediation plan or to assess a plan submitted by outside professionals.

1. Investigate and evaluate moisture and mold problems

- ☐ Assess size (square footage) of moldy area.
- ☐ Consider the possibility of hidden mold.
- ☐ Fix small mold and moisture problems before they become larger.
- ☐ Select remediation manager for medium- or large-sized mold problems.
- ☐ Investigate areas associated with occupant complaints.
- ☐ Identify source(s) of water or moisture problem(s).
- ☐ Note type of water-damaged materials (e.g., wallboard, carpet).
- ☐ Check inside air ducts and air handling units.
- ☐ Consult a qualified professional throughout process if necessary.

2. Communicate with building occupants at all stages of process

- ☐ If necessary, designate contact person for questions and comments about medium- or large-scale remediation.

3. Plan remediation

- ☐ Use professional judgment to adapt or modify remediation guidelines to fit your situation.
- ☐ Plan to dry wet, non-moldy materials within 48 hours to prevent mold growth (see Table 1).
- ☐ Select appropriate cleanup methods for moldy items (see Table 2).
- ☐ Select personal protection equipment (PPE) to protect workers (see Table 2).
- ☐ Select proper containment equipment to protect building occupants (see Table 2).
- ☐ Select remediation personnel with the necessary experience and training to implement the remediation plan and use PPE and containment equipment as appropriate.

4. Remediate moisture and mold problems

- ☐ Fix moisture problems and implement repair plan and/or maintenance plan.
- ☐ Dry wet, non-moldy materials within 48 hours to prevent mold growth.
- ☐ Clean and dry moldy materials (see Table 2).
- ☐ Discard moldy, porous items that cannot be cleaned (see Table 2).

5. Determine When Remediation/Cleanup is Complete

- ☐ Identify and completely correct the source of the water or moisture problem.

- ☐ Complete mold removal—visible mold, mold-damaged materials and moldy odors should no longer be present.
- ☐ Revisit the site(s) after remediation to ensure there are no signs of moldy or musty odors, water damage or mold growth.

Table 1: Water Damage—Cleanup and Mold Prevention

These guidelines are designed to help avoid the need for remediation of mold growth by taking quick action before growth starts. If mold growth is found on the materials listed in Table 1, refer to Table 2 for guidance on remediation. Depending on the size of the area involved and resources available, you may need professional assistance to dry areas quickly and thoroughly.

Guidelines for Response to Clean Water Damage Within 48 Hours to Prevent Mold Growth*

Water-damaged material†	**Actions**
Books and papers	• Discard non-valuable books and papers. • Photocopy valuable or important items and discard originals. • Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet and backing—dry within 24-48 hours**§**	• Remove water with water extraction vacuum. • Reduce ambient humidity levels with dehumidifier. • Accelerate drying process with fans.
Ceiling tiles	• Discard and replace.
Cellulose insulation	• Discard and replace.
Concrete or cinder block surfaces	• Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans and/or heaters.
Fiberglass insulation	• Discard and replace.
Hard surface, porous flooring§ (Linoleum, ceramic tile, vinyl)	• Vacuum or damp wipe with water and mild detergent, allow to dry and scrub if necessary. • Dry any wet or damp underflooring.
Non-porous, hard surfaces (Plastics, metals)	• Vacuum or damp wipe with water and mild detergent, allow to dry and scrub if necessary.
Upholstered furniture	• Remove water with water extraction vacuum. • Accelerate drying process with dehumidifiers, fans and/or heaters. • Consult a restoration/water damage professional who specializes in furniture for valuable pieces, as furniture is difficult to dry completely within 48 hours.
Wallboard (Drywall and gypsum board)	• Dry in place if there is no obvious swelling and the seams are intact; otherwise, remove, discard and replace. • Ventilate wall cavity if possible.
Window drapes	• Follow laundering or cleaning instructions recommended by manufacturer.

Wood surfaces	• Remove moisture immediately and use dehumidifiers, gentle heat and fans for drying. • Use caution when applying heat to hardwood floors. • Clean treated or finished wood surfaces with mild detergent and allow to dry. • Pry wet paneling 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 OSHA requires specific PPE and containment procedures. Consult an experienced professional 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.

§ The subfloor under the carpet or other flooring material must also be cleaned and dried. See the appropriate section of this table for recommended actions depending on the composition of the subfloor.

Table 2: Guidelines for Remediating Building Materials with Mold Growth Caused by Clean Water*

Table 2 presents remediation guidelines for building materials that have, or are likely to have, mold growth. These guidelines are designed to protect the health of occupants and cleaning personnel during remediation and are based on the area and type of material affected by water damage or mold growth. Please note that these are guidelines and that some professionals may prefer other cleaning methods.

Although the level of PPE suggested in these guidelines is based on the total surface area contaminated and the potential for remediator and/or occupant exposure, professional judgment should always play a part in remediation decisions. These remediation guidelines are based on the size of the affected area to make it easier for remediators to select appropriate techniques and not on the basis of health effects or research showing there is a specific method appropriate at a certain number of square feet. The guidelines have been designed to help construct a remediation plan. The remediation manager should use professional judgment and experience to adapt the guidelines to particular situations. When in doubt, use caution and consult an experienced mold remediator for more information.

In cases in which a particularly toxic mold species has been identified or is suspected, when extensive hidden mold is expected (such as behind vinyl wallpaper or in the HVAC system), when the chances of the mold becoming airborne are estimated to be high or when sensitive individuals (e.g., those with severe allergies or asthma) are present, use a more cautious or conservative approach to remediation. Always protect remediators and building occupants from mold exposure.

