Mold Litigation

AN INSIDER'S VIEW OF ASSESSMENT AND REMEDIATION CHALLENGES

by Richard M. Lynch

Mold litigation involves a complex combination of technical, administrative, scientific, medical, economic and legal challenges. Attorneys involved in these claims should consult qualified experts in the areas of industrial hygiene, building science and maintenance, occupational and environmental medicine, and mold remediation and restoration regarding the facts and concerns surrounding a given case. With the assistance of competent advisors in these areas, the chance for a successful outcome in mold-related litigation is greatly increased.

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The purpose of this article is to provide an overview of the methods of assessment and remediation of mold-contaminated buildings such as homes, schools and offices, and to point out several associated technical and administrative challenges that may have an impact on mold litigation cases. A list of common factors that may affect mold litigation success is presented at the end of the article, but is not intended to provide detailed information on health effects of mold exposure. Rather, the article is designed to assist plaintiff and defense attorneys in planning appropriate strategies for assembling their teams of experts in preparation for litigation.

Defining the Problem

Mold is a term commonly used to describe any organism within a group of micro-fungi (*i.e.* filamentous fungi whose spores and other specialized structures must be examined via microscope for identification to occur).[1] These micro-fungi represent one category of a broader grouping of airborne particles that are living or originate from living things, called bioaerosols,[2] which may include fungi, bacteria, viruses, pollen, protozoa, dust mites, cat and dog allergens, endotoxins, mycotoxins and other organisms. The primary route of exposure for bioaerosols is generally considered to be inhalation.[3]

Health effects from exposure to bioaerosols may include infectious diseases such as Legionnaires' disease from legionella pneumophila bacteria or aspergillosis from aspergillus fumigatus; inflammatory diseases such as hypersensitivity pneumonitis and allergic responses such as asthma, and other respiratory ailments. Due to great variation in individual susceptibility and exposures, no governmental or widely accepted exposure limits exist for mold, and the medical significance of exposure to bioaerosols is best determined by a physician with knowledge of the unique medical characteristics of the patient, combined with information collected from the suspected environment by an experienced certified industrial hygienist.

Mold Contamination of Buildings

Mold spores are ubiquitous in indoor and outdoor locations throughout the world. Primary outdoor mold spores measured by the author in New Jersey include spores of alternaria, aspergillus/penicillium-like spores, cladosporium, epicoccum, ganoderma, basidiospores, and hyphal fragments. The relative preponderance of these species varies with the season, rainfall, proximity to vegetation and soil, and other factors.[4] Primary sources of these molds include parasitic destruction of leaves, grass and soil-borne molds, all of which occur naturally. As part of the reproductive cycle, spores from these common molds are released into the air to be carried by wind turbulence.[5] These airborne spores later colonize other food sources where they are deposited, in the presence of the proper balance of moisture, temperature, and a nutrient source such as cellulose.

Because indoor air is derived from outdoor air, indoor mold spores in most normal buildings (clean rooms and hospitals excluded), are often a subset of the outdoor mold spore flora in the local area. Indeed, one would expect indoor air levels of mold spores to be equivalent to or lower than outdoor air levels of mold spores, comprised of roughly the same species, in roughly the same proportion as identified outdoors in most normal homes and businesses, unless extraordinary filtration measures have been implemented (such as those recommended for hospitals undergoing renovations where immuno-compromised patients may be undergoing surgery, to prevent opportunistic infections from inhalation of normal airborne bioaerosols).[6]

Mold contamination of buildings may occur when environmental conditions result in mold proliferation (rapid growth in the number of mold colonies) on surfaces of cellulose-containing walls (such as drywall), carpeting, insulation, ventilation systems, or wood or dust accumulations. Generally, the primary cause of indoor mold proliferation is the presence of elevated levels of moisture within the building. Examples of this may include elevated relative humidity due to malfunctioning heating, cooling or dehumidification systems or flooding from roof or foundation leaks, condensation pan overflows, failed hot water heaters, ruptured water supply lines or cracked toilet bowls. In general, relative humidity should be maintained below approximately 60 percent to reduce the potential for mold growth on surfaces.[7]

Generally, the primary cause of indoor mold proliferation is the presence of elevated levels of moisture within the building.

