



# Molds

## in Your Home

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### Health Effects

Exposure to mold is common both inside and outside the home, but some people are more sensitive to mold than others, especially those with allergies and asthma. Mold exposure may cause cold-like symptoms, watery eyes, sore throat, wheezing and dizziness, and 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 spore levels can cause the development of an allergy to mold.

### Detection of Mold

Molds can usually be detected by a musty odor, and discoloration of surfaces is common with mold growth. The mold may change surfaces to white, green, brown, black or orange.

If you see or smell mold, you have a problem. Reliable sampling for mold can be expensive since it requires special equipment and training. Testing is not generally recommended as a first step.



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### Conditions for Mold Growth

Molds grow on organic materials such as paper, leather, dirt and soap scum. They grow best at warm temperatures, between 77 and 86 degrees Fahrenheit, although they can grow in temperatures between 32 and 95 degrees.

Molds grow in moisture. Water leaks, flooding, high relative humidity and condensation are all situations that increase the growth of mold.

### Places Molds Grow

Basements may have mold if they are wet or damp. Moisture seeping through concrete walls and floors will cause this dampness, resulting in mold on walls, floors, carpeting and materials (including firewood) that are stored in your basement.

Bathrooms are more likely to have mold growth if exhaust fans are not used while showering or bathing. Soap scum, shower walls, ceramic tile and fiberglass are all possible surfaces for mold growth.

Laundry rooms are common places to find mold if damp towels and clothing are present. Unvented clothes drying, which produces high levels of relative humidity, can also cause mold growth.

Kitchens are possible sites for mold growth if large amounts of water are boiled using no

exhaust fan. Refrigerator pans in automatic defrosting refrigerators also commonly have mold.

Closets often have mold growth, especially if clothing is stored damp or dirty or there is a cool outside wall in the closet. And there's a chance mold will be growing behind furniture.

## How to Prevent Mold

- Cleaning, disinfecting and drying surfaces prevents mold growth. Mold will grow on damp surfaces within a couple days at normal temperatures.
- Reduce moisture levels in the bathroom by running an exhaust fan during and after showers.
- Fix plumbing leaks and seepage to prevent the buildup of moisture and prevent the growth of molds.
- Store clothing dry and clean to prevent the growth of mold on clothes.
- Reduce humidity levels by discontinuing use of a humidifier if the relative humidity is more than 40 percent, and use dehumidifiers and air conditioners when levels of humidity are high. Also, ventilate with outside air during the winter when outside temperatures are colder than indoor temperatures. Ventilating with warm summer air typically increases the air's relative humidity in a basement.
- Increase the flow of air within your home. Moving furniture away from walls and opening closet doors to permit air circulation limits the growth of molds.
- Prevent condensation. Insulating walls and installing storm or thermal pane windows keeps walls warm and limits condensation.

## Cleanup and Removal of Mold

- Materials should be dried quickly; mold will grow within about 2 days.
- Anyone spending more than a brief time cleaning in a moldy environment should use a HEPA filter mask; typically it will have two straps. Also, use gloves.
- Porous materials should be thrown out or completely decontaminated if they are moldy. Materials such as hard plastic, glass and metal can be cleaned and disinfected.
- Remove the mold using a non-ammonia soap or detergent. Never mix bleach and ammonia. Surfaces from which the mold cannot be completely removed should be treated with enough chlorine bleach to keep the surface moist for at least 15 minutes, rinsed, then rapidly dried.
- Disinfect by applying a solution of ¼ cup chlorine bleach per 1 gallon water or follow manufacturer's recommendations. The surface should be thoroughly wetted with the solution. Keep the surface wet with the bleach solution 10 to 15 minutes to kill the mold. Allow the solution to dry naturally 6 to 8 hours.

Other products that kill mold are biocides. These biocides have Environmental Protection Agency (EPA) registration numbers on the bottle and instructions for the intended application.

## Methods to Remove Mold from Various Products

### Painted Surfaces Inside the Home

Scrub moldy surfaces with a solution of 1 cup chlorine bleach to 1 gallon water. A little detergent may be added to the solution, but do not mix bleach with cleaners containing ammonia. Rinse with clean water and allow to dry thoroughly before painting or papering.

### Painted Exterior Surfaces

Scrub mold on paint with a solution of 1/3 cup detergent that does not contain ammonia, 1 quart chlorine bleach and 3 quarts water.

### Bathrooms

Scrub surfaces with a solution of 1 cup chlorine bleach, 1 tablespoon detergent that does not contain ammonia and 1 gallon water. Keep the surface wet for about 10 minutes, then rinse well with water and dry.

### Roofs with Asphalt Shingles and Fiberglass Panels

Use a mixture of 3 parts chlorine bleach and 1 part water at the rate of 1 gallon per about 40 square feet. This solution will damage metal rain gutters and plants, so control runoff and rinse surfaces contacted by the solution.

### Wood Shingles, Decks and Other Untreated Wood

Scrub surfaces with a solution of 1 quart chlorine bleach and 1 ounce detergent in 3 quarts water. Rinse thoroughly. If stains remain, increase the concentration of bleach to water and re-treat. Allow wood to dry thoroughly before painting or enclosing.

### Clothing and Other Textiles

Brush, shake, sun and air mildewed textiles outdoors. Launder washable items with detergent and chlorine bleach when appropriate.

### Leathers

Dyes used on leathers are very sensitive to numerous substances. Moisten a cloth with a solution of 1 cup denatured alcohol to 1 cup water, wipe away visible mold, dry in circulating air.

### Carpet and Rugs

Discard pads containing mold. It is nearly impossible to clean and destroy all the mold in a pad. It is best to hire a professional carpet cleaner or restorer to clean wall-to-wall carpet. If you try to save the carpet yourself, apply rug shampoo with a carpet shampooer according to manufacturer's directions. Expose mold growing on the back of carpet to the direct rays of the sun. Paint the carpet backing with a solution of 1/4 teaspoon chlorine bleach to 1 cup water or another sanitizing product applied according to the label directions. Rinse several times. After shampooing and sanitizing, dry the carpet or rugs quickly by laying outdoors in the sun and wind, or use fans to speed drying.

### Upholstered Furniture and Mattresses

Brush surface mold away with a broom outdoors. Vacuum using an upholstery attachment. Discard the disposable vacuum cleaner bag. Use the services of a professional upholstery cleaner, or sponge the item with detergent suds and wipe with a clean cloth. Avoid getting the stuffing wet. Wipe the furniture with a cloth moistened with a solution of 1 cup denatured or rubbing alcohol to 1 cup water and dry thoroughly. Place the item in the sun for a few hours and air it thoroughly or use a fan and indirect heat to dry. If mold is growing deep in the padding of an upholstered piece, nothing will eliminate the mold or odor except renovation or replacement.

### Books

Stand books on end. Spread out pages to dry. Wipe off mold with a clean, dry cloth. After a few hours, stack and press to avoid wrinkling. Alternate opening and stacking until completely dry. Sprinkle talcum powder or cornstarch on pages to absorb moisture. Books may be frozen until you have time to work with them. Place books in a closed container with moth crystals to stop mold growth.