

# **Mould – What it is and what to do about it**

Mould has received considerable media attention recently, as though this were a new problem. While it's true that mould in homes can be a problem, this is nothing new, and probably not news. However, since there is an increased level of awareness and concern, let's look at the issue from a common sense perspective.

## **What is it?**

Mould is a common term for a large family of fungi that have a cottony or wooly appearance. There are nearly a million species of mould. Mould is a naturally occurring organism that has been around far longer than us. Mould grows in buildings where there is moisture, air, a food source, and whenever the temperature is between 40 and 140 degrees F. When conditions for growth are not met, mould becomes dormant; it does not die. Mould spreads by dispersing spores through the air as well as by growth on or within building materials.

## **Mould plays a key role**

We can't eliminate mould, but this is a good thing because we need mould to break down animal and vegetable matter. Mould plays a key role in the food chain. When we say things are rotting or decaying, we are referring to mould at work. If there were no mould, there would be no rot – and we'd all be buried under all the leaves and trees that ever fell down but never decayed.

## **Mould spores are everywhere**

People sometimes tell us that they don't have mould in their home. We ask what happens if they leave bread in a drawer for a month or don't take out the garbage for two weeks. This helps them understand that no matter how clean they keep their home, mould spores are always there ready to grow on any favorable host. There are always mould spores in the air and there is always some mould in buildings, so the objective of a "mould-free home" is not realistic.

## **How dangerous is mould?**

Since it is normal for mould to be present in air and in buildings, its mere existence is not necessarily a reason for alarm. But if mould is present in indoor air at levels higher than would be found in outdoor air, or if a significant mould colony is growing on building surfaces, it could be a cause for concern.

Mould risk falls into three broad categories:

1. Some mould is harmless, a cosmetic nuisance.
2. Some mould is allergenic to some people, in much the same way some people are allergic to peanut butter or shellfish.
3. Toxic mould is dangerous for everyone, although young people, old people, and people with respiratory problems or compromised immune systems are most vulnerable.

Media articles about “black mould,” especially *Stachybotrys*, have terrified some people. Actually it is common to find black *Stachybotrys chartarum* in small amounts in houses where there has been leakage or water entry. It is a toxic mould and it should be removed. But don’t assume that anything black on the wall or ceiling is highly toxic mould. Other common species are also black but may be of low or no toxicity. For example, *Chaetomium globosum* is allergenic rather than toxic. *Cladosporium sphaerospermum* is often found growing indoors on bathroom tile or refrigerator gaskets. It’s a member of the most common mould family, *Cladosporium*, the “universal fungus.” Mould in your house might be only a cosmetic concern. “Bluestain” or *Ceratocystis/Ophistoma* is common on framing lumber and we often find it in attics on the underside of roof sheathing. Unless one of these cosmetic moulds is in a living space, no action is needed.

### **Air-borne spores may cause distress**

People may react to mould spores alone. There does not always have to be a visible growth to cause problems for sensitive people.

### **You can’t tell by looking**

You cannot tell what kind of mould you are dealing with by looking at it. Don’t assume that “black mould” is “bad” and that other mould is OK. Lots of black moulds are cosmetic concerns, not “toxic killers.” Some light-coloured moulds, which are hard to see in your house, can be a health concern. Some species of *Penicillium* and *Aspergillus* are often light-gray to green, and these are probably more common than their infamous brother “*Stachybotrys chartarum*,” and may be more toxic. Of course, other *Penicillium* species are used as medicine. So competent identification is important. An expert, trained in microscopic identification of mould, can usually determine the identity of mould from a physical sample. We cannot rely on the naked eye, or on mould colour to identify moulds.

The home test kits are also not reliable. The swab, culture, settlement dish, or simple air sample methods these kits use are fundamentally inaccurate: for example, the spores collected and “grown” in culture using these methods could be dead, fail to grow on the culture medium, and still be toxic if inhaled. These methods are not a reliable way to determine or characterize a possible mould problem in a building.

For small mould problems, spend your money on some soap and water instead of one of these “tests.” For larger problems, hire an expert to survey your home, or send your own mould sample to a testing laboratory where the aerobiologist or mycologist will determine what’s in the sample.

### **Keeping mould in its place**

Although mould is needed and always with us, we want to keep mould in its place, preferably outdoors. Wolves are a key part of the food chain too, but we don’t want them inside our homes. While we will always have some spores in our homes, the goal is to keep the spores from growing to problem levels.

## **Prevention is the key**

Four things have to be present to have a mould growth:

1. Mould spores
2. Temperatures between 40 and 140 degrees F
3. A moisture source.
4. A food source. This is wood or gypsum board, or that old bread in your bread box.

So, how do we control mould growth?