When prolonged elevated relative humidity exists within cellulose-containing buildings, or when excess moisture is not promptly removed from wet building materials and the affected cellulose-containing materials effectively dry, mold proliferation can become significant in as little as 24 to 48 hours. Under these circumstances, mold levels on surfaces may proliferate and be evidenced by elevated indoor levels of normal outdoor mold spores, or low, moderate or high levels of indicator hydrophillic (water-loving) mold species indoors, that are typically not identified in normal indoor or outdoor air (such as stachybotrys, chaetomium and ulocladium) and other mold species typically associated with high water activity conditions.[8]

Generally, when water-damaged building materials are identified they should be cleaned or removed in accordance with the guidance described later in this article, using techniques that prevent the unintentional spread of mold spores to occupied portions of the home or facility. If the source of the water damage also contains other pathogens —such as bacteria, viruses or protozoa— which would be expected from a sewerage backup, additional precautions and cleaning techniques should be followed.

The Assessment

Assessment of mold contamination typically involves several interrelated activities, including visual inspection; estimation of water content within surfaces of carpet, drywall, wood, concrete, or brick as appropriate; and air, surface and/or bulk sampling coupled with accredited laboratory analysis. The combination of assessment tools to be used in any particular situation depends upon the specific objectives of the investigation and the conditions present within the structure at the time of the inspection.

Visual Observations. Visual observations such as dark (black, brown, red or green) discoloration of drywall is an indicator of possible mold growth, though the presence of these colors on other materials such as wood, brick or concrete may be the result of normal discoloration, low-level naturally occurring mold content, mineralization, or other factors. As an experienced certified industrial hygienist, the author often refrains from judging the severity of a mold contamination based upon visual observations alone. Boroscopes and other devices may aid in observing relatively inaccessible mold in wall cavities, provided access exists.

Moisture Content. Whenever possible, it is valuable to determine if the material contains elevated levels of moisture. This can be determined using a variety of tools, including non-penetrating moisture meters, penetrating moisture meters, infrared cameras and other tools.

The value of moisture indicator tools such as those listed above is diminished as the time between the water intrusion event and the assessment increases. If the water intrusion has occurred so long ago that the building material has dried prior to inspection, hidden mold within wall cavities may exist but may not be suspected or found.

Air, Surface and Bulk Sampling. A variety of air sampling methods may be utilized. One recognized air sampling technique involves drawing a known volume of air over agar plates, which leads to a deposition of airborne mold spores into the agar. These plates are then forwarded to an accredited laboratory, incubated for several days, and examined by a mycologist. Alternatively, there are widely accepted non-culturable methods, where a known volume of air is passed over a treated microscopic slide onto which airborne particles—including mold spores, hyphae and other mold structures—are deposited. These devices are then forwarded to an accredited laboratory for microscopic examination and analysis.

Because all normal indoor and outdoor air contains mold spores, any air sampling for airborne mold spores must involve an active movement of a known volume of air over the collection media, and must be analyzed by an American Industrial Hygiene Association (AIHA)-accredited environmental microbiology laboratory. Outdoor comparison samples must be collected to interpret indoor sampling results. Each sampling methodology has limitations that should be considered by the industrial hygienist interpreting the data.

Surface samples may include tape-lift samples for microscopic examination or culturable dust samples. Carpet dust samples also provide an indication of the mold in dust loading within the carpet, and can be used to help pinpoint sources of identified airborne mold spores. Bulk samples from contaminated wood or other materials can also be used to verify the presence or absence of mold and identify predominate species. Trained and experienced industrial hygienists are essential to determining the appropriate combination of assessment methods.

