Mold Contamination Cases

Creating a standard of care for technical assessment and support

By Kim E. Anderson

FUNGAL ORGANISMS, INCLUDING MOLD, are ubiquitous and have existed long before humans. However, the relatively recent realization by the general public that potentially hazardous mold is often present in residences, office buildings, public buildings and essentially all other structures, has led to broad-based and frequent media attention, insurance claims and litigation (Eccleston; Hardin, et al; Hartwig and Wilkinson; Herndon and Yang; Mitby and Trost; Hodgson; Finnegan and Pickering).

Public concern regarding mold in buildings has heightened in the last five years. This is primarily due to the understanding that selected genera of mold may amplify in places where people live, work and play, and that many mold types (genera or species) may have adverse toxicological effects on humans and cause real property damage (Albright; Bousquet, et al; Fung and Hughson; Hossain, et al; Jaakola, et al; Kemp, et al; Meklin, et al; Page and Trout; Pasanen, et al; Richard, et al; Robbins, et al; Rylander and Etzel; Terr; Van Loo, et al; Burge and Otten; Flannigan and Morey; Strom, et al).

In general, mold can use wood, paper, gypsum and other sources of cellulose materials, as well as general dirt and debris, as a source of nutrients. Combined with water or adequate water vapor, mold can amplify at a rapid rate. As mold goes through its lifecycle, many species have the ability to produce and release spores, release primary and secondary metabolic products, and generate other products. Each of these metabolic products and the general structure of the mold cell walls have the capacity to manifest adverse effects in humans. In addition, as the mold colonies proliferate, property damage often occurs [Dehmler; Dolnick; Ellringer, et al; EPA(a); Garrett; Gots, et al; Lis, et al; NYCDOH; Shelton, et al; Wielinski; Kreiss; Redlich, et al; Reed and Swanson].

Identification of the mold type depends on the analytical method used. For microscopic analysis of mold spores, which does not involve culturing and allowing the spores to grow, the type can be identified based on the spores' appearance to the genus level (or the second level) of detail in the taxonomic classification of fungi. However, if mold spores are cultured, which allows them to grow, identification to the first level of detail—termed the species level—is feasible.

As a result, many mold investigations are now being conducted to serve as the basis for establishing damages to property and individuals that may lead to litigation. To improve investigation methodologies and disposition of cases, a consistent approach to mold investigations is required. This necessitates a standard of care for the technical assessment and support of mold contamination cases. The standard of care outlined in this article is based on the author's 30-plus-year career providing litigation support to occupational disease, toxic tort, environmental damages and, in the last three years, mold cases.

Legislation & Litigation

Without a mandate for factual regulation of mold, many states have attempted to pass legislation to regulate selected aspects of mold activities including:

- licensing, certification or registration of mold assessors, assessment firms and abatement firms;

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During 2003, more than 60 mold-related bills were filed in 25 states. More than 20 states have proposed legislation, created study committees or passed resolutions to establish procedures, guidelines or processes that mold professionals (from assessment to remediation) should follow.

•notification to occupants or prospective purchasers of mold-contaminated buildings or homes;

•study of mold, including toxicity, amplification and types;

•establishment of statutes of limits for civil action for damages related to exposures to mold (Hansen; Hardin, et al; Hartwig and Wilkinson).

During 2003, more than 60 mold-related bills were filed in 25 states, with California, Indiana, Louisiana, Montana and Texas passing bills related to mold claims, real estate transactions and the registration of mold professionals (Aerotech; Hansen). In addition, more than 20 states have proposed legislation, created study committees or passed resolutions to establish procedures, guidelines or processes that mold professionals (from assessment to remediation) should follow (Aerotech; Hansen). These state activities substantiate the need for a consistent, technical competent standard of care for mold work.

Until all states pass mold regulations, selected case law will establish the legal theories and precedents that will be used in decisions regarding personal and real property damages. While it is beyond the scope of this article, mold investigators should review the cases that are litigated.

In the last few years, tens of thousands of claims have been filed with insurance companies (Hardin, et al). Initially, insurance companies paid most mold claims. However, due to the proliferation of claims, most insurers now exclude mold coverage or have implemented significant reductions on the limits of liability. As of August 2003, the insurance departments of 39 states had approved mold exclusions in homeowners' insurance policies. Additionally, mold exclusions are becoming common in commercial property and liability policies (Hartwig and Wilkinson). In some instances, other responsible parties, including property owners or sellers, employers, governmental and private agencies, have responded by making payments for personal injuries and property damage.

