

## *Mold in the home and workplace: How serious is the problem?*

*Spores can survive harsh environmental conditions, such as dryness, that do not support normal mold growth.*

**FUNGI ARE LIVING ORGANISMS.** They used to be grouped together with plants but they are distantly related. They are perhaps more closely related to animals than to plants. Fungi consist of molds, yeasts and mushrooms. Yeasts are single-celled organisms (like bacteria) while molds are long branching thread-like filaments (hyphae) that form visible colonies. Mushrooms are also filamentous fungi that form a large mushroom cap.



Mold is a type of fungus, as are mushrooms and yeast. There are between 100,000 and 400,000 types of fungi (estimates vary), and of these, scientists have identified more than 1,000 types of mold growing inside houses across America. Common molds are *Alternaria*, *Aspergillus*, *Chlosporium*, *Penicillium*, and *Stachybotrys*. Molds are classified according to human responses classification examples include: Allergic Molds or Pathogenic Molds.

According to the CDC, the term "toxic mold" is not accurate. While certain molds are toxigenic, meaning they can produce toxins (specifically mycotoxins), the molds themselves are not toxic, or poisonous. Hazards presented by molds that may produce mycotoxins should be considered the same as other common molds which can grow in your house. There are very few reports that toxigenic molds found inside homes can cause unique or rare health conditions such as pulmonary hemorrhage or memory loss. These case reports are rare, and a causal link between the presence of the toxigenic mold and these conditions has not been proven.

In 2004 the Institute of Medicine (IOM) found there was sufficient evidence to link indoor exposure to mold with upper respiratory tract symptoms, cough, and wheeze in otherwise healthy people; with asthma symptoms in people with asthma; and with hypersensitivity pneumonitis in individuals susceptible to that immune-mediated condition. The IOM also found limited or suggestive evidence linking indoor mold exposure and respiratory illness in otherwise healthy children. In 2009, the World Health Organization (WHO) issued additional guidance, the WHO Guidelines for Indoor Air Quality: Dampness and Mould<sup>1</sup>. Other recent studies have suggested a potential link of early mold exposure to development of asthma in some children, particularly among children who may be genetically susceptible to asthma development, and that selected interventions that improve housing conditions can reduce morbidity from asthma and respiratory allergies, but more research is needed in this regard.

A common-sense approach should be used for any mold contamination existing inside buildings and homes. The common health concerns from molds include hay fever-like allergic symptoms. Certain individuals with chronic respiratory disease (chronic obstructive pulmonary disorder, asthma) may experience difficulty breathing. Individuals with immune suppression may be at increased risk for infection from molds. If you or your family members have these conditions, a qualified medical clinician should be consulted for diagnosis and treatment. For the most part, one should take routine measures to prevent mold growth in the home.



<sup>1</sup> <http://www.who.int/indoorair/publications/7989289041683/en/>



Mold pollution is a key element of indoor air pollution that few people understand. Mold has been making the headlines more frequently over the last several years, largely as a result of severe storms like Hurricane Katrina. And this year has brought enormous record-breaking floods in the U.S. not seen in more than a century, including the massive overflow of the Mississippi River, that is certain to activate serious mold infestations in certain areas of the country.

Along with obvious places such as shower stalls and damp basements, there can be many hidden sources of mold in your home. Particularly, if you've had plumbing problems or leaks in your roof, mold may grow and release spores from places such as behind drywall, under carpet or carpet padding, or in wood. But mold can find its way into some rather surprising places. One study found that even Christmas trees can breed mold, quietly releasing millions of spores into the room and causing winter allergies and asthma attacks. The study found that indoor air quality dropped six-fold over the 14 days a Christmas tree typically decorates a room. Millions of mold spores may even be hiding in your pillows.

Surprisingly, if you live in a dry climate you may be even MORE at risk—mold grows routinely in desert regions, and the desert naturally selects the most tenacious forms.

