

Healthy Indoor Air Series

Mold

What is mold?

Molds are fungi, usually microscopic in size, that occur in nature in large quantities. They reproduce by releasing spores into the air. Spores settle onto surfaces and, if conditions are right, begin to grow. Mildew is a common mold.

What does mold need to grow?

Molds thrive on organic materials like natural fibers (cotton, wool), paper, leather, wood or surfaces coated with organic matter such as food, grease, and soil. Molds grow best in warm temperatures of 77 to 86 degrees. Molds need moisture that can come from water leaks, flooding, high relative humidity, or condensation. And, molds require oxygen, but not light. Without the proper conditions, molds may not grow, but become dormant. Then when conditions are again right for growth, they begin to regenerate.

How does mold affect humans?

People react to mold whether it is living or dead. Exposure to mold can cause cold-like symptoms, respiratory problems, nasal and sinus congestion, watery eyes, sore throat, coughing and skin irritations, and can trigger asthma attacks. Because some mold spores are very small and can easily be breathed deeply into the lungs, it is not safe to live in houses with high mold levels. Exposure to high mold spore levels can cause the development of an allergy to mold.

Everyone should minimize their exposure to mold. Children, the elderly, pregnant women, and people with existing respiratory sensitivities are at higher risk for adverse health effects from mold. Some people are affected when exposed to very little mold, while others may show no adverse health symptoms when exposed to mold in any amount.



Where is mold found?

Basements that have moisture seeping through concrete walls and floors provide conditions likely to cause mold growth on or in walls, carpet and materials stored in the basement. Even moisture from the earth can migrate through concrete walls causing them to become damp. Other sources of moisture include leaky pipes, holes for sump pumps, and condensation from an air conditioner or dehumidifier.

Crawlspaces built over uncovered earth can have mold problems when the moisture in the ground causes dampness in the space. Crawlspaces that are sloped incorrectly and have water pooling in them are likely to have problems.

Mold often grows under cabinets, behind baseboards, inside walls, in carpet padding and under vinyl wall coverings. It can be found in closets if clothing is damp or if there is a cool outside wall in the closet. It is possible for mold to grow behind furniture or inside a bookshelf, particularly if the item sits against an outside wall.

Bathrooms are a source of moisture for mold growth. Molds may be found growing on shower curtains and in or around the tub or shower. Humidity levels are also high in the kitchen. Mold growth might be found around and under the sink, on kitchen walls and even in the drip pan under the refrigerator.

Using an un-vented clothes dryer produces a high level of relative humidity, which supports mold growth. Damp towels and clothes in laundry hampers, washers, or dryers can develop mildew growth.

How do I know if there is mold in my house?

Mold can often be detected by a musty odor. Growth of mold can be seen in the form of a discoloration, ranging from white to orange and green to brown and black.

In most cases, it is not practical to test for mold growth in a house. There are no standards for “acceptable” levels of mold in a dwelling. Reliable sampling for mold can be expensive since it requires special equipment and training. Testing is not generally recommended as a first step.

However, there are businesses that provide mold testing. Before contracting a service, ask for credentials and referrals and check with the Better Business Bureau and/or Attorney General’s office.

How do I remove mold from my home?

Protect your health during mold removal. Isolate the work area from the rest of the home. Provide adequate ventilation and wear eye protection, rubber gloves and clothing that can be laundered immediately. Use a mask or respirator that will filter out mold spores. An N95, 3M#1860 or TC-21C particulate respirator is recommended.

Dampen moldy materials before removal to minimize the number of airborne mold spores. Mold can be removed from hard surfaces such as hard plastic, glass, metal and counter tops by scrubbing with a non-ammonia soap or detergent. (Do not mix ammonia and bleach; the fumes are toxic.)

It is impossible to completely remove mold from porous surfaces such as paper, sheetrock (drywall), insulation and carpet padding, so these materials should be removed and discarded. Scrubbing may not remove mold growth on structural wood such as wall studs, so it may need to be removed by sanding.

After the mold is removed, disinfect the area using a chlorine bleach and water solution. If the surface is relatively clean, use a solution of ¼ cup chlorine bleach to 1 gallon of water. The surface must remain wet for about 15 minutes to allow the solution to disinfect. Concentrations as high as 1½ cups of bleach per gallon of water are recommended for dirty surfaces that cannot be thoroughly cleaned. Finally, rinse the entire area with clean water, and rapidly dry the surfaces using fans, dehumidifiers and air conditioners. If the outdoor air is dry, a window can be opened to help promote drying.

Mold can be cleaned from many surfaces, but new mold will grow in the same place as long as conditions are favorable.

Air cleaners will not solve a mold problem. A HEPA (high-efficiency particulate air) filter may reduce the number of spores in the air, but many mold spores will settle onto surfaces such as the floor, where air filters cannot remove them.

How do you prevent mold growth?

Mold spores are everywhere, and they grow on any organic surface, given the right conditions. For growth, they require organic matter for food, moisture, warmth and oxygen. To prevent mold growth, keep all surfaces clean and dry, and provide plenty of ventilation.

For more information

Contact your local U of I Extension office or visit these web sites:

*Kansas State University
Agricultural Experiment Station and
Cooperative Extension Service*
[http://www.oznet.ksu.edu/library/
hous2/mf2141.pdf](http://www.oznet.ksu.edu/library/hous2/mf2141.pdf)

Montana Extension Service
[http://www.montana.edu/wwwcxair/
facts_mold.html](http://www.montana.edu/wwwcxair/facts_mold.html)

Resources

Remove Mold for a Healthy Home
Kenneth Hellevang, Ph.D.,
Engineer, North Dakota State
University Extension Service.

Controlling Mold Growth in the Home
Marilyn Bode, Housing Specialist,
and Deanna Munson, Textiles
Specialist, Department of Clothing,
Textiles and Interior Design,
Kansas State University.

Environmental Protection Agency
[http://www.epa.gov/iaq/molds/
images/moldguide.pdf](http://www.epa.gov/iaq/molds/images/moldguide.pdf)