Due to the high volume of claims paid, insurance companies and other responsible parties are now often denying claims while taking the opportunity to critically evaluate essentially all new claims to determine their validity. In cases where claims are denied, claimants often initiate legal action to attempt to recover damages they believe have occurred or may occur (Dybdahl; Dybdahl and Lemon; Maniloff). Based on the scope and nature of the denied claim, the success of any resulting litigation is determined by various factors, including:

•terms and conditions of the exclusions for applicable insurance policies, if any;

•statute of limitations and whether the jurisdiction has a statute of repose or tolling for latent conditions;

•cause of damages (real property and/or personal), including water intrusion or excessive moisture;

•existence, location, genera or species, concentration of the mold and impacted media;

•approximate date of water intrusion or excessive moisture, mold amplification and real property and personal damages (i.e., trigger);

•link between the events (water intrusion or excessive moisture, existence of mold and alleged damages).

Of these six factors, the determination of insurance coverage and applicability of the statute of limitations are subject to legal evaluation, while those that relate to water intrusion or excessive moisture, determination of the significance of the mold (locations, genera/species and concentration), causation triggers and links between these factors require proper and effective technical assistance. To ensure proper disposition of these technical factors, the following procedure for the standard of care for the technical assessment of fungal (mold) contamination cases is recommended. It includes four key activities.

Determine Cause of Damages

The facility must be inspected by the party's designated technical expert to determine the source(s), location(s) and extent of the source of water or excessive moisture. Selecting an expert in mold cases is as critical as selecting an expert in most cases. However, the difficulty in mold cases is that no recognized licensing or registration exists for mold experts. Although some state and local governments have proposed or are considering mold licensing, it is unlikely that a national licensing or registration will occur for some time. In many instances, other recognized licensing or designations, including CSP, CIH or CHMM, should be considered.

During the selection process, the education and experience of the potential expert must be considered. Many CSPs, CIHs and CHMMs have a superior educational background in biological science and chemistry, which is essential in understanding the structure and functioning of mold. Education in engineering or architecture is also needed to understand the impacted structure, including building techniques and materials, sources of water intrusion and high moisture, and abatement and renovation (where applicable).

Sufficient education in toxicology is also beneficial as it helps the expert understand the potential toxicological impacts of mold on humans, including acute and chronic disease manifestation. In addition, the expert must have sufficient education to plan and conduct mold investigations and surveys, including the collection of moisture measurements

and mold sampling, as well as sufficient skill to prepare a proper technical report.

While it may be difficult to retain an expert who meets all of these criteria, an expert can be "matched" with the key issues of a given case. For example, if the case involves a leaking roof that requires an investigation to determine the extent of the water intrusion and damages, an expert with a CSP, CIH or CHMM and engineering training and education would be appropriate. Depending on the scope and nature of the contamination, an assessment of construction materials and methods may be required. This assessment may require the services of a mechanical or structural engineer. For other situations where damages are not related to construction of the facility, a civil or chemical engineer may be preferred. However, if the same case also involves significant personal damages from alleged respiratory ailments, an expert with the previously described credentials and education in toxicology would also be desirable.

The inspection should be preceded by a review of the case file to establish issues, allegations and facts. At minimum, the facility inspection should include the following three activities:

1) interview of facility personnel and "affected" personnel;

2) a facility walkthrough;

3) preparation of a technical report.

Specific procedures must be used during the interview and facility walkthrough tasks to ensure that the information collected is valid and meaningful. The process of interviewing the structure's owner and occupants often provides important information—ranging from the construction of the structure, historic uses, operational and maintenance issues, and similar details. ASTM's proposed "Standard Guide for Limited Survey for Moisture Intrusion and Microbial Growth in Commercial Buildings" contains an excellent interview checklist, filled with questions designed to help an investigator determine the likelihood of real property or personal damages [ASTM(a)]. Several other sources are also available [Black; ASTM(b); Macher; Smid, et al].

The technical report, which will likely be required, must conform to accepted guidelines for technical report writing (Ambrose and Ambrose; Day). The report must explain the scope of the survey or investigation, describe sampling methodologies employed, present and interpret sampling results, and provide conclusions. It must also contain findings and observations gathered during the interviews and facility walkthrough, as well as conclusions regarding the causation and extent of water intrusion or excessive moisture. The information contained in this document is often included in the report prepared following the mold assessment/investigation [Miller; Portnoy, et al; EPA and NIOSH; EPA(b)].

