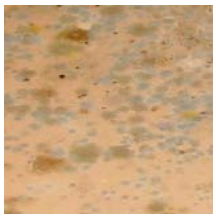
Indoor Mold and Health

A Fungus among Us



This article addresses some of the most common questions and concerns about indoor mold, how it affects human health and ways in which you can prevent or remove it.

What are molds?
Molds are types of fungi. They grow in the natural environment. Tiny particles of molds are found everywhere in indoor and outdoor air. In nature, molds help break down dead materials and can be found growing on soil, foods, plants and other items. Molds are also very common in buildings and homes. Mold needs moisture to grow. Indoors, mold growth can be found where humidity levels are high, like basements and showers. Molds produce microscopic cells called “spores” that are spread easily through the air. Spores can also be spread by water and insects. Live spores act like seeds, forming new mold colonies when they find the right conditions.

What makes mold grow?
Mold only needs a few things to grow and multiply:

- Nutrients (food)
- A suitable place to grow
- Moisture

Many building materials (such as wood, sheetrock, etc.) provide food that can support mold growth. Even dust that has settled on these materials or furniture can be a food source for molds. Molds can grow almost anywhere there is enough moisture or high humidity.

Controlling moisture is the key to stopping indoor mold growth, because all molds require water to grow. Moisture can come from:

- Flooding from the outside (storm water, overflowing lakes, streams, storm surge, etc.)
- Flooding from the indoors (overflow from sinks, tubs, toilets, air conditioner drain pans or sewerage systems)
- Condensation (caused by indoor humidity that is too high or surfaces that are too cold)
- Water leaks from outside the building (roof, walls, floors)
- Indoor plumbing leaks or broken water pipes
- Outdoor sprinkler spray hitting the walls, or indoor fire sprinklers
- Poor venting of kitchen and bathroom moisture (steam from shower or cooking)
- Humidifier use
- Drying wet clothes indoors, or not venting clothes dryers outdoors (including electric dryers)
- House plants (over watering, etc.)
- Moisture from our bodies (sweat, wet hair on pillows, breath)
- Warm, moist air from outdoors
- Liquid spills

Should I be worried about mold in my home?
Yes and no. On the one hand, there will always be mold in your home in the form of spores and pieces of mold cells. The presence of mold in the air is normal. On the other hand, one should not let mold grow and multiply indoors. When this happens, your level of exposure can increase, thereby increasing the risk of potential health problems. Building materials, household goods and furnishings may also be damaged. Mold needs to eat to survive, and it's perfectly happy eating your home if you allow it.

What health problems can be caused by mold?
There are four kinds of health problems that come from exposure to mold: allergic illness, irritant effects, infection, and toxic effects. For people that are sensitive to molds, symptoms such as nasal and sinus irritation or congestion, dry hacking cough, wheezing, skin rashes or burning, watery or reddened eyes may occur. People with severe allergies to molds may have more serious reactions, such as hay-fever-like symptoms or shortness of breath. People with chronic illnesses or people with immune system problems may be more likely to get infections from certain molds, viruses and bacteria.

Molds can also trigger asthma attacks in persons with asthma. Headaches, memory problems, mood swings, nosebleeds and body aches and pains are sometimes reported in mold complaints, but the causes of these physical symptoms are not yet understood. The toxic effects of certain molds are not well understood, and are currently a controversial topic in the medical and scientific community. There is evidence of specific long term toxic effects from eating foods with mold toxins. Unfortunately, very little is known regarding the actual health risks from breathing in or skin contact with mold toxins. Allergic disease is now considered the most likely health problem related to mold exposures. Research into the possible health effects related to mold exposure continues today. It should be noted that there are other causes of the symptoms described above. Talk to your family physician regarding what the cause of your symptoms may be.

How can I tell if there is mold in my home, or should I test my home for mold?
Indoor mold growth can usually be seen or smelled. In most cases, if visible mold growth is present, sampling is not needed. There is no health or exposure-based standard that you can use to evaluate a mold sampling result. The Winnebago County Health Department does not recommend mold testing or sampling to see if you have a mold problem, or to see what kind of mold might be growing. Sampling for mold in the air can be expensive and, if done, should only be done by experienced professionals. Investigate a mold problem; don't test.

- Look for visible mold growth (it may look cottony, velvety, rough, or leathery and have different colors like white, gray, brown, black, yellow, or green). Mold often appears as a staining or fuzzy growth on furniture or building materials (walls, ceilings, or anything made of wood or paper). Look for signs of moisture or water damage (water leaks, standing water, water stains, condensation, etc.).
- Check around air handling units (air conditioners, furnaces) for standing water. Routinely inspect the evaporator coils, liner surfaces, drain pans and drain lines.
- Search areas where you notice mold odors. If you can smell an earthy or musty odor, you may have a mold problem.
- If mold-allergic people have some of the symptoms listed above when in your home, you may have a mold problem.

