



Avoiding Mold Hazards

A flood-damaged building requires special attention to avoid or correct a mold population explosion. Mold problems can result in damage to materials and health. The longer mold is allowed to grow, the greater the risk and the harder it is to remedy. As soon as the floodwaters recede and it is safe to return, don't delay cleanup and dry out.

Do-It-Yourself Mold Cleanup Steps

Follow these guidelines, and also refer to the EPA publication, *A Brief Guide to Mold, Moisture and Your Home*, at www.epa.gov/mold.

1. Wear protective gear during cleanup. People are mainly exposed to mold by breathing spores and skin contact. Wear gloves, goggles and a respirator rated N-95 or higher. Some types have valves to make it easier to breathe. A properly fitted half-face or full-face respirator with filter cartridges provides greater protection and comfort than the dust mask types.

Take photographs before cleaning up for insurance purposes, and get started. Do not wait for the claims adjuster to see your home before removing wet and moldy materials. Most homeowners' insurance policies do not cover mold damages or cleanup costs, but flood insurance may cover it.

2. Isolate work area and ventilate to outdoors. Disturbing mold colonies during cleanup can cause a huge release of spores into the air, so seal off the moldy areas from the rest of the house. Open windows, and don't run the central air system during cleanup. Tape plastic over air grilles, and drape plastic in the stairwell if the second story is dry and clean. If power is on, put a box fan in a window to blow out and exhaust mold-filled air to the outdoors.

3. Remove Mold Porous Materials:

Porous moldy or sewage-contaminated materials should be removed, put in plastic bags if possible and thrown away. To reduce the release and spread of mold spores, it is helpful to cover moldy material with plastic sheeting before removing it.

- Remove all flooded carpeting, upholstery, fabrics and mattresses right away. It's best to discard them, but if you hope to salvage a valuable item, have it cleaned, disinfected and dried quickly outside the home. Never reuse flooded padding.
- Remove all wet fibrous insulation, even if wallboard appears to be dry.

Wet insulation will stay wet far too long, leading to the growth of hidden unhealthy mold and decay fungi inside the walls. Cut wall covering above the level that was wet; as water can wick up above the flood level.

- It's best to remove all moldy porous materials, especially if there is heavy or long-term mold growth – including gypsum wallboard, processed wood products (particle board, chip board, etc.), ceiling tiles and paper products.
- Plaster, wood paneling and non-paper faced gypsum board walls that dried, are in good condition and have no insulation in the wall may be cleaned and disinfected to salvage them. It's best to remove multiple layers of paint on old plaster to aid drying. There is a risk of mold on the backside, however, that can release spores into the home through air leaks in the walls. If you choose to restore these materials, wait until thoroughly dry and then try to seal interior gaps with caulk.
- Remove all vinyl wallpaper, flooring and any other materials that hamper drying of framing toward the interior space. All interior side plastic sheeting or foil- faced insulation should be removed.

4. Clean and disinfect. Surface mold can be effectively cleaned from nonporous materials such as hard plastic, concrete, glass and metal; solid wood can also be cleaned since mold cannot penetrate solid wood but grows only on the surface. Cleaning should remove, not just kill, the mold, because dead spores can still cause health problems.

After cleaning, you may choose to use a disinfectant to kill any mold missed by the cleaning. If there was sewage contamination, disinfection is a must. If you disinfect, follow label directions and warnings, handle carefully, wear rubber gloves, and never mix bleach with ammonia or acids. Many disinfectants, including bleach, can kill molds but do not prevent re-growth of new colonies.

- Remove any sediment. Hose out opened wall cavities, if necessary.
- Wash dirty or moldy materials with non-phosphate all-purpose cleaners. Rough surfaces may need to be scrubbed. Rinse, but avoid pressure spray that can force water into materials.
- Use a HEPA filtered vacuum (not a regular vacuum) to remove dust and mold residue, if possible.
- Disinfect wall cavities and other materials after cleaning to kill any remaining fungi and bacteria.

Soil can make some disinfectants, including bleach, less effective. On colorfast, nonmetal surfaces, you can disinfect with a solution of 1/2-1 cup household chlorine bleach per gallon of water. Quaternary ammonia compounds may also be used as a disinfectant. Whatever disinfectant is chosen, check the label to make certain it has an EPA Registration Number. This assures that the product has met EPA requirements for disinfectants. DO NOT MIX DISINFECTANTS OR CLEANING

PRODUCTS. Do not use in the air conditioning system. You can use milder, less corrosive disinfectants, such as alcohols, phenolics and hydrogen peroxide on materials that may be damaged by bleach.

- 5. Consider a borate treatment to resist termites, decay and mold.**
Applying a borate treatment to wood framing can provide some resistance to termites, decay and mold. The type of borate solution that penetrates wood over time is more expensive but offers better protection. Other mold inhibitors such as latex zinc paints and fungicides also may help inhibit mold growth during drying. Do NOT apply sealants that can impair drying.
- 6. Air Out.** After cleaning and disinfecting, air out the building. Use fans in windows to pull mold spores to the outdoors.
- 7. Dry.** Dry all wet materials as quickly as possible. Close windows and air condition or heat, run fans and use a dehumidifier, if possible. If there is no power, keep windows open.
- 8. Remain on Mold Alert.** Continue looking for signs of moisture or new mold growth. New mold can form in as little as 2-3 days if materials stay wet. Wood and other materials that may look dry can still be wet enough to support new growth. If mold returns, repeat cleaning and, if possible, use speed drying equipment and moisture meters. Regrowth may signal that the material was not dry enough or should be removed.
- 9. Do not attempt restoration until all materials have dried completely.**
Wood moisture content should be 15% or less percent. Do NOT use vinyl wallpaper, oil-based paint or other interior finishes that block drying to the inside. Use a moisture meter, properly calibrated for the type of wood you are testing to determine the moisture content of the wood.
- 10. Restore with flood-resistant materials.** If possible, “wet floodproof” your home so it can better withstand a flood. Use closed-cell spray foam insulation in walls, or rigid foam insulating sheathing that does not absorb water. Choose solid wood or water-resistant composite materials. Elevate wiring and equipment. Consider removable, cleanable wainscoting or paneling. Use paperless drywall that does not provide a food source for mold. Use restorable flooring such as ceramic tile, solid wood, stained concrete, etc.

Adapted 8/30/2011 from: Mold Removal Guidelines For Your Flooded Home, by Claudette Reichel, Ed.D. Professor, Housing Specialist