Conduct a Mold Assessment/Investigation

Based on the determination of the cause(s) of damage(s), a mold assessment/investigation will be conducted. This process must use valid and appropriate techniques to: 1) establish the location, nature and extent of mold growth; 2) establish the genera and concentrations of mold in the air and on surfaces; and 3) prepare a technical report (Miller; Portnoy, et al; Burge and Otten; Cox and Wathes; Nevalainen, Willeke, et al).

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To establish the locations, nature and extent of mold growth, the mold genera and concentrations, valid and appropriate techniques will include use of evaluative and monitoring tools and equipment such as a moisture meter; temperature and relative humidity meters; ventilation smoke tubes; air sampling equipment and media; swab or filter sampling devices; and other equipment such as direct reading chemical monitoring pumps and tubes; optical and invasive water/moisture identification equipment; velometers; wall cavity sample devices; illumination devices; and marking devices.

Proper equipment calibration must precede any field sampling. Records from the calibration must be maintained for use in litigated cases. A sufficient number of samples must be collected in order to conduct an evaluation of the mold in the air and on surfaces. In addition, a laboratory with appropriate competency and accreditations must conduct the laboratory analysis (Macher; Smid, et al; Chang, Hwang, et al; Chang, Grinshpun, et al; Jensen and O'Brien; Leidel, et al; Madsen; Nevalainen, Pastuszka, et al).

Two independent groups, AIHA and American Assn. for Laboratory Accreditation (AALA) provide accreditation for laboratory practices. Proficiency testing programs, including the Environmental Proficiency Analytical Testing (EMPAT) program, which is sponsored by AIHA, is also available. It is recommended that, at minimum, the laboratory used to analyze samples should participate in and meet the criteria of the EMPAT program.

Once laboratory results are received, a technical report may be prepared. Depending on the laboratory results and disposition of the case, the client may not request such a report at this time. For example, if the contamination is limited or if the case can be resolved at this point, then report preparation costs may be eliminated by simply providing the laboratory results to the parties.

Should a report [which includes reduction and interpretation of the sampling (analytical) data] be required, limitations of air sampling results must be

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identified. These limitations can include inaccuracies, imprecisions and biases associated with sampling and analytical methods and equipment; laboratory analytical methods; the limited number and sampling time of the samples; equipment calibration; and other limitations. Furthermore, the technical expert must understand the number of samples required to conduct statistical analyses of the analytical data if used (Aizenberg, et al; Eduarda and Heederik; Macher; Miller; NYCDOH; Smid, et al 1989). As noted, information obtained from the determination of the cause of damages is often included in this report.

If the mold assessment/investigation report indicates that the mold genera/species, concentrations, extent or some combination of these issues provide significant information to warrant continuation of the case, the case triggers should be established. These include approximate date of the water intrusion or excessive moisture, mold amplification, and real property and personal damages.

Establish Case Triggers

To establish case triggers, the information and data assimilated during the earlier investigative stages must be used. The technical expert and legal counsel should collaborate to establish these triggers based on assimilated data that can be validated and information that is confirmed. In some cases, triggers may be obvious if the water intrusion was caused by a single event with the ensuing mold growth easily identified, as would occur if excessive wind dislocated a portion of a facility's roof and within a week visible mold was present that impacted the real property and manifested symptoms in occupants.

In other cases, it may be difficult to establish triggers due to insidious water intrusion resulting in mold growth. For example, the water intrusion could have been caused by a minor water leak in the potable water supply to a structure. Following a prolonged period, visible water damage and perhaps mold become evident, while over an extended period, occupants have reported nonspecified, subjective symptoms, including upper-respiratory irritation, cough and eye irritation. In such a case, exact case triggers will be difficult to establish; therefore, a range of occurrence dates can be provided that correspond to the facts of the case. Based on a review of results from conducting the initial five factors, it may be possible to define the links between water intrusion or excessive moisture, the existence of mold and the alleged damages.