How can I be exposed to mold?
Mold is virtually everywhere, floating in the air and on all surfaces. People are exposed to molds 24 hours a day, seven days a week, and 365 days a year. Exposures increase when indoor moldy materials becomes dried, damaged or disturbed, causing spores and other mold cells to be released into the air and then inhaled. Elevated exposure can also occur if people directly handle moldy materials or accidentally eat mold.

How much mold does it take to make me sick?
It depends on the situation and the person. This question is difficult to answer in the same way it's hard to say how much sun causes sunburn: the amount varies from person to person. What one person can tolerate with little or no effect may cause symptoms in another individual. The long-term presence of indoor mold may eventually become unhealthy for anyone. Those with special health concerns should consult a medical doctor if they feel their health is affected by indoor mold. The following types of people may be affected sooner and more severely than others:

- Babies and children
- Elderly persons
- Individuals with chronic respiratory conditions or allergies or asthma
- Persons having weakened immune systems (for example, people with HIV or AIDS, chemotherapy patients, or organ transplant recipients)

Are some molds more hazardous than others?
Some types of molds can produce chemicals called mycotoxins. These molds are sometimes referred to as "toxic mold" although the mold itself is not toxic. There are very few reports that "toxic molds" inside homes can cause unique or rare health conditions. If you think you have a mold problem in your home, you do not need to find out what type of mold you may have. All molds should be treated the same when it comes to health risks and removal. All indoor mold growth should be removed promptly, no matter what type(s) of mold is present, or whether or not it can produce mycotoxins.

What is *Stachybotrys chartarum*?
Stachybotrys chartarum (also known as *Stachybotrys atra*) is a greenish-black mold that can grow on materials such as drywall or sheetrock, ceiling tiles and wood when they become moist or water-damaged. Not all greenish-black molds are *Stachybotrys chartarum*. Some strains of *Stachybotrys chartarum* may produce mycotoxins. Whether a mold produces mycotoxins depends on what the mold is growing on and conditions such as temperature, pH, humidity or other factors. When mycotoxins are present, they occur in both living and dead mold spores and may be present in materials that have become contaminated with molds. While *Stachybotrys* is growing, a wet slime layer covers its spores, preventing them from becoming airborne. When the mold dies and dries up, air currents or physical handling can cause spores to become airborne. Currently, there is no test to determine whether *Stachybotrys* growth found in buildings is producing toxins. There is also no blood or urine test that can tell if an individual has been exposed to *Stachybotrys chartarum* spores or its toxins.

How can *Stachybotrys* affect my health?
Typically, indoor air levels of Stachybotrys are low. As with other types of mold, at higher levels adverse health effects may occur. These include cold-like symptoms, rashes, sinus inflammation, eye irritation and aggravation of asthma. Some symptoms are more general - such as inability to concentrate or fatigue. Usually, symptoms disappear after the mold is removed.

How can I tell when *Stachybotrys chartarum* is present in my home?
Many molds are black but are **not** *Stachybotrys*. For example, the black mold often found between bathroom tiles is not *Stachybotrys*. *Stachybotrys* can be identified only by specially trained professionals through a microscopic exam or by cultures. The Winnebago County Health Department does not recommend that people sample mold growth in their home. All indoor mold growth should be removed, regardless of type.

How can I prevent mold growth?
Water is the key. Without it, mold growth cannot start, much less multiply and spread. The easiest way to prevent the mold from gaining a foothold is to control dampness. Keep your home clean and dry. When water stands for even 24 hours, common molds can take hold. Keeping humidity levels below 60% and venting moisture from showering and cooking to the outside are several ways to prevent the conditions that can lead to mold growth. Other ways include:

- Clean and dry up spills within 24 hours
- Dry out wet building materials and carpets within 24 hours
- Use an air conditioner or a dehumidifier to reduce the indoor humidity levels below 60%. If you have a central air conditioning system and need a dehumidifier to reduce relative humidity below 60%, you should have the air conditioning system examined for problems
- Do not carpet bathrooms or basements. Note: While most experts suggest a relative humidity of less than 60%, below 50% is best for controlling both mold growth and dust mites. Dust mites are microscopic animals related to spiders, ticks and other mites. Dust mites eat mold and dead human or animal skin scales (flakes) and leave allergenic proteins. Dust mites reduce allergen production at these lower humidity levels.

