Mold: Guide for Real Estate Professionals Home Buyers, Sellers and Owners.

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Mold Growth

Mold spores are everywhere waiting for the right condition for to thrive. Mold is an important part of the natural decay process. Life on earth could not exist in its present state without mold and other agents of decay.

Mold spores can lay dormant through extremely inhospitable conditions. When a source of moisture and food exits within a wide temperature range, mold will begin to grow. Building materials provide food. When the moisture content reaches 19% and the temperature is between about 40º and 115º F, mold will grow.

Colonies of mold will establish in 48 hours. When you have water damage, or soaking of building materials, it must be cleaned and dried within 48 hours. When the moisture is dried up the mold will no longer grow. Spores (reproductive bodies similar to seeds) will be produced, broadcasted to lay dormant until favorable conditions exist for growth again. When moldy materials are damaged or disturbed, spores can be released into the air. People, pets and air currents spread spores. Spores, both dead and alive, can cause allergic reactions

Some molds are territorial and emit mycotoxins, or toxic gas, to kill off any competing life. Other molds produce endotoxins when they die. These are toxic gases from the decaying mold. Mycotoxin exposures have been linked to a variety of acute and chronic health problems.

Most vulnerable to health problems from mold

- Infants
- Children
- Elderly
- People with respiratory conditions
- Immune compromised
- Pregnant women

Health problems from inhaled mold spores and toxins

- Respiratory problems
- Diarrhea
- Nasal and sinus congestion
- Nose and throat irritation
- Cough
- Watery and red eyes
- Headache
- Pulmonary hemorrhage
- Recurring cold and flu like symptoms
- Immune system damage
- Damage to heart, liver, kidneys and other organs
- Skin irritation
- Fatigue
- Aches and pains
- Fevers
- Asthma
- Emphysema
- Death
- Dermatitis
- Burning/sore throat
- Excessive fatigue
- Central nervous system problems

Common places to find mold

- Any Moist Areas
- Attic
- Kitchens
- Bathrooms
- (HVAC) Ventilation System
- Basements
- Carpets
- Living Rooms
- Bedrooms
- Garage

Common sources of moisture to sustain mold growth in home or workplace

- Flooding
- Leaky roofs
- Humidifiers
- Damp basement or crawl space
- Plumbing leaking more than 48 hours
- Backed-up drain
- Building design/construction flaws
- House plants
- Shower/bath steam
- Shower/bath leaks
- Loose/leaking toilet
- Clothes dryers vented indoors
- Steam from cooking
- Wet clothes

What to look for

Mold may be easily found or may be completely hidden. Mold can often be smelled even when not seen. The musty, smell associated with damp basements comes from mold growth. A currently popular method of finding hidden mold is using a dog to sniff it out. If you think you smell mold (mildew), you probably do.

The most dangerous and damaging mold infestations in the news lately have been from growth inside walls. Many of these building have used Exterior Insulation Finish Systems (EIFS), also known as synthetic stucco or faux stucco.

Water was trapped behind the siding during construction or seeped in after installation. The moisture could not escape and hidden mold developed. Children died in these homes. Families lost all their belongings. Furniture, clothes, books, photo albums and other valued possessions have become so toxic they had to be abandoned along with the home itself.

Ventilation channels were added by nailing furring strips under the siding to allow evaporation of water behind the stucco. You should be able to detect this by using a mirror to look under the siding. If there is no air space between the siding and wall sheathing, suspect hidden mold growth.

Mold grows in places you would normally find water penetration or damage. The first place to look is the grading around the foundation. If water drains toward the house, inspect inside and out where the water ponds near the foundation.

If there is a crawl space, look inside. Shine a flashlight around looking for signs of water. Mud, wet or stained floor joists, dripping water, insulation installed with the vapor barrier out or the smell of sewage are good indication of possible mold problems. Mold growth is a certainty if these conditions have existed for 48 hours or more. If the insulation is installed improperly, mold growth may be visible on the vapor barrier paper. Not all mold is harmful to people, but it is all harmful to the building materials that make up your house.

Look for water stains on the outside walls that indicate water cascading down the siding. This is usually from clogged or broken gutters. Water stains on the soffit indicate a possible mold garden inside.

Binoculars allow you to get a pretty good look at a roof. Using binoculars, examine the roof for broken shingles, exposed nails, cracked flashings or other damage. If the roof is leaking, water may be available to encourage mold to digest insulation, sheathing and rafters. The most dangerous mold love cellulose containing building materials. Poor roof ventilation combined with even a small leak can provide everything mold needs to thrive.

Inside the house, the basement is the most likely place for mold. If you smell the unpleasant odors associated with basements, it's probably sewer gas or mold. Pour water in floor drains and run faucets to fill drain traps. If the odor remains it is probably mold.

If you found places where water drained toward the house or cascaded down the siding, look in this area in the basement. Water stains on walls, floor or around expansion joints at the outer edges of the floor merit closer examination. Sump pump areas and backed-up drains are also good potential spots for mold.

Examine ceilings for water stains. If joists for the floor above are exposed, look for wet spots. Under bathrooms and kitchens are the most like places to find wet building materials. Examine all exposed plumbing for leaks. Any place that's wet for more than 48 hours at a time probably has mold.

Check the furnace/AC for signs of water condensation leaking from a broken, or missing, drain pan. Chronic moisture under furnace, or water heater, can be ideal growing spots for mold. Humidifiers and swamp coolers are always suspect. If these are not properly maintained, they have mold. Furnace ducts are common places for mold growth. Leaking boilers, or radiators for hot water heat, can provide friendly environments for mold.

