

Health Problems from Mold

We are exposed to many kinds of mold both inside and outside the house. The exposure is greater in damp or wet conditions, especially when timely drying out does not have a chance to occur.

Of the thousands of molds that exist, some are known allergens (aggravating or causing skin, eye and respiratory problems) and a few molds produce harmful mycotoxins that can cause serious problems. But all molds, in the right conditions and high enough concentrations, are capable of adversely affecting human health.

The potential for health problems occurs when people inhale large quantities of the airborne mold spores. For some people, however, a relatively small number of mold spores can cause health problems. Infants, children, immune-compromised patients, pregnant women, individuals with existing respiratory conditions and the elderly are at higher risks for adverse health effects from mold.

Serious Health Problems from Mold Exposure

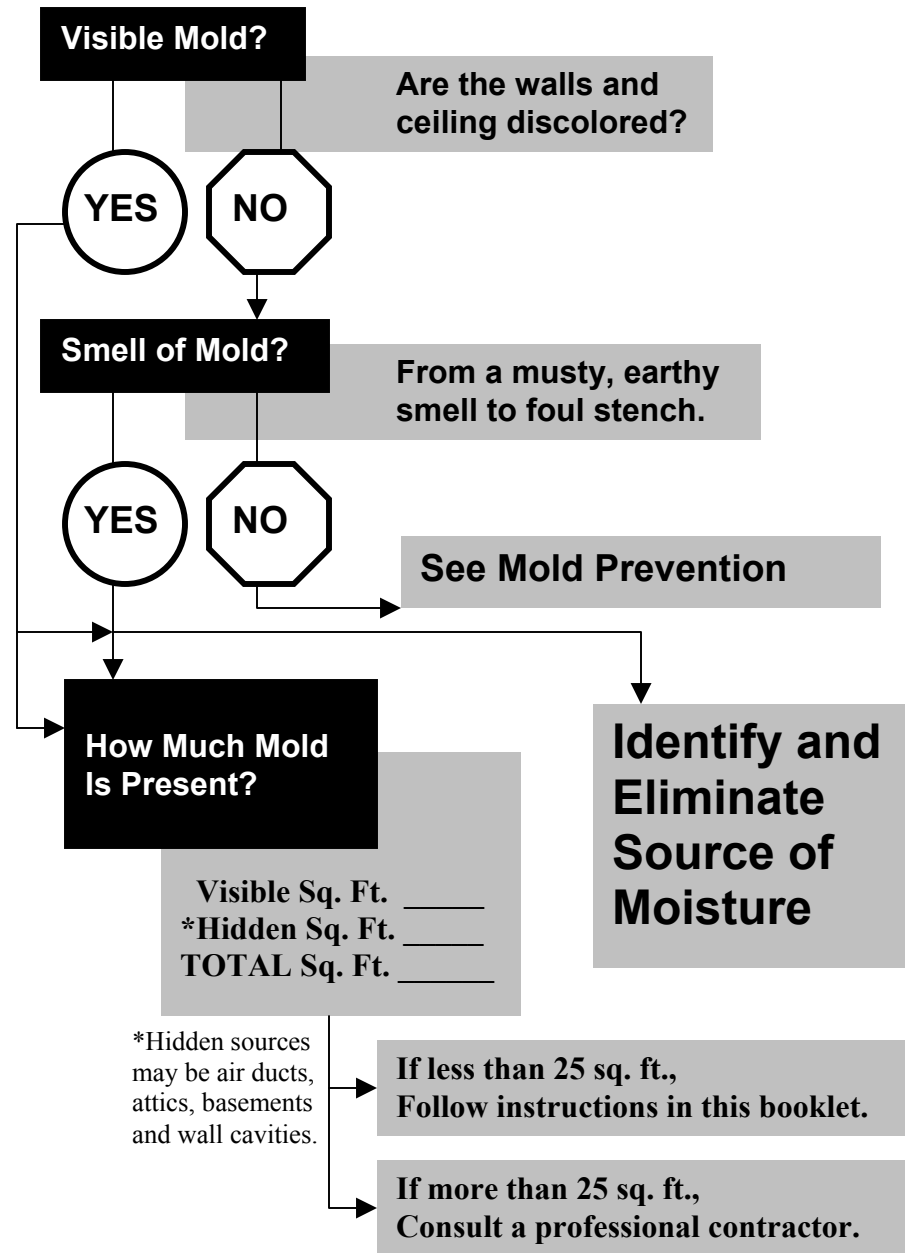
Typical symptoms reported from mold exposure include:

- Respiratory problems – wheezing, asthma attacks, etc.,
- Nasal and sinus congestion or dry, hacking cough
- Eye irritation – burning, watery, redness
- Nose or throat irritation – sneezing fits, bloody noses
- Skin irritations – rashes or hives
- Nervous system – headaches, memory loss, mood changes
- Aches and pains

The more serious health problems have been associated with *Stachybotrys atra*, a highly toxic mold. The mold is greenish-black and slimy, resembling tar or black paint. *Stachybotrys* typically grows only on repeatedly wetted materials that contain cellulose like paper and ceiling tiles, and any kind of wood. In most cases, this mold can be removed by a thorough cleaning with a 10% bleach solution. Severe mold infestations may require the assistance of a professional with experience in dealing with *Stachybotrys*.