1. We have said that mould spores are everywhere. So is their food. We can't control those.
2. People are not comfortable in their homes at temperatures below 40 degrees or above 140 degrees, so this is no help.
3. The only thing left is moisture. The best way to prevent mould from growing is to control moisture. This is lucky in a way because controlling moisture is something we want to do in homes anyway.

## ***Moisture sources***

Sources of moisture in homes include:

1. Leaks into or through roofs walls, door, windows, basements, etc. The leaks that come through usually get corrected quickly. The leaks that stay in walls, for example, often don't get corrected because they are not noticed.
2. Leaks from plumbing or heating systems.
3. High humidity from cooking, bathing etc., resulting in condensation.
4. Air conditioning systems, humidifiers, dehumidifiers, sump pits and other places where moisture is commonly present.

## **Getting rid of a mould problem – Step One - remove the mould**

Most moulds can be cleaned up easily with soap and water, or a mild bleach solution.

If the mould species is allergenic or toxic and present in large quantity, special procedures may be necessary to assure that cleanup is performed safely and to prevent contamination of other building areas or contents.

## ***A word of caution***

*People who are allergic, asthmatic, infant, elderly, immune-impaired, etc., should not disturb mould and should not be in the area where mould remediation is being performed. Consult with your doctor, health department or other professional before tackling this job yourself.*

Specialists with respirators, skin protection and eye protection should be called in to clean up large amounts (more than 30 square feet, an area 3 feet by 10 feet, for example) of toxic mould.

## **Getting rid of a mould problem – Step Two - remove the moisture**

Once we get rid of the mould, the next step is to remove the moisture source that allowed the mould to grow. Curing leaks, improving drainage and drying things up are important steps in controlling mould.

### **Maintenance is important**

Don't forget to clean your refrigerator, including gaskets, coils, and evaporator tray. Regular furnace and air conditioning service will help ensure that standing water or chronic moisture is not an issue. Gutters and downspouts should be kept clear and leaks should be corrected.

### **Finding mould**

Mould comes in many colours and may be visible and distinct. It can also be very subtle. Mould on a surface may be the tip of an iceberg, with considerable mould concealed behind the wall, for example. In other cases, the mould is only on the surface. The toughest situation is when the mould is entirely out of sight.

The best clues to look for are areas susceptible to mould. As we have discussed, these include high moisture areas.

To check more carefully and thus more successfully for mould, shine your flashlight along the wall surface in an area that has been damp or wet. Don't shine it right at the wall or you won't see much. Look where things have been wet or damp, regardless of whether it was a single event (washer flood) or one that happens after every rainstorm.

Here are a few areas that you might not have considered: under carpets that have been wet - check for mouldy tack strips; previously wet cardboard boxes; at ceiling penetrations like smoke detectors; at the top of poorly-insulated exterior walls; behind wallpaper below windows. Take a careful look at your air conditioner as well as any heating or cooling air handlers and ductwork. Check especially "downstream" of the air handler on cooling systems since condensation there may promote mould growth. Ducts buried in concrete floor slabs are also susceptible. Look at humidifier trays attached to the furnace, and at heat recovery ventilators.

One indication of a problem is higher levels of spores inside the house than outside. This requires air sampling, of course.

### **Closing comments**

Mould can be significant problem, but in most homes, good maintenance and common sense are the best weapons. As home inspectors have been saying for years, moisture is the biggest enemy of homes. Mould is just one of the results of high moisture levels.

Alan Carson – [www.carsondunlop.com](http://www.carsondunlop.com)

and

Daniel Friedman – [www.inspect-ny.com/sickhouse.htm](http://www.inspect-ny.com/sickhouse.htm)

*Alan Carson is a senior technical educator and building failures researcher in Toronto. He has served as the President of OAH, the Ontario Association of Home Inspectors, the President of ASHI®, the American Society of Home Inspectors and he continues to write and teach in the field of building inspection and diagnosis. He is also a principal in Carson, Dunlop, a Toronto home inspection firm. Alan can be contacted at [carson@carsondunlop.com](mailto:carson@carsondunlop.com) or 800-268-7070.*

*Daniel Friedman is a mould/indoor air quality investigator and home inspector as well as a professional writer Poughkeepsie, New York. He is a member of the American Industrial Hygiene Association and the American Society of Home Inspectors. He presently chairs ASHI's national Standards of Practice Committee and has led ASHI's Education and Technical Committees as well as serving on ASHI's Exam, and Ethics/Professional Practices Committees.*

©2002 Daniel Friedman and Alan Carson

*This article was submitted by Carson Dunlop, a Toronto based Consulting Engineering company that has specialized in **Home Inspection** since 1978. For more information, call 1-800-268-7070 or visit [www.carsondunlop.com](http://www.carsondunlop.com).*