How Should Mold Be Cleaned?
Mold should be cleaned as soon as it appears. Persons who clean the mold should be free of symptoms and allergies. Small areas of mold should be cleaned using a detergent/soapy water combination or a commercial mildew or mold cleaner. Gloves and goggles should be worn during cleaning. The cleaned area should then be thoroughly dried. Throw away any sponges or rags used to clean mold. If the mold returns quickly or spreads, it may mean you have an underlying problem, such as a water leak. Any water leaks must first be fixed when solving mold problems. If there is a lot of mold growth, consult the U.S. Environmental Protection Agency's booklet: "*Mold Remediation in Schools and Commercial Buildings*". It is available free by calling the EPA Indoor Air Quality Information Clearinghouse at (800) 438-4318, or on the Internet at www.epa.gov/iaq/molds/mold_remediation.html. If the moldy material is not easily cleanable, such as drywall, carpet padding and insulation, then removal and replacement may be necessary.

Should bleach or other biocides (disinfectants, sanitizers, or fungicides) be used to kill mold?
Using bleach or other chemicals to kill indoor mold growth is not needed in most cases. The goal should be to remove mold growth by cleaning or removing moldy materials. Dead mold can still pose health risks if you are exposed. Using bleach or other disinfectants on surfaces after mold removal may be needed where people are thought to be susceptible to fungal infections (such as a person with immune system problems). Should you decide to use bleach or another chemical, please read and carefully follow the label directions and hazard statements (caution, warning, danger). **Do not mix bleach with ammonia cleaners or acids, because a dangerous chlorine gas may form**.

Should I use an ozone generator to address an existing mold problem?
No. Ozone irritates lungs, and is not likely to be effective at addressing an indoor mold problem.

No one should expose themselves or others to ozone on purpose. Address the cause of the mold (usually moisture) and then remove the mold by cleaning surfaces or removing moldy materials.

Who should do the cleanup?
Who should do the cleanup depends on a number of factors. One consideration is the size of the mold problem. If the moldy area is less than about 10 square feet (less than roughly a 3 ft. by 3 ft. patch), in most cases, you can handle the job yourself. However:

●If there has been a lot of water damage, and/or mold growth covers more than 10 square feet, consult the U.S. Environmental Protection Agency (EPA) guideline: "*Mold Remediation in Schools and Commercial Buildings"*. Although written about schools and commercial buildings, this document also helps when dealing with mold in other building types.

●If you choose to hire a contractor (or other professional service provider) to do the cleanup, make sure the contractor has experience cleaning up mold. Check references and ask the contractor to follow the recommendations in EPA's "*Mold Remediation in Schools and Commercial Buildings"*, the guidelines of the American Conference of Governmental Industrial Hygienists (ACGIH), or other guidelines from professional or government organizations.

●If you think the heating or air conditioning (HVAC) system may be contaminated with mold, read the EPA's guide "*Should You Have the Air Ducts in Your Home Cleaned?"* before taking further action. Visit www.epa.gov/iaq/pubs/airduct.html, or call (800) 438-4318 for a free copy.

Note: The EPA suggests the following: "Do not run the HVAC system if you know or suspect that it is contaminated with mold - it could spread mold throughout the building". Unfortunately, it is thought that most, if not all, heating and air conditioning systems in will support mold growth at some point. Stopping the use of an air conditioning system due to suspected mold growth would make most Winnebago County buildings very uncomfortable during hot and humid weather. Should you turn off an air conditioner if a mold problem in the system is found? Ideally, yes. The system should be shut down while cleaning or mold removal is performed. If the water and/or mold damage was caused by sewage or other contaminated water, then call a professional who has experience cleaning and fixing buildings damaged by contaminated water.

●If you have concerns regarding your health before starting the cleanup, consult your doctor.

Who can I call if I suspect that I have a mold problem, or if I want more information on mold?
For additional information about the health effects of mold exposure and information on the safe removal of mold, please call the Winnebago County Health Department's Environmental Health Improvement Center, phone number (815) 720-4110. You may also call the U.S. Environmental Protection Agency's Indoor Air Quality Information Clearinghouse at **1-800-438-4318**.

Where can I obtain additional information on the Internet?

Winnebago County Health Department (WCHD)
(Look under Environmental Health /Neighborhoods Program)
http://www.wchd.org

U.S. Environmental Protection Agency (EPA)
http://www.epa.gov/iaq/molds

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov/nceh/airpollution/mold/

American College of Occupational and Occupational Medicine (ACOEM)
http://www.acoem.org/guidelines/article.asp?ID=52

American Industrial Hygiene Association (AIHA)
http://www.aiha.org/GovernmentAffairs-PR/html/prmoldsources.htm

Building Science Corporation
http://www.buildingscience.com/resources/mold/default.htm