If mold exposure is unavoidable, sensitive people should wear tight-fitting masks or respirators.

Removing Mold From Your Home



Solutions to Mold Problems

Materials You Will Need

- Gloves
- Buckets
- Scrub Brush
- Broom, Mop
- Non-ammonia detergent, soap or commercial cleaner (phenolic or pine-oil based)
- Disinfectant Chlorine bleach – a 10% solution = 1-1/4 cup bleach to 1gallon water
- Mask (Painter's or respirator)
- Trash Bags
- Wet-Dry Shop Vacuum
- Sponges, Rags

Dry Out a Water or Mold Damaged House

Turn off main power if wiring is wet or moldy. Have electrician check the house's electrical system before turning power on again.

Open the house to fresh air when the humidity is lower outside than inside.

Use fans and dehumidifiers to remove excess moisture unless mold has already started to grow (fans may spread existing mold).

Use the furnace only if the ducts have not been inundated (any forced air central heating ducts that have come in contact with water or mold should be professionally checked).

Remove all wet items such as furniture, rugs, bedding, toys and carpeting.

Discard soaked or moldy carpeting! Clean and disinfect other items.

Discard all possibly contaminated food products – anything not in a watertight container.

Interior Walls and Ceilings: Remove all wet or contaminated porous materials such as ceiling tiles, Sheet-rock, and wood by-products. If wallboard is soaked, remove to a foot above the water mark and discard.

Drain walls by removing baseboard and drilling holes near floor.

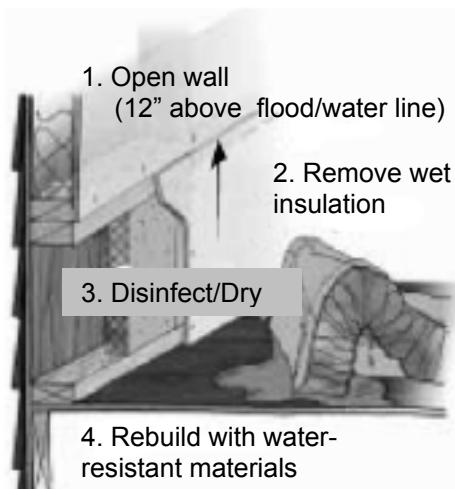
Dry panel-type wall by pulling the bottom edge out from studs.

Check interior of the wall for hidden mold.

Floors and Exterior Walls:

Remove all wet insulation.

Discard all but rigid insulation, which can be reinstalled after disinfecting and drying.



Cleaning and Disinfecting

Before you begin:

- Make sure the working area is well ventilated.
- Wear gloves and a mask; protect your eyes.
- If mold is present, clean a small test patch. If you feel your health is adversely affected, consider hiring a professional to carry out the work.
- Disinfectants are intended to be applied to *already cleaned* materials.

Hard Surfaces: Wash items such as metal, glass, solid wood, plastic and other nonporous materials with a non-ammonia detergent and hot water.

Use a stiff brush on rough surface materials such as concrete.

Use a Wet-Dry shop vacuum to remove water and clean items such as studs or exposed wood framing.

Disinfect all cleaned surfaces with a 10% bleach solution (1-1/4 cups bleach in one gallon of water). Let the solution stay on the surface for at least 10 minutes before rinsing with clear water or allowing to dry.

Porous Materials: This includes upholstered furniture, rugs, bedding, clothing, curtains, books and papers and furniture made of pressed particle materials. Deciding whether or not to keep a contaminated item? Remember, **when in doubt, throw it out.** If an item has been wet for less than 48 hours, it may be able to be cleaned and disinfected with phenolic or pine-oil cleaner. It should then be completely dried and monitored for several days for any fungal growth and odors – if any mold develops, discard the item.

Allow the wet or contaminated area to dry completely (usually two to three days) before beginning to rebuild or replace the damaged items.