Material or Furnishing Affected	Cleanup Methods†	Personal Protective Equipment	Containment
SMALL - Total affected surface area less than 10 square feet			
Books and papers	3	Minimum N-95 respirator, gloves and goggles	None required
Carpet and backing	1, 3		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (plastics, metals)	1, 2, 3		
Upholstered furniture and drapes	1, 3		
Wallboard (drywall and gypsum board)	3		
Wood surfaces	1, 2, 3		
MEDIUM - Total affected surface area between 10 and 100 square feet			
Books and papers	3	Limited or Full Use professional judgment - consider potential for remediator exposure and size of contaminated area	Limited Use professional judgment - consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1,3,4		
Concrete or cinder block	1,3		
Hard surface, porous flooring (linoleum, ceramic tile, vinyl)	1,2,3		
Non-porous, hard surfaces (plastics, metals)	1,2,3		
Upholstered furniture & drapes	1,3,4		
Wallboard (drywall and gypsum board)	3,4		
Wood surfaces	1,2,3		
LARGE - Total affected surface area greater than 100 square feet or potential for increased occupant or remediator exposure during remediation estimated to be significant			
Books and papers	3	Full Use professional judgment - consider potential for remediator/occupant exposure and size of contaminated area	Full Use professional judgment - consider potential for remediator exposure and size of contaminated area
Carpet and backing	1,3,4		
Concrete or cinder block	1,3		
Hard surface, porous flooring (linoleum, ceramic tile, vinyl)	1,2,3,4		
Non-porous, hard surfaces (plastics, metals)	1,2,3		

Upholstered furniture & drapes	1,2,4		
Wallboard (drywall and gypsum board)	3,4		
Wood surfaces	1,2,3,4		

Cleanup Methods

- **Method 1:** Wet vacuum—in the case of porous materials, some mold spores/fragments will remain in the material but will not grow if the material is completely dried. Steam cleaning may be an alternative for carpets and some upholstered furniture.
- **Method 2:** Damp-wipe surfaces with plain water or with water and detergent solution and scrub as needed. For wood surfaces, use wood floor cleaner.
- **Method 3:** High-efficiency particulate air (HEPA) vacuum after the material has been thoroughly dried. Dispose of the contents of the HEPA vacuum in well-sealed plastic bags.
- **Method 4:** Discard or remove water-damaged materials and seal in plastic bags while inside of containment, if present. Dispose of as normal waste and HEPA vacuum area after it is dried.

Cleanup and Biocides

Killing mold is not the only component to remediation. Dead mold is still allergenic, and some dead molds are potentially toxic, so eliminating the particles is also crucial. The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation; however, there are instances where professional judgment validates its use, such as when immune-compromised individuals are present. In most cases, it is not possible or necessary to completely sterilize an area because a background level of mold spores will always remain in the air in small quantities. These spores will not grow if the moisture problem in the building has been resolved.

If you choose to use disinfectants or biocides, always ventilate the area, asbiocides are toxic to humans and to mold. If necessary, bring in outdoor air with fans; however, when using fans, take care not to distribute mold spores throughout an unaffected area. Use appropriate PPE in addition to reading and following all label precautions. Never mix chlorine bleach solution with cleaning solutions or detergents that contain ammonia because this could produce toxic fumes.

Some biocides are considered pesticides, and some states require that only registered pesticide applicators use these products in schools. Make sure anyone applying a biocide is properly licensed if necessary. Fungicides are commonly applied to outdoor plants, soil and grains as a dust or spray—examples include hexachlorobenzene, organomercurials, pentachlorophenol, phthalimides and dithiocarbamates. Do not use fungicides developed for use outdoors for mold remediation or in any other indoor situation.

Personal Protective Equipment (PPE)

- Minimum: Gloves, N-95 respirator, goggles/eye protection
- Limited: Gloves, N-95 respirator or half-face respirator with HEPA filter, disposable overalls, goggles/eye protection
- Full: Gloves, disposable full body clothing, head gear, foot coverings, full-face respirator with HEPA filter

Containment

- Limited: Floor-to-ceiling polyethylene sheeting with slit entry and covering flap, maintain area under negative pressure with HEPA filtered fan unit and block supply/ return air vents within containment area
- Full: Two layers of fire-retardant polyethylene sheeting with one airlock chamber, maintain area under

negative pressure with HEPA filtered fan exhausted outside of building and block supply/return air vents within containment area.

*Use professional judgment to determine prudent levels of PPE and containment for each situation, particularly as the remediation site size, potential for expose and potential for health risks increase. Assess the need for increased PPE, if more extensive contamination is encountered than was expected during remediation. Consult Table 1 if materials have been wet for fewer than 48 hours and if mold growth is not apparent.

These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage or chemical/biological pollutants, then OSHA requires certain PPE and containment methods. Consult an experienced professional if you and/or your employees do not have expertise in remediating contaminated water situations.

†Select the method most appropriate to the situation. Molds gradually destroy things they grow on, so if mold growth is not addressed promptly, some items may be damaged such that cleaning will not restore their original appearance. If mold growth is heavy and items are valuable or important, consult a restoration/water damage/remediation expert. Please note that these are guidelines and that some professionals may prefer other cleaning methods.

Source: U.S. Environmental Protection Agency