

## Indoor Air Quality and Mold: *An Overview*

Molds, mushrooms, mildews, and yeasts are all classified as fungi, a kingdom of organisms distinct from plants and animals. To our knowledge there are approximately 100,000 species of fungi in existence. Of that 100,000, more than 1,000 can be found inside buildings throughout the United States. Less than 500 of those molds found indoors are described as human pathogens which can potentially cause infections.

### ❖ **What factors encourage mold growth?**

Although molds can be found almost anywhere, they do need moisture and nutrients to grow. The exact specifications for optimal mold growth vary from one species to the other, however generally molds grow best in damp, warm environments.

The availability of nutrients in indoor environments is not usually a limiting growth factor. Mold can use wood, wallboard, wallpaper, upholstery, books, leather, foods even dust as a nutrient source. Similarly, the temperature of indoor environments, above freezing and below the temperature for denaturing proteins, can support mold growth, even if the actual temperature is not ideal. The one element mold must have to grow and is the easiest control is moisture.

### ❖ **How are individuals exposed to mold?**

Given the ubiquity of mold in the environment, some level of exposure is inevitable. Some people are sensitive to molds. For these people, exposure to molds can cause symptoms such as nasal stuffiness, eye irritation, wheezing, or skin irritation. Some people, such as those with serious allergies to molds, may have more severe reactions.

Individuals are exposed to mold through skin contact, or ingestion, however inhalation is usually presumed to be the most important. The majority of fungal spores are very small (2--10  $\mu\text{m}$ ), allowing them to settle in the upper and lower respiratory tract. Inhalation exposure to a fungal spore requires that the spore be initially disturbed and made airborne at the site of growth.

### ❖ **How much mold will make me sick?**

Unfortunately there are no health-based standards for indoor airborne concentrations of mold or mold spores. There is very limited information on the amount of mold in the environment and subsequent health concerns. The amount of mold that affects one person severely may have little to no effect on other individuals and only a mild effect on others. Thus a numerical line between a healthy environment and an unhealthy one cannot be drawn.

There are also no standardized methods to measure the amount of mold in a building. Because of the sheer quantity of mold types, their complex life cycle and the multitude of reactions to a wide variety of environmental conditions, any sampling will only provide a rough approximation of the environmental conditions at the time the sampling was conducted.

- **For these reasons, it is NOT possible to first sample for mold, then measures the amount of mold in that sample, and then decided if that environment is safe or not safe.**

In the end if mold exposure is suspected the best policy is to first find, and then control the source of moisture. Once the source of moisture is dealt with the contaminated material should be either cleaned or removed.

## ❖ **What do I do then if I see or smell mold inside?**

**The primary factor that limits the growth of mold indoors is a lack of moisture.** Substantial indoor mold growth is virtually synonymous with the presence of moisture inside the building. The moisture can come from many sources. Some examples include:

- Long running showers
- Drying clothes
- Many cooking processes
- Condensation around windows or pipes
- Condensation between a cold and a warm environment
- Faulty or leaking equipment and building components

It could then be concluded that if the moisture is controlled, mold growth is controlled. With that in mind some suggestions for controlling moisture include:

- Using the exhaust fans in bathroom and kitchen,
- Taking shorter shower,
- Turn off or limiting the use of humidifiers,
- Using dehumidifiers to reduce moisture, *but be sure that the dehumidifier is emptied regularly otherwise it will support mold growth as well,*
- Open doors to colder rooms such as a closet to increase circulation,
- Clean throw rugs regularly as carpet can absorb moisture and serve as a growth spot and,
- Reduce the temperature in your room if there is moisture on or around your windows