Some General Cautions

- Exercise caution in cleaning and disinfecting molds because they release mold spores when disturbed. Wear gloves and a mask.
- Never mix bleach with ammonia; fumes from the combination are toxic.
- When discarding items contaminated with mold, use extreme caution or hire a professional.

The Problem With Mold

Molds are fungi – simple microscopic organisms that thrive anywhere there is a moist environment. Mildew is fungi that grows on plants, but the name is commonly used to refer to the discoloration on walls and bathroom surfaces caused by mold. Molds are a necessary part of the environment; without them, leaves would not decay and aspects of soil enrichment could not take place. It is the ability to destroy organic materials, however, that makes mold a problem for people – in our homes and in our bodies.

Molds grow on wood products, ceiling tiles, cardboard, wallpaper, carpets, drywall, fabric, plants, foods, insulation, decaying leaves and other organic materials. Mold growths, or colonies, can start to grow on a damp surface within 24 to 48 hours. They reproduce by spores – tiny, lightweight “seeds” that travel through the air.

Molds digest organic material, eventually destroying the material they grow on, and then spread to destroy adjacent organic material. In addition to the damage molds can cause in your home, they can also cause mild to severe health problems. See the HEALTH section on mold-related health problems.

Mold In Your Home?

If your home has water damage due to –

- flooding
- sewage backup from flooding in the area
- plumbing or roof leaks
- damp basement or crawlspace
- overflows from sinks or bathtub
- high humidity from steam cooking, dryer vents, humidifiers

– **mildew and mold** will develop within 24 - 48 hours of water exposure. Even worse, it will continue to grow until steps are taken to eliminate the source of moisture and effectively deal with the mold problem.

Use the diagram on the facing page to assess the extent of mold in your home. Then refer to the SOLUTION section for steps you need to take to remedy the problem. Also refer to the PREVENTION section for tips on keeping mold out of your home in the future.

Mold Prevention

There is no practical way for you to eliminate all of the molds and mold spores in the indoor environment. But there are many ways to help control moisture and mold growth in your home.

Stop the Water

- Fix leaks in pipes, and any damp area around tubs and sinks, so that biological pollutants don't have growing environments.
- Rebuild, or retrofit, with water-resistant building materials such as tile, stone, deep-sealed concrete, galvanized or stainless steel hardware, indoor/outdoor carpeting, waterproof wallboard, water-resistant glues and so on.
- Prevent seepage of water from outdoors into your house. Rain water from gutters or the roof needs to drain away from the house. Ground around the house needs to slope away to keep basement and crawl space dry.
- Cover dirt in crawl spaces with plastic to prevent moisture from coming from the ground. Ventilate the area as much as possible.

Keep It Clean

- Clean fabrics often and keep them dry. Soil promotes mold growth.
- Store clean fabric items in well-ventilated areas.
- Consider having air ducts cleaned if you suspect mold exists on the inside surface of the duct or if duct insulation has been wet.

Keep It Dry

- Reduce the moisture in the air with dehumidifiers, fans and open windows or air conditioners, especially in hot weather. Do NOT use fans if mold may already exist; a fan will spread the mold spores.
- Try to keep the humidity in your home below 40%.
- In moisture-prone areas, choose carpets of man-made fibers.
- Reduce potential for condensation on cold surfaces by insulating.

Disinfect It

- Routinely check potential problem spots like the bathroom and laundry for moldy odors.
- Disinfect often with a 10% solution of bleach – 1-1/4 cup of bleach to a gallon of water.

For More Information on Mold

An excellent publication from the American Red Cross and the Federal Emergency Management Agency (FEMA) is *Repairing Your Flooded Home*. This source of comprehensive information is available free from

FEMA Publications
P.O. Box 70272
Washington, DC 20024

Local information and/or assistance is available through your county or city. Contact any of these agencies or departments: Health, Social Services, Environmental Health or Housing.

More information on cleanup after a flood and ways to reduce damages from future disasters can be found at www.fema.gov/fima.

The Environmental Protection Agency (EPA) has an extensive listing of resources on mold and indoor air quality in general: www.epa.gov/iaq. Click on Molds and Moisture.

The EPA website describes the importance to your health of cleaning up mold in your home after a flood:

During a flood cleanup, the indoor air quality in your home or office may appear to be the least of your problems. However, failure to remove contaminated materials and to reduce moisture and humidity can present serious long-term health risks. Standing water and wet materials are a breeding ground for microorganisms, such as viruses, bacteria, and mold. They can cause disease, trigger allergic reactions and continue to damage materials long after the flood.

For an electronic version of this brochure, on the Internet visit: www.fema.gov/regions/v/



Mold and Mildew

Cleaning Up Your Flood-Damaged Home



FEMA