

# MOLD



## in your home?

**Protect your health and investment**



# Introduction

**Without question,** mold is a source of indoor air pollution and, in large amounts, may cause mild to serious health problems. Mold can also cause structural damage to homes, leading to costly repairs and affecting home resale prices.

Should you panic? *No.*

Should you be concerned? *Yes.*

### What is mold?

Molds are any of several types of fungi and can be found almost anywhere. Particles of mold too small to be seen are present in indoor and outdoor air. Molds can grow on many substances where moisture is present, including wood, paper, carpet, insulation and foods.

In nature, molds help to break down dead materials and can be found growing in soil, on plant matter, and on other organic matter. Molds



*Mold on strawberries.*

produce microscopic cells called spores, which spread easily through the air. Mold spores act like seeds, forming new mold growth when they find the right conditions: moisture and nutrients.

### Why should I be concerned about mold in my home?

Mold should not be permitted to grow and multiply indoors. When this happens, health problems can occur and building materials, goods and furnishings may be damaged.



*Mold damage.*

### What are some of the health effects?

Scientific evidence links mold and other factors related to damp conditions in homes and buildings to asthma symptoms in some people with the chronic disorder, as well as coughing, wheezing, and upper respiratory tract symptoms in otherwise healthy people. People are mainly exposed to mold by breathing spores or other tiny fragments of mold. The types and severity of symptoms depend, in part, on the extent of an individual's exposure, age, and his or her existing sensitivities or allergies.

Although other and more serious problems can occur, people exposed to mold commonly report problems such as:

- Nasal and sinus congestion
- Cough
- Wheezing/breathing difficulties
- Sore throat
- Skin and eye irritation
- Upper respiratory infections

# Home investigation

### How do I tell if I have a mold problem in my home?

**Investigate.** The most practical way to find a mold problem is by using your eyes to look for mold growth, and by using your nose to locate the source of a suspicious odor. If you see mold or if there is an earthy or musty smell, you should assume a mold problem exists. Other clues are signs of excess moisture or the worsening of allergy-like symptoms. While investigating your home:

- Look for visible mold growth, which may appear cottony, velvety, granular or leathery, and have varied colors of white, gray, brown, black, yellow or green. Mold often appears as a discoloration, staining, or fuzzy growth on the surface of building materials or furnishings.
- Search areas with noticeable mold odors.
- Look for signs of excess moisture or water damage. Look for water leaks, standing water, water stains, and condensation problems. For example, do you see watermarks or discoloration on walls, ceilings, carpeting, woodwork or other surfaces.



*Condensation can be a warning sign of mold problems.*

- Search behind and underneath materials (carpets and pads, wallpaper, vinyl flooring, sink cabinets), furniture, or stored items, especially things placed near outside walls or on cold floors.



*Search behind and underneath materials such as carpets, wallpaper, and insulating materials.*

Sometimes destructive techniques may be needed to inspect and clean enclosed spaces where mold and moisture are hidden; for example, opening up a wall cavity.

### Should I test for mold?

In most cases, testing for mold is not necessary. Instead, you should simply assume there is a problem whenever you see mold or smell mold odors. Hiring a contractor to test for mold could use up resources that are needed to correct moisture problems and remove existing mold growth.

Sometimes mold growth is hidden and difficult to locate. In such cases, a combination of outdoor and indoor air samples and material samples may help determine the extent of contamination and where cleaning is needed. However, mold testing is rarely useful for trying to answer questions about health concerns.

*The N.H. Department of Environmental Services does NOT test for mold.*



*Search your basement for signs of excess moisture or water damage when investigating your home for mold.*

### Are some molds more hazardous than others?

Some types of mold are more hazardous because they can produce chemical compounds called mycotoxins. They do not, however, always do so. Molds that are able to produce toxins include some common types. In some circumstances, these toxins may cause more serious health problems. Moreover, wet surfaces themselves may cause chemicals and particles to be released from building materials, which may be the source of health problems as well. Regardless of whether mold produces toxins, all indoor mold growth is potentially problematic and should be removed promptly.



*Look for water stains on walls, ceilings, woodwork and other surfaces.*

# Clean-up & Removal

To clean up and remove indoor mold growth, follow steps one through six as they apply to your home.

**1. Identify and fix the moisture problem.** The most important step in solving a mold problem is to identify and correct the moisture sources that allowed the growth in the first place. Common indoor moisture sources include:

- Flooding
- Condensation (caused by indoor humidity that is too high or surfaces that are too cold)
- Movement through basement walls and slab
- Roof leaks
- Plumbing leaks
- Overflow from tubs, sinks or toilets
- Firewood stored indoors
- Humidifier use
- Inadequate venting of kitchen and bath humidity
- Improper venting of combustion appliances
- Failure to vent clothes dryer exhaust outdoors, including electric dryers
- Line drying laundry indoors
- House plants; watering them can generate large amounts of moisture

To keep indoor surfaces as dry as possible, try to maintain the home's relative humidity between 30-50 percent year-round. You can purchase devices to measure relative humidity at some home supply stores.

