

How Housing Matters

A home without mold is a healthy home

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Mold

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What Is Mold?

Mold is a *fungus*. A fungus is an organism that lives by decomposing and absorbing the organic matter on which it grows. Mold is natural and it is everywhere.

Molds reproduce by *spores*. The spores, which are microscopic cells, are released into the air. Mold spores can remain dormant for long periods of time, until the right growing conditions are available.

What Are the Health Problems Caused by Molds?

There are many factors that make it very difficult to study the health effects of mold.

- There are numerous varieties of molds and different types produce different chemicals or biological products that can affect people physically.
- The *amount of exposure* or the *length of time* of exposure will influence the health effects.
- Different people have different *sensitivity* to molds.
- Once you have been exposed to mold, you are sensitized to future exposures.
- Mold can produce health effects even when it is dead or dormant.

Generally, the potential health effects from molds fall into three broad categories:

- *Irritants* -- Exposure to mold can cause irritation to eyes, nose, and upper airways.
- *Allergens* -- Some people are allergic to specific varieties of molds.
- *Asthma* -- People who have asthma may be allergic to one or more molds, and exposure to this mold can trigger an asthma attack.

How Does Mold Grow in Buildings?

In buildings, molds are most commonly found on or in cellulosic building materials, such as paper, wood, or natural fiber textiles. Molds can also grow on non-cellulose materials, such as plastic, metal, or concrete with a layer of organic dirt on the surface of the material. This layer of organic dirt can be things such as residue from skin cells, grease, oils, food waste, or insect droppings.

Mold can grow very quickly. The spores of some varieties can begin to germinate in as little as four to 12 hours. When building materials get wet, mold can become extensive within 24 to 48 hours.

To prevent mold problems in our homes, we need to understand how mold grows and to learn to control the conditions that lead to mold growth. In order to grow, molds require:

- Oxygen.
- Adequate moisture to germinate and then adequate moisture to maintain growth.
- A food source, such as dead organic material, to digest.
- Appropriate temperature range, usually 40 - 100 degrees Fahrenheit.

Most places in our homes have an adequate food and oxygen supply at appropriate temperatures for mold growth. Therefore, **to control mold growth in our homes, we must control excess moisture and water!**



What Is the Safe Method to Clean-Up Mold?

Environmental or mold experts talk about mold *remediation*:

- *Finding and fixing the underlying water problem* that led to the mold growth, including leaks, flooding, and condensation.
- *Cleaning and removing mold* from materials and surfaces in the home.
- *Disposing of mold-contaminated materials* that cannot reasonably and successfully be cleaned.

For *small areas of mold* (less than about 10 square feet):

The following is the recommended method for mold cleaning for most household materials. For gypsum wall board (dry wall), *skip steps 1 and 2*.

1. Using a wet vacuum, clean the surface to remove all visible mold. If needed, dampen work area to minimize dust that would spread mold spores.
2. Clean surfaces with a cleaner appropriate to the material, such as an all-purpose cleaner for vinyl or plastic.
3. Thoroughly dry all surfaces and materials.
4. Vacuum all surfaces with a vacuum cleaner with a HEPA (high efficiency particulate air) filter. Dispose of the contents of the filter in a sealed plastic bag.

If the mold has grown or penetrated into the materials, or the materials are water damaged, remove, seal in plastic bags, and discard as normal waste.

Larger areas of mold need to be contained to prevent the building's ventilation system from circulating the mold spores. Professional assistance may be required for mold clean-up.



Should I Use Bleach to Remove Mold?

Chlorine bleach is a *biocide*, which means that it is a disinfectant chemical that will kill germs to control infections. Using bleach to clean mold may not be enough to stop mold growth or prevent health effects from mold by-products. In addition, bleach evaporates easily and can affect indoor air quality. Therefore, in most situations, using bleach to clean mold is not recommended.

Cleaning mold from flood waters or sewer back-up is a special situation where bleach may be used. It would be very important that any detergents or cleaning products used to clean and remove mold do not contain ammonia, in case they mix with bleach. Bleach and ammonia will form poisonous gas.

How Can I Protect Myself When Cleaning Up Mold?

Personal protection is very important when working in mold contaminated areas or cleaning and/or removing mold. A long sleeve shirt and long pants are suggested to protect arms and legs. In addition, the minimum safety protection is:

- Gloves, preferably extending to the middle of the forearm.
- N-95 respirator (approved by the National Institute of Occupational Safety and Health).
- Goggles or eye protection.
- Disposable overalls.

If the mold has grown or penetrated into the materials, or the materials are water damaged, remove, seal in plastic bags, and discard as normal waste.

Any clothes, shoes, or protective equipment worn in the mold-contaminated area should be removed in that area and cleaned before leaving the area. Alternatively, clothes and equipment can be placed in plastic bags and taken outside of the building for cleaning. This is to prevent mold spores from being distributed all over the building.

How Can I Learn More About Molds?

Virginia Cooperative Extension has three fact sheets on mold:

- MOLD BASICS (http://pubs.ext.vt.edu/2901/2901-7019/2901-7019_pdf.pdf)
- MOLD PREVENTION (http://pubs.ext.vt.edu/2901/2901-7020/2901-7020_pdf.pdf)
- MOLD REMEDIATION (http://pubs.ext.vt.edu/2901/2901-7021/2901-7021_pdf.pdf)

You may also want to consult the following references:

- Environmental Protection Agency (EPA) at www.epa.gov/mold.
- American Industrial Hygiene Association information, *The Facts about Mold* at: http://www.aiha.org/news-pubs/newsroom/Documents/Facts%20about%20Mold%20_July%202011.pdf
- Federal Emergency Management Agency (FEMA) at www.fema.gov. This web site has fact sheets and case studies about mold clean-up and prevention after flooding, hurricanes, and other weather disasters.

www.ext.vt.edu

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