

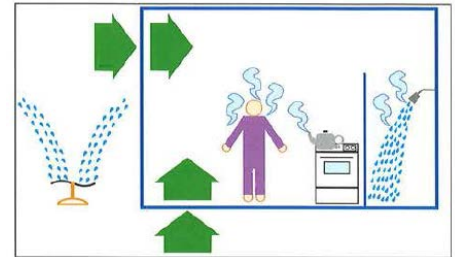
Concrete Homes Technology Brief

No. 11: Mold and Moisture

Mold growth in homes is the hot topic in the home building industry today. Headlines tout the danger of exposure to mold in our homes and at work. A member of the fungi family, mold comes in thousands of varieties and exists in every indoor and outdoor environment. It is a natural and necessary part of the ecosystem in which we live. While many types of mold have positive benefits, there are several strains that can lead to health problems if allowed to flourish indoors.

Who is at risk?

Exposure to certain types of mold can cause health problems. The sensitivity of individuals and the exposure amount varies so widely that there has been no “safe” threshold defined by authorities. According to the Center for Disease Control (CDC), most people experience no reaction to “normal” mold exposure. Some individuals are very sensitive to mold exposure, much like some people are affected by hay fever.



Moisture can accumulate within a home due to cooking, bathing, and physical activity; or can enter a home from outdoors due to the soil, sprinklers, and leaks.

Children, senior citizens, and people with weakened immune systems may be more vulnerable to mold exposure. Although “toxic mold” is the phrase most often seen in headlines, the Environmental Protection Agency and the CDC state there is very little current scientific evidence connecting mold exposure and extreme illness, considering the low levels of exposure in most homes.

If mold has been around forever, why are we seeing so many problems now?

Building practices and materials have evolved at a rapid pace in the US during the past century. Today, the predominance of organic building materials such as paper faced drywall, wood framing and plywood sheathing provide a food source for mold growth. Also, increased energy costs and a limited supply of fuel have forced us to construct more energy efficient buildings. Past construction practices allowed moisture from cooking, bathing, and other occupant activities to readily escape, along with conditioned air. According to the National Association of Home Builders (NAHB), we build homes that are 50% more energy efficient than 30 years ago. Sealing the building envelope against air loss is critical in achieving this performance. The problem arises when moisture and humidity levels are controlled.

What does moisture have to do with it?

Mold typically found in homes is a living organism and requires three favorable conditions in which to grow:

Temperature Range:	Between 40 and 100 degrees Fahrenheit
Food Source:	Organic Material (wood, dust, paper, etc.)
Moisture:	Water, or water vapor (high humidity, plumbing)

People need the same conditions to survive. Of the three components required for mold growth, moisture is the only one we can control while maintaining comfortable living conditions. Often, the local weather report includes mold exposure for sensitive individuals.

Where does this moisture come from?

Leaks and flooding—Most major mold problems are attributed to large quantities of water. Plumbing, roofing, and walls can develop leaks. This is often due to deferred maintenance, storm damage, or improper material installation. Undetected, a small leak can lead to major problems. Lawn sprinklers should be positioned to spray away from the home’s exterior walls. Homes should be dried out within 24 to 48 hours of a leak or flood.

Condensation—Everyone is familiar with condensation of water vapor on a cold beverage container during a warm summer day. The same thing can happen on a window during a winter day, or on a cold water pipe or air-conditioned ductwork in a hot, humid climate. Left unchecked, this condensation can accumulate and create ideal growing conditions for mold.

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How do I prevent mold growth in my home?



Moisture can accumulate behind vinyl wallcoverings.

Are concrete homes affected by mold?

What's the bottom line?

Air leaks—As winds blow against a house, air can leak through gaps in sheathing, under sill plates, and around doors, windows, and electrical outlets. If there is a large difference between indoor and outdoor temperature, water vapor can condense in wall cavities, or behind vinyl wallpaper, as it passes through insulation and cools to the dew point. Once liquid water collects in the cavity, mold can begin to grow.

Regardless of the source, excess water should be cleaned up as soon as possible and the affected materials should be dried out. If you suspect you have serious mold growth in your home, seek advice from your insurance carrier or knowledgeable building professional.

Food sources for mold are plentiful; wood construction materials, furniture, paper in drywall and wallpaper, organic fibers in fabrics, carpet backings, and dust. If these organic food sources are exposed to high levels of moisture in our homes, mold can grow.

The Nose Knows—Musty odors are a sign of mold growth in a building. Look for visible signs of mold and/or moisture then eliminate the moisture source.

Humidity Levels—Current recommendations from the NAHB suggest keeping maximum relative humidity levels below 40% during the heating season and below 60% during the cooling season.

Proper Ventilation—Bathroom fans, kitchen fans, and clothes dryers should be vented to the outside of the building envelope (home). Energy recovery ventilation is recommended in tightly constructed homes having less than 0.35 fresh air changes per hour.

Seal of Approval—Sealing outlets, sill plates, and through-wall penetrations (including doors and windows) can minimize uncontrolled air infiltration. Insulating pipes and ductwork in humid spaces can minimize condensation in those areas. Vinyl wallcoverings should not be applied to concrete walls because moisture can accumulate behind them. Slabs, and crawl spaces, should have a vapor retarder beneath them to prevent moisture from entering the home.

Inspection and Maintenance—Regular inspection and cleaning of the condensation drain line on a central air conditioning unit is recommended. Inspect the roof, windows and siding after storms to identify missing shingles, damaged flashing and visible water leaks.

The concrete, foam and steel in a concrete wall system are not a food source for mold growth unlike wood studs, joists, and wall sheathing. However, organic materials such as floor decking, paper faced drywall and carpet are used inside concrete homes. These products can support mold growth and should be treated accordingly. Regardless of the building system, there is no substitute for good construction practices, regular inspections and preventative maintenance to prevent mold from getting a foothold in your home.

Mold is here to stay but we can do something about it. Homeowners have a responsibility to regularly inspect and maintain the components of their home to ensure that water is not accumulating in the building. Maintain reasonable humidity levels and fresh air exchange rates. Evidence of mold or moisture (visibly or by smell) should be addressed immediately to locate and eliminate the moisture source. Affected materials should be thoroughly dried or removed and replaced.

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