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Mold and Indoor Air Quality
White Paper

Mold is a decomposer. Its role in the environment is to consume organic materials and return carbon, which is found in all living matter, back to Earth's crust. Water and organic matter are absolutely essential for the existence of mold. We can control mold growth and mold spore levels in buildings by keeping interiors and organic materials in them ***clean and dry*****.**

Health authorities suspect that all mold spores are allergens to some degree. In high enough concentrations and sufficiently long exposure times, regardless of species, mold spores can, in theory, trigger a reaction. Some molds trigger allergic reactions more readily at lower exposure levels. Anyone with asthma, allergies, or weakened immune systems is most susceptible to adverse reactions.

Mold is only an environmental problem when it grows, amplifies, and gets out of control. Small amounts of mold growth on indoor surfaces, a few square inches for example, are not likely to pose a problem. It is only when spores are released to the air that the risk increases. As mold on an interior surface begins to die, it releases spores as part of normal reproduction. The longer mold is allowed to grow, the more likely it becomes that sensitizing or allergen spores will be released into the air.

Molds obtain nourishment from organic materials such as paper and wood products (cellulose), natural fibers, foods and many soils. When clean and free of foreign organic matter, synthetic carpet materials do not support mold growth.

Water is essential for mold growth and water leaks are often associated with mold growth. Once mold growth has begun, high humidity at the surface of an organic food source may be all that is needed to sustain the growth. **Clean and dry = no mold**!

Fungi can survive over a broad temperature range 50-104ºF (10-40ºC). The optimum temperature for most mold growth and amplification is around 78º F (25ºC), but it grows very well in a range between 68ºF and 86ºF.

Molds love dark, damp habitats. Basements, attics, crawlspaces, closets, and spaces behind large furniture often provide a stagnant environment with elevated humidity. Mold growth can be avoided by keeping the indoor environment clean and by promoting dry air circulation.

The presence of mold in the indoor environment may be indicated by a musty odor. As mold digests its host material, it releases gas phase metabolites commonly referred to as Microbiological Volatile Organic Compounds (MVOCs). A musty or stale odor alone does not necessarily mean that a mold problem exists, but it does indicate that careful investigation is warranted.

Mold spores are everywhere and have the potential to germinate when provided with wet, organic nutrients. It takes about 48 hours under ideal conditions for spores to germinate and begin to grow and amplify. After four or five days, mold colonies enlarge and mold growth often becomes visible on walls, fabrics or furnishings.

Abnormally high levels of mold spores are most often associated with water damage, water intrusion, failed HVAC systems, or non-existent or ineffective cleaning programs. Water when combined with an organic nutrient in the form of dirt or debris for extended time periods, at elevated temperatures, will result in mold growth and can cause excessive spore level resulting from that growth.

Mold growth can also occur in rooms where conditioned cool air blows against the interior surface of an exterior wall causing condensation. Poor duct design, diffuser location or diffuser performance can create a cold spot on the surface of the interior finish. Mold can occur in the wall cavity as the outdoor air comes in contact with the cavity side of the cooled interior surface. Rooms decorated with interior finishes, such as wallpapers and high gloss paints, may be a possible problem because moisture can become trapped between the interior finish and the gypsum board. Rampant mold growth can be present when these interior finishes are combined with cold spots and exterior moisture.

Visible mold **must** be dealt with immediately, and depending on the amount, it may require the removal of mold contaminated materials. If mold can be seen or smelled, a mold problem probably exits. Actions should be taken to control the moisture sources and remove the mold contamination. Check for visual signs and odors. Look for moisture in the form of leaks, standing water, water stains, and condensation. Measure relative humidity at cold surfaces and within wall cavities. Look for visible mold colonies. These may appear cottony, velvety, granular, or leathery and have varied colors such as white, gray, brown, black, yellow, green, or other. Use smell to locate sources of "musty" or "earthy" odors.

If water damage occurs, contact a firm that specializes in water damage restoration services. Professional water damage restoration firms understand the basic principles of mold management. Restoration should be initiated within 48-72 hours to prevent the problems associated with molds. Many porous building materials such as drywall, wallboard, wallpaper, insulation and ceiling tiles are constructed of or contain organic material. When these materials become moist from flooding or condensation, fungi on or in the materials become active. Growth will continue until the moisture and/or nutrients are removed.

Control of environmental conditions is the most effective method of preventing mold activity. Cool, dry conditions, adequate ventilation, and general good housekeeping practices are advised. Effective vacuuming and damp wiping of walls and hard surfaces, vacuuming and extraction cleaning of fabrics to include carpet is most effective in the removal of mold spores before they can get put back into the air.

Carpet that is maintained in a clean, dry condition does not support or cause mold growth.

Clean and dry = no mold.