Fungi grow by releasing reproductive cells (spores) into the air, just as plants reproduce by spreading seeds. The airborne spores are invisible to the naked eye, which is a major reason mold is such a problem. It is not uncommon to find hundreds or even thousands of mold spores per cubic foot of indoor air. Spores are extremely small (1-100 microns) - 20 million spores would fit on a postage stamp.

Spores can survive harsh environmental conditions, *such as dryness*, that do not support normal mold growth. In fact, many spores can lie dormant for decades until favorable conditions allow them to spring back to life.

Molds can be found almost anywhere; they can grow on virtually any substance, provided moisture and oxygen are present. There are molds that can grow on wood, paper, carpet, tile, sheetrock, insulation, leather, fabrics, and foods. Molds survive by digesting whatever substrate they are growing on, which is a real problem when it happens to be your floorboards. The most common indoor places for mold to take hold are damp areas, such as: Bathrooms and kitchens, especially under sinks - particularly leaky ones, behind or under appliances that hide slow plumbing leaks (refrigerators, dishwashers, washing machines, etc.), roof leaks, around windows where condensation collects, and high humidity areas of your home, such as basements. There is no way to eliminate all mold and mold spores from your indoor environment; the only way to control indoor mold growth is to control moisture.

Often, the first sign of a mold problem is a "musty" odor. You are probably familiar with the smell of mildew - mildew is simply a variety of mold. You could also notice bowed or buckled floorboards, discolored carpet, a new water stain on your wall, or black or white specks - all signs you could be developing a mold problem. Proper treatment and removal is necessary.



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*Both the FDA and the CDC recommends consumers to simply wash their hands with plain soap and water over purchasing over-the-counter hand sanitizers.*



**Bleach:** is a readily available, inexpensive and an effective disinfectant. In fact, Clorox® bleach is the only bleach registered disinfectant by the Environmental Protection Agency (EPA). Typically 10% concentration in water is effective for killing some bacteria and viruses including staphylococcus, streptococcus, E. coli and salmonella, Norovirus, flu, common cold. However, bleach is also harmful to human health – do not apply to skin and never mix with other disinfectants or cleaners especially ammonia-based cleaners. Also, application to stainless steel will pit and “rust” the surface. If used on these surfaces, it is recommended that you follow-up with 70% alcohol solution to stainless steel surfaces and wiped clean.

**Ammonia-based cleaners:** While these products may be “eco-friendly” over chemical-based products, ammonia-based cleaners are not EPA registered as a disinfectant. Ammonia-based cleaners will not kill staphylococcus bacteria but are excellent glass cleaner since it is known to be a cleaner that leaves no streaks and great for removing soap scums. However, ammonia-based cleaners should never be used with bleach and/or bleach containing products.



Unfortunately, no disinfectant is ideal for every situation. It is important that you define the need and select the proper disinfectant with consideration of the characteristics of a disinfectant to select the most effective and cost-efficient product. Disinfectant considerations to consider: Concentration (how much of the active ingredient or how much to dilute), method of application (spray, wipe, other), contact time, that is how long does it need to be in contact with the surface to be effective; storage (how long can the disinfectant be stored before losing its ability to disinfect). Other considerations that will affect the effectiveness of the disinfectant: Temperature, humidity, surface conditions (rough or smooth, absorbent); other chemicals and interferences. What should you do? Read and understand the instructions and the limitations of the product before selecting a disinfectant.

<sup>i</sup> Scientific American, Strange but True: Antibacterial Products May Do More Harm than Good by Coco Ballantyne. June 7, 2007; Retrieved 12/09/2016: <https://www.scientificamerican.com/article/strange-but-true-antibacterial-products-may-do-more-harm-than-good/>

<sup>ii</sup> U.S. Food and Drug Administration (FDA) : Antibacterial Soap? You Can Skip It -- Use Plain Soap and Water 9/2/2016; Retrieved 12/09/2016: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm378393.htm>