Upstairs rooms that have water stains on walls or ceilings, or around windows and exterior doors can be hiding mold growth. Damp feeling building materials in these places indicate active leaking and good conditions for mold.

Obvious places to look for mold

- Under bath and kitchen sinks
- Around base of bath/shower
- Around base of toilet
- Under refrigerator

- Under dishwasher
- Around clogged drains
- Under washing machine
- Water stained floors/walls and ceilings

Wet conditions in the attic can cause mold growth. Water can penetrate from outside or can condense from bathroom, kitchen and dryer vents ending in the attic. Sometimes they are vented into walls adding more moisture with every use that has no way to escape. If you choose to look into the attic, use caution.

If your Denver area home was built between 1930 and 1990, you may have asbestos insulation in your attic. This is made from vermiculite and sold as Zonolite. The EPA describes the insulation as a pebble-like, pour-in product, usually light brown or gold in color. It has also been described as "brown Styrofoam" or "dirty Styrofoam."

Before you open the attic access put on a respiratory mask rated for asbestos. If you find asbestos in your attic, carefully replace the access cover disturbing as little as possible. Call a professional remediator immediately. Vacuum the area thoroughly with a HEPA vacuum, if available. A regular vacuum cleaner will not contain particles as small as asbestos fibers and may release the fibers into the air.

If it's safe to enter your attic, look any place you saw a possibility of leakage when you examined the roof. Water stains may be dry at the time of examination. This is good as far as mold growth goes. If the attic has sufficient ventilation, mold will not grow unless there is a constant plumbing leak. If ventilation is not adequate to keep insulation and wood dry, and there is water penetration or leakage, mold will grow.

Common Molds Associated with Health Problems

These are the three most common toxic molds, although there are many others that are harmful to human life.

Stachybotrys Chartarum

The mold so much in the news is Stachybotrys Chartarum. It's thought to be a possible cause of the sick building syndrome. It's a greenish-black toxic mold that colonizes particularly well in high-cellulose material, such as straw, hay, wet leaves, dry wall, carpet, wall paper, fiber-board, ceiling tiles, thermal insulation, etc. Stachybotrys, before drying, is wet and slightly slimy to touch. There are about 15 species of Stachybotrys, known throughout the world. This toxic mold grows in areas where the relative humidity, or the moisture content of building materials is above 55%. This type of mold does not grow on plastic, vinyl, concrete products, or ceramic tiles. It is not found in the green mold on bread or the black mold on shower tiles.

Aspergillus

Aspergillus is one of the most infectious of molds, but infections are uncommon in people with normal immune systems. For immuno-compromised individuals, the disease Aspergillosis is a significant and potentially deadly health concern. It can be almost any

color. Health effects vary by species, but many species are reported to be allergenic. Some species produce toxins that might have significant health effects in humans.

Penicillium

Penicillium is one of the most common molds found worldwide in soil and decaying vegetation. It's found indoors in dust, food, and various building materials. Common bread mold is a species of Penicillium. It may be allergenic and cause certain infections in compromised individuals.

Testing

There are many methods of mold testing. The appropriate testing methods are selected for the individual circumstance. Testing should be done by a qualified Certified Industrial Hygienist specializing in environmental testing.

Air Sampling

The biggest advantages of air sampling are versatility and speed. Air sampling can detect virtually any kind of airborne pollutant. Biological pollutants can be identified by spore or DNA. The biggest disadvantage is that it can't distinguish which are living or which are dead.

Tests can be specifically designed for individual circumstances. The air a person would breathe in the building is sampled with a variety of collection devices and pumps. The correct choice depends on what you are looking for. Testing in a home where children are chronically ill might include mold, dust mites, asbestos and animal dander. Testing after a flood might include mold and bacteria.

Many test results can be ready in a matter of hours after reaching the lab. The quicker the analyses time the higher the lab fee.

Agar Plate Collection

This method of testing provides no useful information. It can be assumed that spores for many common molds will be present, either in a dormant or active state. These spores will grow if a friendly environment, such as the collecting plate. This test proves only the obvious. Don't waste your money on this type of testing.

Direct Testing

Samples of identified mold colonies might be placed in the agar growth solution and sent to the lab. More typically, a direct sample is taken in a variety of ways and sent to lab. The sample might be cultured in the lab, or various methods of direct identification might be used to provide instant identification.

Direct testing reveals only the identity of the actual mold colony that the sample is taken from. Samples are usually taken in a few ways. A piece of the mold colony might be

placed in a sterile bag and sent to the lab for identification. Samples can be lifted using a sterile cotton swab or clear tape.

Cleaning

The homeowner can clean most mold problems. Small patches of mold can be removed with a bleach/detergent mix, or a commercial fungicide from your local hardware store. HEPA vacuuming areas four times, where spores have settled will remove most spores. A good HEPA filter will remove mold spores from the air. A HEPA filter can also be added to the furnace/AC system.

Proper personal protection should be used when cleaning mold. Respirators rated for mold, rubber gloves, eye protection and skin protection are all necessary. Never touch mold with your bare hands/skin.

A professional duct cleaner certified for mold removal can clean mold, spores and the debris that provides food for growth from ductwork. This process is more than running a vacuum hose through ducts. Don't waste money on a cleaning that will not solve the problem.

All buildings, and homes, have mold. Not all molds are harmful to humans, but any mold that colonizes on, and digests, the materials used to build your house is harmful to the house, if not your health. A clean, dry house inhibits mold growth, as well as insect infestations. Both need a constant water supply to survive. A healthy environment for humans is an unhealthy environment for the things that destroy your house and possibly your health.