

Should you be concerned about mold?

Over the past few years, mold has raised increasing concerns among building owners and construction contractors for the damage it causes to building structures, furnishings, and materials. This issue of the Construction Depot highlights the health issues related to mold, how to control it, and what to consider when you need to remove it.

What is mold?

Molds – there are thousands of species – are forms of fungi that exist everywhere in the environment. Most fungi, including molds, produce microscopic cells called spores that spread easily through the air. Live spores form new mold colonies when they find favorable growing conditions — primarily oxygen, organic matter, moisture, and temperatures between 40 F and 100 F.

Are molds harmful?

Though some molds produce substances called mycotoxins that are toxic in high concentrations, there's no strong scientific evidence that airborne mycotoxins adversely affect human health in home, school, or office environments. Most people have no reaction when exposed to low concentrations of mold for a short time.

For those who are sensitive to molds, allergic reactions are the most common health concern. Molds can also cause flu-like symptoms or a skin rash and can aggravate asthma; however, these symptoms may also be due to bacterial and viral infections or other allergies. Most health effects caused by mold end when the source is eliminated.

How to prevent mold

The key to preventing mold is to control excess moisture.

- Keep heating, ventilation, and air-conditioning drip pans clean and unobstructed.
- Keep indoor relative humidity below 60 percent.
- Inspect HVAC systems regularly.
- Ventilate or use exhaust fans (to the outdoors) to remove excess moisture.
- Repair water leaks promptly; dry and clean or replace water-damaged materials. Materials that stay wet for longer than 48 hours are likely to produce mold growth.
- Keep foundations dry.

How do molds enter a building?

Mold becomes a problem in homes and commercial buildings only where it finds high relative humidity and moisture-holding surfaces. Most molds that thrive indoors have outdoor sources. Following are common ways that molds enter buildings.

How molds enter a building	
Source/route	Examples
Outdoor air intakes	Sources such as standing water, dirt, plant debris, feathers, and bird droppings that are near outdoor air intakes.
Air filters	Microbial growth on filters; gaps between filters and housings; low-efficiency filters.
Heat exchangers	Dirty heating or cooling coils; excessive water in condensate pans; poorly maintained air washers or humidifiers; stagnant water in air washers or humidifiers.
Supply-air plenums and ductwork	Excessive surface deposits; dampness and surface microbial growth; inaccessible humidifiers.
Supply air diffusers	Surface deposits, rust, or microbial growth on louvers; soiled adjacent ceilings and walls; poor air mixing.
Water damage	Plumbing or roof leaks; water intrusion; indoor humidity greater than 60 percent.
Chronic condensation	Inadequate insulation; humid outdoor air that causes condensation on windows, perimeter walls, or other cool surfaces.
Window air conditioners and evaporative air coolers	Dirty grills; standing water in condensate pans or sumps; dampness and surface microbial growth near units.
Fan coil and induction units	Dirty heating or cooling coils or filters; excessive water in condensate pans; dampness and surface microbial growth near units.
Carpet	Dirty, poorly maintained, or water-damaged carpet.
Fabric office partitions, wall coverings, drapes; upholstered furniture	Dirty, poorly maintained, or water-damaged fabric-covered and upholstered items.
Portable humidifiers	Poorly maintained units with microbial growth in the water reservoirs, spray or mist units.
Return air plenums	Excessive surface deposits; dampness; surface microbial growth.

Should you test for mold?

Generally, it's not practical to test for mold. Testing surfaces or monitoring the air tells you little about where mold is and how to clean it. Also, there are no standards for acceptable levels of mold in buildings; most tests compare levels and types of mold spores found inside a building with those existing outside. It's more effective to identify the mold source and get rid of the mold.

The first thing to do when you discover mold

Identify the mold source and determine how to correct the condition that caused it. The source must be stopped or repaired to prevent mold from recurring.

What's involved in cleaning up mold?

The answer depends on the type of contaminated material and the extent of contamination. Use detergent and water to clean mold from non-porous (hard) surfaces then dry completely. Replace contaminated porous material such as ceiling tiles, wallboard, and carpeting.

Use a wet vacuum to remove water from rugs and other surfaces where water accumulates. Use it only to vacuum materials that are still wet, then clean hoses and attachments thoroughly. Steam cleaning may be an alternative for carpets and some upholstered furniture.

Use high-efficiency particulate air (HEPA) vacuums for final cleaning of contaminated areas after surfaces are clean and dry. Dispose the contents in sealed plastic bags.

Cleanup work that disturbs mold increases the risk of exposing others. Examples include breaking up moldy wallboard, removing mold in a wall cavity, stripping or peeling moldy wallpaper, and using fans to dry moldy material. Before beginning such work, contain the mold so that it doesn't spread and use appropriate personal protective equipment to avoid inhaling spores or touching contaminated material.

Containment methods. To keep mold from spreading, enclose the contaminated area – ceiling-to-floor – in polyethylene sheeting; include a slit entry and a covering flap. Keep the enclosed area under negative pressure with a HEPA-filtered fan unit. Block supply- and return-air vents in the enclosed area.

Discard contaminated building materials and furnishings that are not salvageable. Double bag the material with six-millimeter polyethylene sheeting and discard it with other construction waste.

Skin and eye protection. Use rubber gloves to protect skin from mold and from mild cleaning solutions. Use natural rubber, neoprene, nitrile, or polyurethane gloves with strong cleaning solutions. Use goggles to keep out dust and small particles; don't use safety glasses or goggles with open vent holes. Use mold-impervious disposable protective clothing when doing extensive cleanup work.

Respiratory protection. For cleaning relatively small contaminated areas (10 square feet or less), use a NIOSH approved N-95 filtering facepiece for protection from mold spores and dust. More extensive cleanup work may require additional protection such as a half- or full-face respirator with a HEPA filter.

If the source of contamination may contain sewage, hazardous chemicals, or other biological pollutants, you'll need to take additional protective measures. Get assistance from an experienced abatement specialist.

Does OR-OSHA have regulations that address mold?

OR-OSHA doesn't have regulations that address mold or the quality of indoor air. However, paragraph 654.010 of the Oregon Revised Statutes (the general duty clause) requires employers to "furnish ... a place of employment which (is) safe and healthful for employees ..." An employer's workplace could be cited for a violation of the general duty clause if all of the following are true:

- **There is a contaminating source:** For example, a workplace is significantly water damaged or contaminated with molds or other microorganisms.
- **There is an exposure path:** The contaminant reaches workers in the same manner; for example, through the respiratory tract or by contacting skin.
- **There are symptoms or illnesses:** A physician has diagnosed a building-related illness or building occupants are suffering from symptoms consistent with exposure to the contaminating source.

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