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Mold Issues

By Stephen E. Fauer

On occasion, seemingly from nowhere, a "crisis" develops in public health. Two examples come to mind. One is Lyme disease. This disease was first recognized in the United States in 1975 when an outbreak of "juvenile rheumatoid arthritis" was identified near Lyme, Connecticut, but it wasn't until 1982 that a spirochete bacterium was discovered to be the etiologic agent and the deer tick the vector by which it is transmitted. Another example is Legionnaire's Disease. This disease acquired its name after a pneumonia outbreak occurred in a Philadelphia hotel in July of 1976 during an American Legion convention. The disease was caused by a bacterium that thrives in warm, stagnant water. In both cases, people who contracted these diseases before the epidemiology was elucidated were misdiagnosed.

To my way of thinking, the sudden preoccupation with mold is similar to those two medical examples. Mold is spread by airborne spores, and mold spores are truly ubiquitous. From my professional perspective, up until roughly 18 years ago, mold was not on ESA's radar screen. Clients simply never asked about it, and it was not deemed to be a problem by most members of the regulated community. Then things began to change.

Suddenly mold became an issue. ESA began to get calls from people asking what to do about mold. When I would visit a chamber of commerce trade show I would see one or two mold remediation companies touting their expertise, when before there had been none! "Where did these companies come from?" I would ask myself. Having studied mold while earning two degrees in botany and ecology, I would casually approach them and begin to ask questions. I determined that they certainly knew something about mold, but I was unconvinced about the "pressing need" for their services that they espoused.

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Mold service companies are what I call "blue widget" companies. If you are in the market for a blue widget, the Blue Widget Company is just what you need. But what if you are not in the market for a blue widget, but the Blue Widget Company presses you to buy one anyway? I find that blue widget companies sometimes suffer from an inherent inability to garner trust due to their inherent bias. Some mold companies use fear to sell their service; preying upon the ignorance of the consumer.

Thus it is my purpose to demystify this subject: what is mold, how does it grow, and what should you do if you encounter mold. Without a doubt some mold situations present genuine health issues. That being the case, how can the lay person make intelligent decisions about what to do? For the lay person who wishes to know more about mold, consult the following URL published by the Environmental Protection Agency, <http://www.epa.gov/mold/moldcourse/chapter1.html>

The guidelines I am about to present are general in scope and are not meant to supplant the expertise of someone with remedial mold expertise. There is no substitute for a first-hand appraisal by an expert. Second, and this is very important, the most important thing any property owner can do is to prevent circumstances that foster the growth of mold. Thus an ounce of prevention is worth, in this case, many pounds of cure.

What is mold?

Mold is neither a plant nor an animal; it is a fungus. By definition, mold feeds off dead and decaying tissue. Mold is found almost everywhere and it requires moisture to grow. It simply cannot grow in the absence of moisture. Thus maintaining a dry environment is the key to preventing the growth of mold! And when water leaks occur, it is imperative to stop the source of the leak with certainty and to thoroughly dry the premises as quickly as possible.

Mold propagates via spores. When a spore lands on a dry surface, nothing happens. But when mold lands on a moist surface, the spore has an opportunity to germinate. Upon germination the spore will enter a vegetative state and spread in a mass of filaments called a mycelium. This stage is normally invisible to the naked eye. However, most fungi reproduce quickly. This means the mycelium will sporulate in short order, and this is when it becomes visible and it is the sporulating phase that creates a situation that may be hazardous to human health.

The other essential ingredient for mold growth is food. Mold feeds upon organic matter. Think about dead and decaying wood (part of the decay process occurs via mold), leaves

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rotting on the forest floor, or dry-rotted wood. Sometimes the organic substrate is not obvious. Think about sheetrock. The interior of sheetrock is an inorganic mineral, gypsum. Being inorganic it does not support mold. But the sheetrock is covered with paper and glue, which are both organic. So when sheetrock gets wet it becomes a perfect substrate for several forms of mold, including some of the more toxic species.

What makes mold dangerous?

Not all molds are dangerous. Think about mildew in your shower. It may not be pretty and it may smell "moldy," but most of us have cleaned a shower with mildew at one time or another. (Most people are unaffected by mildew unless they are allergic.) Another example is bread mold (a.k.a. *Rhizopus*). When we see mold on bread, we throw it out. We certainly do not call a mold remediation company. (Note: When is the last time you threw out moldy bread crumbs? They don't foster mold growth because they are dry: no moisture, no mold.)

