MOLD

What is it?

Mold is a fungus. It is part of nature’s recycling system. It plays an important role in decomposing organic materials such as leaves, plants, wood, and other natural materials. A compost pile needs mold to accomplish the decomposition of grass cuttings and leaves that may be added to the pile. When mold forms on clothing we call it mildew.

Mold often appears as a black or green patch on a surface. However, the color of a mold colony is influenced by the nutrient source and the colony’s age. Mold growing behind vinyl wallpaper may appear as pink or purple blotches.

Conditions for Mold Growth

In order to grow, mold requires food, suitable temperature (from 40 to 100 degrees Fahrenheit but ideally between 70 and 85 degrees Fahrenheit), oxygen, and moisture. When these conditions are present mold will grow. When mold grows it reproduces by producing spores that are released into the air and function like tiny seeds. These
airborne spores are everywhere and travel in and out of buildings with the exchange of air and the movement of people and their belongings.

When a spore lands on a damp surface that provides food and oxygen and if the temperature is right, it will start to grow. The oxygen comes from the air. The surface itself may be inorganic such as shingles, concrete, or glass, but the presence of dust or dirt may be adequate to provide the nutrient source. Some molds can get the necessary moisture from the air when the relative humidity is at or above 80 percent.

**Health Effects of Mold**

Mold spores are everywhere outdoors. Mold is on everything we work with, build with, and everything we bring into the building. It is not possible to have a mold-free building. Therefore, the goal is to not have a lot of mold inside, particularly an active mold colony growing where it can be inhaled. Unfortunately, presently there is no definition of “a lot.” There also is no scientific evidence that indicates how much exposure to mold is necessary to produce an allergic response. In addition to an allergic response, some molds can cause infectious disease in some people that have a weakened immune system.

**Moisture Sources in Buildings**

Mold can grow anyplace if the conditions are right. However, in all cases the critical factor is moisture. If there is no moisture, mold will not grow. In homes, unfortunately, there are a number of sources of moisture that can support mold growth.

Improperly maintained air conditioners can create excessive condensation that, in turn, can serve as a breeding ground and distribution mechanism for mold particles.
Walls, ceilings, and floor cavities that harbor standing water for more than a few days will stimulate mold growth. The sources of water in homes include plumbing leaks, gaps in the roof, siding or masonry, poorly sealed windows, porous slabs and foundations, inadequate drainage, and faulty roof drains and down spouts.

Poor ventilation and/or circulation combined with high indoor humidity from such activity as showers and cooking can result in condensation that promotes mold growth. Even in homes that do not have a general high humidity problem, poorly insulated walls can provide a surface for condensation to occur.

Moisture from unseasoned framing lumber may create conditions suitable for mold growth. However, once the moisture content of the lumber falls below 20 percent, mold growth is no longer supported. Depending on the climate, framing lumber will dry to less than 20 percent moisture content during construction and before the building is enclosed.

More airborne mold spores are found in homes with exposed dirt crawl spaces and basements. Since under the right humidity conditions mold can grow on house dust, poor housekeeping and high humidity levels are both associated with increased mold growth.

The biggest source of indoor mold spores is often the outdoor air. Higher level of indoor mold spores tend to be found in homes with yards having dense and overgrown landscaping. However, outdoor spore levels vary with the season and weather. Spore count is high in the growing season but approach zero when the ground is snow covered. In general, normal indoor spore counts are 20 to 50 percent of outdoor levels.

**Limiting Mold Growth**

The best way to limit mold growth in homes is early detection and prompt elimination of the moisture source. Detecting the presence of mold growth usually relies on the occupants detecting of an unpleasant, earthy or musty smell. This smell comes from a volatile compound that is released into the air by the mold.

Controlling indoor humidity levels will limit the formation of condensation on walls, windows, and around air conditioning supply vents. A dehumidifier or well maintained air conditioner will help control indoor humidity to a point at or below 65 percent during the humid months of the year. A relative humidity below 40 percent in the heating season will prevent condensation on the indoor surfaces. An alternative is to increase the temperature of the surface where condensation is detected. To increase the surface temperature, increase the insulation level or increase the circulation of heated air. In an unconditioned basement, installation of a dehumidifier should be considered.

Performing periodic inspections of the building and the HVAC system will provide early detection of sources of moisture or poor HVAC performance. Roof and wall penetrations should be inspected particularly carefully.
The soil around the home should be graded to provide a slope away from the foundation that will carry roof rainwater away from the foundation.

Plumbing leaks, deteriorated caulking, or failed flashing around wall openings should be repaired or replaced as soon as possible. Water penetration and accumulation in the wall cavity will not produce mold growth if the water is removed, the site is wiped dry, and the source of the water is eliminated within a few days. Periodic inspection of the site should be performed to insure that the water source has not returned.

Additional Reading


It is recommended that the U.S. Environmental Protection Agency publication titled Mold Remediation in Schools and Commercial Buildings be reviewed by persons concerned with mold growth in buildings other than homes.