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MOLD IS A FOUR-LETTER WORD*

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Over the past several years, newspaper and magazine headlines have caused a stir with news of "toxic mold". The public was shocked into awareness in 1997 with reports that toxic mold caused bleeding lungs and the sudden death of several Cleveland, Ohio infants during 1993-1994. High profile law suits, health claims, and huge jury awards have since captured the headlines. A "Toxic Mold Protection Act" was signed into law in California in 2001. "The United States Toxic Mold Safety and Protection Act" was introduced in the U.S. Congress in 2002. Isn't it true that almost everyone is exposed to mold virtually everyday? Is this sudden concern about mold just hype, or is this for real?

Good Mold / Bad Mold

Mold is not inherently good or bad, but some types are potentially more harmful than others. Now, people who find anything growing under the sink, on the bathroom ceiling, on their favorite leather jacket, or on left-overs in the fridge are asking: "Is it the good kind or the bad kind?" Unfortunately, there is no clear dividing line that separates good mold from bad mold, and no way to just look at it (or sample it) and say that it is either certainly harmful or certainly harmless. Normally, we don't need to be concerned with molds going about their normal business outdoors. It's only when they start encroaching on our personal space that we should get uneasy.

Toxic Mold

Stachybotrys chartarum has captured headlines, as being about as bad as it gets, but it is only one of a long list of toxigenic molds. Whether these molds produce toxins and what kinds of toxins are produced depends not just on the species, but on the conditions they grow in. There are hundreds of mold species that produce toxins, and dozens of different toxins which might be produced by these species. None of these species are necessarily "bad"; they are just every-day molds going about their age-old business of decomposing dead plant material while competing with other molds and microbes for survival. Toxins help give them that competitive edge. We humans aren't targets, we just find ourselves in the line of fire while mold species compete for food and territory.

Many mold species are capable of producing mycotoxins that disrupt cellular structure and interfere with vital cellular processes like protein, RNA and DNA synthesis. They can cause cancer, organ damage, cell damage, birth defects, infertility, headache, vomiting, diarrhea, rash, and a host of ailments. "Toxic" means "poisonous". Molds produce some of the most potent low molecular weight inhibitors of protein synthesis known, capable of causing severe disease and even death at a high enough dose. Unfortunately, we don't yet know with certainty how much exposure is too much, or how mycotoxins interact with each other or with other particles and chemicals in the air to result in damaging effects. In 2000, The Center for Disease Control challenged the 1997 conclusion that the bleeding lungs and deaths of Cleveland babies were related to indoor growth of Stachybotrys, and they recommended a more detailed and careful analysis of future cases. There have since been some carefully documented cases, and

case reports from Texas, Delaware, Kansas, Belgium, and Quebec are reinforcing the original conclusions drawn in the Cleveland case. Breathing airborne spores and fragments from indoor mold growth on building materials can result in serious health effects. Clearly, you wouldn't want to sleep with these molds growing on your headboard.

Good Mold Gone Bad

Even if mold in your home or workplace seems friendly enough and is not of the poisonous persuasion, it can get on your bad side eventually. There are many health effects associated with mold exposure that don't necessarily have anything to do with mycotoxins: infection, inflammation, immune response, asthma and allergies. Most of these health effects depend on an individual's susceptibility. Some of these symptoms are rare while others are much more common. For example, people don't normally develop an infection from indoor building molds unless their immune system has been weakened. People susceptible to infection include infants, the elderly, those recovering from illness or surgery, those under chemotherapy, people with AIDS, kids with cystic fibrosis, and others. Allergies from indoor molds are far more common. Almost all mold species are potentially allergenic. In 1999, Mayo Clinic researchers reported that most chronic sinus problems are caused by an immune system response to mold. An estimated 37 million people suffer from chronic sinusitis in the U.S., making it the most common chronic disease in the country. In 2000, The Institute of Medicine associated indoor mold growth with exacerbation of asthma symptoms and increased upper respiratory symptoms.

Whether or not you develop an allergy depends not only on your genetic makeup but your level of exposure. Before your personal exposure threshold is crossed you may not experience any reaction. After that limit is reached, even a small exposure may trigger a response for the rest of your life. Because of the variation in individual susceptibility, it is difficult to establish safe limits of exposure or to predict the risk to health.

Risky Business

Obviously, a small amount of growth in a home with a few healthy family members would pose a lesser risk than a house with a large area of growth, or a home with family members who are more susceptible. A larger commercial building with more occupants presents greater risk that a sensitized individual might be exposed. A large building with a high rate of occupant turn over would pose an even greater risk of exposing a susceptible individual. The dividing line between good mold and bad is therefor very broad and very gray, and depends on a variety of factors. It's clear that some molds like Stachybotrys chartarum may cause more serious health effects than others may, but many (perhaps all) pose some cause for concern. If we must draw a line between good mold and bad mold, it would be more appropriate to consider outdoor mold growth as "good" (where would the world be without decomposition?) while the same growth indoors would be "bad."

Mold Cops

In 2001, the Federal Environmental Protection Agency joined with many health organizations, professional organizations, and state departments of health to warn us that if you have mold growing indoors you should get rid of it, regardless of what kind it is or how much you find. They further recommend taking precautions during the cleaning and removal process to protect workers and building occupants from exposure during remediation. Guidelines for the level of recommended protection during remediation are based on the size of visible mold growth. Discussion of the potential health effects of mold exposure continues, but the trend indicates that these concerns are real. The World Health Organization will soon publish a report on the consensus of an expert panel. This report mirrors the concerns expressed by Health Canada, the International Society of Indoor Air Quality, the New York City Department of Health, the American Conference of Governmental Industrial Hygienists, the California Department of Health, the EPA, and many others.

Hype, or Horror?

News may be hyped, but excitement sells newspapers. Responsible news stories usually have a basis in reality, and there have been hundreds of responsible news articles. The new "Toxic Mold Protection" acts might be more appropriately termed "Indoor Mold Protection" acts, as they (appropriately) apply to all indoor mold growth. Living or working in a moldy building can cause building-associated asthma, and is associated with exacerbation of asthma and increased rates of upper respiratory diseases. If mold is found indoors it should be considered "bad" mold, not only because it is causing deterioration of building materials, but also because it may adversely impact the health of building occupants. What seems like hype to you may be a horror to your neighbor. Unless and until science has established reasonable limits and risks of exposure, a conservative approach is a reasonable approach. We can't tolerate the growth of mold indoors.

* Only in the U.S. (Everywhere else "Mould" is a five-letter word . . . but it is becoming almost universally treated like a four-letter word if caught indoors)

The following web-links may provide further useful information:

Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health: http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html
Facts about Mold, New York City Department of Health:
http://www.ci.nyc.ny.us/html/doh/html/epi/epimold.html
Mold Resources, United States Environmental Protection Agency
http://www.epa.gov/iaq/pubs/moldresources.html
Is Indoor Mold Contamination a Threat to Health? Washington State Department of Health: http://www.doh.wa.gov/ehp/oehas/mold.html
Mold in My Home, What do I do? California Department of Health Services:
http://www.asbestos.org/microbial/index.html

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