



RISK BULLETIN

Mold And Microbial Contamination

Mold has become a hot topic recently among property owners, health and safety professionals, and regulators. While the debate goes on over how much of the hysteria is hype and how much is based on science, property owners must



become knowledgeable about the threat of mold and how they can protect building occupants and reduce their liability. While “mold” is the word most commonly used in these discussions, microbial contamination can include not only molds but also yeasts, bacteria, and other

microorganisms, all of which can cause health problems by producing allergens, irritants, and toxins when their spores are inhaled or touched, particularly by sensitive individuals. Mold can also exacerbate asthma and cause eye, skin, and respiratory irritation.

HOW DOES MOLD BECOME A PROBLEM?

Microorganisms are present in all but the cleanest air, such as in a clean room operation. Spores

can lay dormant at most temperatures and moisture levels. The hazard to building occupants comes when those spores are amplified. Amplification occurs when a spore is present with the right temperature, moisture and nutrient source. If amplification occurs in an area with poor ventilation, the microorganisms can become airborne, forming an inhalation hazard to those present in the growth area.

Indoor moisture can come from a variety of sources, including rainwater, plumbing leaks, kitchen spills, or humidity. Rainwater can penetrate buildings from roof leaks, poor flashing, deficient masonry pointing, porous wood, or inadequate grading which does not divert surface water from the building. Plumbing leaks can occur in both fresh water and sewer piping in wall or floor cavities as well as piping buried under slabs or encased in concrete, which can wick through the concrete to the building interior. Indoor relative humidity levels should be between 30 percent and 60 percent. Temperature extremes should be avoided, particularly high temperatures above 70° F. Inadequate climate controls can be a major factor in microbial contamination when inadequate fresh air is taken in to save heating and cooling expenses, if zones such as auditoriums are not heated or cooled when not in use, or if an HVAC unit is undersized

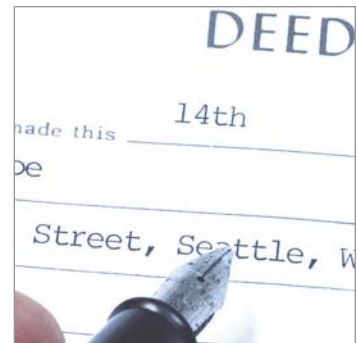
and cannot extract enough moisture from the air. Nutrients can be provided by cellulose material such as paper, wood, ceiling tiles, cardboard; dirt and dust; and glues such as those found in wall-paper paste.

PREVENTION

To prevent microbial amplification, building owners need to address one of the components (nutrients, moisture, and temperature) of microbial amplification as all three are needed to prevent mold growth. It is not practical to eliminate nutrients, as paper and wood are common in most buildings. However, if a building or part of a building is prone to high moisture (such as kitchens, semi-protected loading docks, and washrooms), nonporous, inert materials such as glass, ceramics, plastics, and metal should be used. Maintaining temperature can be done by ensuring adequate HVAC systems are installed and a preventive maintenance program is employed. The most effective method to reduce microorganism amplification is moisture control. Moisture control begins during construction. Building owners should ensure that contractors have quality control procedures and adequate insurance. Porous materials (drywall, carpet) should not be installed before the building is tight. After construction, moisture controls can include regular inspections of mechanical systems, exterior protection (roofing, flashing, pointing), basements, sumps, and regular walkthrough inspections. High humidity areas such as shower rooms, laundry rooms or indoor pool areas should be provided with ventilation fans which discharge to the exterior.

MANAGEMENT CONTROLS

Management can take some preventive measures beyond the previously-mentioned building maintenance tasks. If a building is leased to a tenant, the owner should state in the lease agreement who has responsibility for the building's mechanical systems, including temperature and humidity ranges which must be maintained. The owner should also require that the owner or their representatives conduct an annual inspection to check for moisture conditions or visible microbial growth. The owner should also require the tenant to promptly report any moisture or microbial growth conditions as well as any claims related to these conditions. If a concern or complaint is received by the owner, it should be documented and action should be taken as soon as practical. The owner or an authorized representative should conduct a visual inspection of the complaint area and inspect for visible moisture or microbial growth. If moist conditions are observed, they should be corrected as soon as possible by fixing leaks, repairing roofs, or regrading. If extensive microbial growth is observed or if health complaints are received, a qualified indoor air quality consultant should be retained to assess the situation. Building owners should conduct periodic audits of property management records and internal staff and external contractor practices.



REMEDIATION

In the event of water damage, prompt action is essential. Cleanup operations should be conducted within 48 hours. Hard surfaces should be dried and water-damaged porous surfaces such as drywall should be discarded. If action is not taken in a timely manner, porous surfaces such as carpets and furniture may also have to be discarded. Comprehensive mold regulations have



not yet been developed; however, detailed procedures for mold remediation may be found in the US Environmental Protection Agency (USEPA) guidance document *Mold Remediation in Schools and Commercial Buildings* and in the New York City Department of

Health (NYDOH) *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. These guidance documents provide suggestions for what should be discarded, how drying should be conducted, how to prevent microbial migration to other areas, investigation protocols, clearance sampling, and protection of remediation personnel. Extensive remediation should be performed by qualified contractors with adequate insurance coverage affiliated with professional organizations. Check references and ensure that USEPA, NYDOH, or other guidelines are followed.

While it is not possible to completely eliminate microorganisms in occupied spaces, control of temperature, nutrients and, most importantly, moisture, can prevent microorganism amplification. Policies and procedures should be developed to discover moisture conditions and mold growth at the earliest stages and take action quickly. In the event that amplification has occurred, remediation should be performed by qualified personnel using established guidelines to remove the mold, prevent recurrence, and protect employees and the public.

For additional information on mold and microbial contamination, please see the related XL Environmental Risk Bulletin entitled, “Mold Prevention and Control for Mechanical and HVAC Contractors.”

The information contained herein is intended for informational purposes only and does not constitute legal advice. For legal advice, seek the services of a competent attorney. Any descriptions of insurance provisions are general overviews only.

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