Mold Remediation

Following assessment, a mold remediation work plan is often developed by an industrial hygienist, to be implemented by an experienced certified mold remediation contractor. There exist numerous certifying bodies for remediation contractors, and the work quality and approach can vary greatly between contractors. While no regulatory rules for mold remediation at the federal or state level currently exist, widely accepted industry guidelines do, and have been published by agencies including the New York City Department of Health[9] and the Institute of Inspection Cleaning and Restoration Certification (IICRC S-500 and S-520).[10] Recently, the Occupational Safety and Health Administration (OSHA) published guidelines for mold remediation on their website (www.osha.gov/dts/shib/shib101003.html).[11]

These guidelines do not establish safe or dangerous levels of mold, but generally acknowledge that in normal buildings, indoor mold air levels should be comparable to outdoor levels. What these guidelines do, is provide standards of practice for mold remediation efforts, aimed at protecting the public from unintentional exposure to mold spores during remediation, as well as establishing reasonable safety precautions for workers involved in mold remediation efforts. These guidelines broadly categorize mold remediation jobs into any of five categories based upon the extent of contamination (levels 1–5), and describe increasing levels of safety precautions when addressing the contamination, ranging from cleaning small isolated areas (<10 square feet) to addressing large contamination (>100 square feet).

Due to the presence of potential hidden mold in wall cavities or beneath carpeting or hardwood flooring, the full extent of mold contamination within a building may not be clear until remediation is underway. Therefore, it is important that remediation contractors take precautions to prevent fugitive releases of mold spores from wall cavities, even when small areas of mold contamination are removed.

Remediation contractors and building owners should adhere to the guidelines listed above in considering the specific conditions of the site, and seek professional guidance from experienced industrial hygienists to assist in remediation planning oversight, sampling and control. Independent industrial hygienists should be considered for conducting clearance testing, to reduce the potential for obvious conflicts of interest that may occur when remediation contractors are asked to clear their own work.

When the source of the water damage may be chronic foundation leaks, roof or pipe leaks, or other building envelope failures, it may be necessary to secure the assistance of an experienced building scientist, such as an architect, to aid in assessing the condition and planning strategies to prevent future water intrusion.

Mold Litigation Dynamics

The following is a description of factors that may have a bearing on mold litigation cases. The significance of these issues depends on the nature of the case, the claims being made, duty to act, breech of duty and proximate or actual harm alleged.

Environment

- Source of water infiltration
- Owner's actions or lack of actions upon knowledge of water infiltration problem
- Industry standards for construction, waterproofing, etc.
- Availability of maintenance records and preventative maintenance protocols

Assessment

- Air and other sampling methods utilized
- Adequacy of outdoor/indoor comparison samples
- Calibration of sampling equipment
- Chain of custody forms completed
- Use or non-use of an AIHA-accredited laboratory
- Qualifications of personnel conducting the assessment
- Steps to protect the environment and nearby personnel during assessment
- Specificity of physician's opinion regarding patient health status
- Other confounding factors (*e.g.* cat dander, etc.).

Remediation

- Adherence to industry guidelines
- Disclosure to occupants, employees or visitors of risks and limitations
- Steps taken to mitigate damages due to unforeseen events during remediation
- Qualifications of remediation contractor personnel
- Documentation of remediation activities
- Contractual agreements
- Dispute resolution ⚖

Endnotes

1. Flannigan, B., R.A. Samson, and J.D. Miller, *Microorganisms in Home and Indoor Work Environments*, Taylor & Francis, 2001 p. 21.
2. Macher, J., *Bioaerosols: Assessment and Control*, American Conference of Governmental Industrial Hygienists, 1999, p 1-1.
3. Dillon, H.K, P. Heinsohn, and J.D. Miller, *Field Guide for the Determination of Biological Contaminants in Environmental Samples,* American Industrial Hygiene Association, Biosafety Committee, 1995 pp 21-30.
4. Flannigan, pp 7-14.
5. *Id.,* p. 5
6. Overberger, P.A., R.M. Wadoswsky, and M.M. Schaper, Evaluation of Airborne Particulates and Fungi During Hospital Renovation, *Am. Ind. Hyg. Assoc. J.,* 56:706-712, 1995.
7. Macher at pp 10-3, 10-4
8. Flannigan at p. 92.
9. New York City Department of Health, *Guidelines on Assessment and Remediation of Fungi in Indoor Environments,* www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html.
10. IICRC Standard and Reference Guide for Professional Water Damage Restoration §500 Institute of Inspection, Cleaning and Restoration Certification, 1999, and IICRC Standard and Reference Guide for Professional Mold Remediation §520, Institute of Inspection, Cleaning and Restoration Certification, 2003.
11. OSHA, A Brief Guide to Mold in the Workplace, U.S. Department of Labor, www.osha.gov/dts/shib/shib101003.html.

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