Did you know that each of us inhales mold spores every day? In fact, depending upon where you are, sometimes a few spores are inhaled with each breath! Yes...mold spores are that ubiquitous! But that does not render them dangerous. They become dangerous when they are highly abundant. Mold spores are prone to being airborne via the slightest gentle agitation of the air. A person walking past ripe spores creates enough breeze to release them to the air. Thus a mold outbreak can create a potentially unsafe breathing environment.

Mold can be dangerous via inhalation and via ingestion. Most mold symptoms arise via inhalation of chronic levels of spores due to a moisture-induced outbreak. Inhalation can cause allergic reactions, asthma, or irritation. It is very difficult to pinpoint the cause and effect of mold, let alone any other indoor air quality situation. Everyone can react differently to the same causative agent.

The good news is that most mold species are relatively benign, but exceptions exist; some mold species are toxic! Thus potential danger is real. For example, there is a well-known species of black mold (not all black molds are toxic) called *Stachybotrys chartarum* that is highly toxic. The problem is that an individual mold species cannot be discerned by sight; it must be examined in a laboratory to be certain of its identity.

What constitutes a dangerous amount of airborne mold?

Oddly enough, there is no standard by which we gauge a safe

condition. Instead two procedures are used by industry professionals. The first is a visual inspection. Any mold inspector is going to look for obvious mold growth. The problem with this is that not all mold growth is obvious or readily apparent. For example, sheetrock has two sides. If sheetrock gets wet, the side facing the room can dry quickly and be mold-free. But the interior (or hidden side) can remain wet and become a mold host. I will address this paradoxical problem in a moment. The other problem is that when mold first begins to grow the mycelium grows within the substrate and may not be visible until it sporulates.

The other procedure involves actual spore counts taken from various places inside the subject building and one spore count outside the building. This outdoor sample is used as a baseline and is considered to be the ambient spore count, which is then compared to the indoor spore counts. In general, you want indoor spore counts to be the same as or less than the outdoor spore counts.

How is mold remediated?

Believe it or not, there are no codified procedures for mold remediation. But there are guidelines that have become well-accepted in the remediation industry (IICRC S520, Standard and Reference Guide for Professional Mold Remediation, published by the Institute of Inspection, Cleaning and Restoration Certification, 2715 East Mill Plain Boulevard, Vancouver, Washington, 98661). So here is what you need to know:

1. People with asthma and any other respiratory weakness should not personally address any mold situation.
2. Remedial guidelines suggest that a mold-impacted area (generally contiguous) less than 10 square feet can be addressed by the lay person. In such cases appropriate respiratory protection and other protective measures should be taken. (ESA does not recommend that anyone undertake mold remediation unless they are comfortable doing so. The EPA addresses this: www.epa.gov/mold/moldcleanup.html)
3. Guidelines further suggest that areas in excess of 10 square feet be addressed by a professional mold remediation company.
4. In general, it is easier and preferable that the mold-impacted substrate be removed from the site and be disposed as construction debris. This is why wet sheetrock should be removed and properly disposed.

5. Some mold, depending upon the substrate upon which it resides, can be remediated with a fungicide (such as a 10 percent bleach solution). Once again, ESA warns that people who decide to do this on their own exercise extreme caution, wear appropriate safety equipment and respiratory protection, and work only in a well-ventilated area. Following application of the solution, the substrate should be rinsed then allowed to dry thoroughly.

Mold is here to stay. Be sure that your roof does not leak, water pipes are in sound condition, and window sills are tight. If a water leak occurs you must stop it ASAP, and with certainty! Then you must dry out the subject area as quickly as possible. It pays to use heaters, blowers, and dehumidifiers to facilitate the drying process. Doing so will likely minimize the great chance that fungus will grow in the first place.

When is mold not mold?

I want to add one final note because I frequently field this question. I am often asked to identify a form of "white mold" that grows on concrete and cinderblocks. As you might recall from above, mold does not grow on inorganic substrates like concrete. So how can there be mold, or something that looks like mold? The answer is that it's not mold. More often than not the material is calcium salt crystals, commonly known as efflorescence. Efflorescence develops over time when moisture wicks through concrete or cinderblocks and, in doing so, dissolves the calcium salts and leaches them to the surface where they form crystals via evaporation. These crystals are often mistaken for mold but are no cause for concern.

Regards,
Stephen