

A Guide to Community-based, low cost Mold Remediation

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Introduction

There are many ways to address mold, and we are not experts or professionals. This document is a compilation of information gleaned from public health professors, mold remediation specialists, and experienced disaster responders. We are confident in our method and believe that it strikes a balance between cost and efficacy.

Mold requires water, heat, and food (any organic material, such as wood, mud, or dust) to grow. **You can't prevent heat or remove the food source from your home, but you can control your home's moisture level.** Mold surrounds us at all times, and it's impossible to completely eradicate it. Through proper mold remediation, you can reduce mold to a safe level.

Anyone engaging in mold remediation **must have the proper equipment and follow a safety protocol** to mitigate potential health risks (see, "Safety Guide on Mold Remediation") **Wear full PPE** (Personal Protective Equipment) at all times during mold remediation, **especially a P100 respirator.**

There are six steps to effective mold remediation: Gutting & Debris Removal; Drying; Mold Removal; Vacuuming; Disinfecting; and Sealing (optional but recommended).

Quick Definitions

Mold: a furry growth of minute fungal hyphae occurring typically in moist warm conditions, esp. on food or other organic matter.

Spore: a minute, typically one-celled, reproductive unit capable of giving rise to a new individual without sexual fusion, characteristic of lower plants, fungi, and protozoans.

1. HOUSE GUTTING & DEBRIS REMOVAL

Completely remove anything that is moist, moldy, and non-essential to your home's structural integrity: drywall; personal belongings; screws and nails; trim; interior doors; and any other **non-load bearing material.** Expose the

frame of the structure. **If you are unsure whether or not something is structurally essential or load-bearing, consult a professional builder.**

Measure the moisture level of the walls and ceilings. If the moisture level is **greater than 12%**, remove that material. A moisture meter is an essential tool to accurately determine what likely has fungi growth. Like any tool, moisture meters vary in price and quality. Cheap moisture meters are typically unreliable. One with a depth sensor is generally more accurate than one that takes only a surface reading. A quality moisture meter can cost \$350.

For extensive information, see “How to Demo and Gut Safely.”

2. DRYING

Dry the remaining building materials. Even if wood may appear to be dry on the surface, it may still hold some internal moisture. Any building material with a moisture level **greater than 12%** can grow mold.

You can dry a building in several ways, varying in price and efficacy:

- **Cross Ventilation:** Open a window on each side of the affected space and place an outward-blowing fan in one of these windows. This method takes a lot of time but is inexpensive and easy.
- **Dehumidifier:** Using a dehumidifier greatly decreases drying time. It is important that the area stays enclosed. Residential-grade dehumidifiers (\$100 – \$300) have a limited water capacity, requiring the reservoir to be emptied frequently (depending on the size of the reservoir and temperature of the space). Commercial dehumidifiers are **far more effective and energy-efficient**. The drawback is their high cost (\$1500–3000). The temperature of a space greatly affects a dehumidifier’s efficiency: **cold spaces take longer to dry than warm spaces**. Check the manual to find the minimum operating temperature.
- **Heating Source:** This is an efficient drying method, though there are several factors to consider. Moisture needs to escape. If the structure remains closed, moisture will condense on windows and any other cold surfaces. **If you heat an enclosed area without ventilation, mold will thrive**. Opening a window – ideally one close to the ceiling – allows moisture to escape easily. Open a lower window opposite the first for increased ventilation. **Vent gas heaters according to user manual to prevent carbon monoxide poisoning**. Combining a heat source with a dehumidifier or fan is the fastest way to dry a structure.

3. MOLD REMOVAL

There are a variety of methods and tools for mold removal. As you remove mold, the spores become airborne. **Cross-Ventilate.** Work from the top to the bottom. **Scrub or grind** the affected area to remove visible mold. Afterwards, allow the spores to settle for **at least 30 minutes** before proceeding to the next step: vacuuming.

For mold removal, we recommend the following tools:

- **Steel Wire Brushes.** Wire brushes are inexpensive, effective, come in a wide variety of sizes and shapes, and can reach many different areas. However, they're slow and labor-intensive.
- **Angle Grinder.** These are fast and effective. At any hardware store, you can find a wire brush cup attachment for this tool. It is a **dangerous high-powered tool** and users must first be trained. It also pushes a lot of air and can send spores everywhere. HEPA filter-compatible shop vacuum attachments for angle grinders are available and highly recommended. **DO NOT use Non-HEPA filters**, which disperse spores back into the air.
- **Steel Studs and Concrete:** Mold will not grow on **clean** concrete and steel. However, **any buildup of organic material** (e.g. dust, mud, dirt, etc.) **enables mold growth.** Wipe steel studs with a rag and detergent (see Section 5) to remove mold. Wire push brooms work well on moldy concrete slabs.

4. VACUUMING

Vacuum **all surfaces**, including: studs; sheathing; floors; crevices; ceilings; and walls. **Work from the top to the bottom.** The vacuum **must be equipped with a HEPA filter.** If you notice a decrease in the vacuum's performance, take the whole unit outside. Remove the filter, and carefully shake it out in a trash bag. **Do not shake the filter into the open air.** The spores can travel and affect your neighbors' homes.

5. DISINFECTING

Even if you can't see any more mold, **spores** still remain. Mix warm water with a mild dish detergent. Using rags or other cloth, **Wipe down the entire affected area.** Change out dirty cloths for fresh ones often. Change your water/detergent mix often. You are both disinfecting the surfaces **and removing dead or live mold spores from the house.** Think of it as wiping a table clean.

Surfaces that were touched by flood water or sewage may need disinfection. **Bleach kills mold and bacteria from raw sewage on non-porous surfaces**

(metal, hard plastics, ceramic, etc.). **It will not kill or remove mold from porous surfaces (e.g. wood).** If you choose to use bleach, mix one cup household bleach with two gallons of water. **DO NOT** use full-strength bleach or mix with other cleaning products. Note that bleach – a liquid – may encourage mold growth on wood by adding moisture into your home.

Commercial mold remediation disinfectants are available. Investigate toxicity; handling; efficacy; and cost of commercial disinfectants before using.

Steel Studs: Salt water left from the flood will corrode steel studs. Ensure that they are wiped down thoroughly.

6. SEALING (Recommended)

To inhibit mold growth, seal all porous surfaces with a latex-based primer. Before applying primer, use your moisture meter to ensure that the wood is dry. Primer is best applied with a paint sprayer but can also be brushed or rolled on. Most hardware stores stock basic latex-based primers.

Historically, lime-based whitewashes have been used to seal wood and inhibit mold growth. Whitewashing is inexpensive but less reliable.

Appendix

- A.** Safety Guide on Mold Remediation
- B.** How to Demo and Gut Safely
- C.** Tool Recommendations for Mold Remediation