Ventilation, air circulation near cold surfaces, dehumidification, and efforts to minimize the production of moisture in the home are all very important in controlling high humidity that frequently causes mold growth in warm and humid weather.

**2. Begin drying all wet materials as soon as possible.** For severe moisture problems, use fans and dehumidifiers and move wet items away from walls and off floors.

**3. Remove and dispose of mold**



Take steps to protect yourself. Use an N-95 or equivalent dust mask, rubber gloves, eye goggles, and disposable clothing.

**contaminated materials.** Items that have absorbed moisture (porous materials) and that have mold growing on them need to be removed, bagged and thrown out. Such materials may include sheet rock, insulation, plaster, carpet/carpet pad, ceiling tiles, wood products (other than solid wood), and paper products. Non-porous materials with surface mold growth may be saved if they are cleaned well and kept dry (see Step 4).

**Take steps to protect yourself.** The

amount of mold particles in air can increase greatly when mold is disturbed. Consider using protective equipment when handling or working around mold contaminated materials.

The following equipment can help minimize exposure to mold:

- Rubber gloves
- Eye goggles
- Outer clothing (long sleeves and long pants) that can be easily removed in the work area and laundered or discarded.
- Medium or high efficiency filter dust mask; at a minimum, use an N-95 or equivalent dust mask. These can be found at safety equipment suppliers, hardware stores, or some other large stores that sell home repair supplies.

**Take steps to protect others.** Plan and perform all work to minimize the amount of dust generated. The following actions can help minimize the spread of mold spores:

- Hang plastic sheeting to separate the work area from the rest of the home.
- Enclose all moldy materials in plastic bags or sheets before carrying through the home.
- Remove outer layer of work clothing in the work area and wash separately. Disposable clothing is recommended during a mold-removal project greater than 10 square feet in size.
- Damp-clean the entire work area to pick up settled contaminants in dust.

**4. Clean surfaces.** Surface mold growing on non-porous materials such as hard plastic, concrete, glass, metal, and solid wood can usually be cleaned. Cleaning must remove and capture the mold contamination, because dead spores and mold particles still cause health problems if they are left in place.

- Thoroughly scrub all contaminated surfaces using a stiff brush, hot water and a non-ammonia soap/detergent or commercial cleaner.
- Collect excess cleaning liquid with a wet/dry vacuum, mop or sponge.
- Rinse area with clean water and collect excess rinse water. Discard excess wet, cleaning materials properly. Items that can't be cleaned should be sealed in plastic bags and disposed of as normal waste.

**5. Disinfect surfaces, if desired.**

After cleaning all visible mold and other soiling from contaminated surfaces, a disinfectant may be used to kill mold missed by the cleaning.

- Mix  $\frac{1}{4}$  to  $\frac{1}{2}$  cup bleach per gallon of water and apply to surfaces where mold growth was visible before cleaning. The solution can be applied with a spray bottle, garden sprayer, sponge, or other method.
- Collect any run-off of bleach solution with a wet/dry vacuum, sponge or mop. Discard excess wet, cleaning materials properly. However, do not rinse or wipe the bleach solution off the areas being treated; allow it to dry on the surface.

Always handle bleach with caution.



The most important step in solving a mold problem is to identify and correct the moisture sources that allowed the growth in the first place.

Bleach can irritate the eyes, nose, throat and skin. *Never* mix bleach with ammonia – toxic chlorine gas may result.

Open a window or door to provide fresh air while disinfecting. Protect skin and eyes from contact with bleach. Test solution on a small area before treatment, since bleach is very corrosive and may damage some materials.

**6. Remain on MOLD ALERT.** Continue looking for signs of moisture problems or the return of mold growth. Be particularly alert to moisture in areas of past growth. If mold returns, repeat cleaning steps and consider using a stronger solution to disinfect the area again. Mold returning may signal that the material should be removed or that moisture is not yet controlled.

**When can we rebuild?**

Rebuilding and refurbishing must wait until all affected materials have dried completely. Be patient. It takes time to dry out wet building materials. A moisture meter may help measure drying progress.

**Can ozone air cleaners remove indoor mold?**

Some air cleaners are designed to produce ozone, which is a strong oxidizing agent and a known irritant of the lungs and respiratory system. Studies have shown that ozone, even at high concentrations, is not effective at killing airborne mold or surface mold contamination. Health experts do not recommend the use of ozone to address mold or any other indoor air problems.

## For more information

More information on indoor air quality is available from the U.S. Environmental Protection Agency's website at [www.epa.gov/iaq](http://www.epa.gov/iaq), or contact EPA Region 1 at (888) 372-7341.

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