Define Links Between Water Intrusion or Excessive Moisture, Existence of Mold & Alleged Damages

Links must be established between the precursor to mold amplification (water intrusion or excessive moisture), mold growth that results and the damages (property or personal) in order to assist in the successful disposition of a case. This requires that the facility evaluation provide conclusive, definitive and technically supportable information and data regarding the sources and occurrence of water intrusion or excessive moisture, and the resulting presence of the mold genera/species at elevated concentrations or concentrations of concern for toxigenic mold genera/species. The final and most important link between the occurrence of mold and the resulting property or personal damages may then be established.

The link between water intrusion and excessive moisture, associated mold growth and property damage is generally reasonably established. The cause and effect between the proliferation of mold on a facility's walls, floor, ceilings and HVAC systems can often be readily observed and confirmed through sampling. In selected locations, interwall cavity observations and sampling, carpet sampling and structural analysis techniques can be employed to confirm this link and determine (calculate) the property damage.

Personal damages are the most important and financially significant component in many cases. However, links between water intrusion or excessive moisture, associated mold growth and personal damages are often difficult to establish due to the lack of definitive medical opinions. While voluminous literature is available to define toxicity of many mold species, including cell wall components, primary or secondary metabolic products and other toxicological materials, from human ingestion and inhalation, only select medical practitioners accept or endorse the association of mold exposure with physical impairments other than allergenic or other acute respiratory effects.

The technical expert who evaluates the facility and conducts the mold assessment/investigation can often help the medical practitioner review medical records and provide a review of the literature related to the mold genera/species and alleged physical anomalies. Federal law protects the confidentiality of medical records, including those of a party alleging injury associated with mold contamination. Medical records are only released for review by another party on proper authorization of the injured party, as required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA), Public Law 104-191. Therefore, appropriate legal counsel must administer the acquisition of any medical records. Often, the technical expert can also help

(Article continued on page 40)

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Many cases that meet the "legal" requirements of coverage and timing are derailed by critical technical flaws such as improper sampling and analyses, invalid conclusions presented from analytical data, lack of sampling equipment calibration and invalid technical reports.

the medical practitioner define the claimant's exposure, including duration and dose. With collaborative assistance of technical and legal experts, the medical practitioner can ensure that the most appropriate legal opinion—which can provide the personal damage link—is submitted.

A Standard of Care Is Critical

In many mold cases, substantial deviations from this standard of care have occurred. Often, cases are filed when either insurance coverage does not exist or when statutes of limitations have expired. Many cases that meet the "legal" requirements of coverage and timing are derailed by critical technical flaws such as improper sampling and analyses, invalid conclusions presented from analytical data, lack of sampling equipment calibration and invalid technical reports. Among those cases that meet legal and technical requirements to proceed, most fail when the case triggers and links are not established, defined and supported with technical data and medical opinions.

Therefore, mold investigators must endeavor to assess facilities in order to determine the cause of damages from water intrusion or excessive moisture while evaluating the relationship of the mold type and contamination to physical injuries that may be described. The investigator must also define the locations of mold growth and establishing its type (genera or species) and concentration. If possible, the expert must also establish the approximate date that the causation agent (water or excessive moisture) occurred, the timing of the mold amplification and the resulting damage(s) that is termed the trigger. Finally, the mold investigator must attempt to link the events of the case, including the causative agents that result in the mold growth which is responsible for the damages.

Conclusion

To help those whose property and/or health are impacted by mold, a standard of care should be followed with respect to the technical assessment and support of mold contamination cases. In many instances, this standard of care is neglected, which causes cases to fail. Therefore, SH&E professionals involved in mold cases must:

1) Follow reasonable and scientifically sound procedures to determine locations and sources of water intrusion or excessive moisture while not speculating on causation.

2) Obtain, calibrate, maintain and use proper sampling equipment with sampling methods detailed by procedures established by AIHA, ACGIH or the microbiology laboratory that will be used.

3) Interpret sampling data after comparing the type (genera or species) and concentration (enumeration) to the background sampling results, which may be from outside or areas not impacted by mold, depending on the case. Distribution of the mold and type (genera or species) of samples from suspect and background locations must also be compared to determine any disparities that may indicate contamination or unusual mold amplification.

4) Engage other experts when necessary to attempt to establish the cause and approximate timing of the water intrusion or excessive moisture. In addition, if necessary, other experts may be consulted to determine the extent of mold amplification and resulting real property or personal damages.

5) Establish the link or relationship of the causative event, mold growth and contamination, and resulting damages. Significant efforts must be employed to establish this linkage in a logical progression of the causative event ultimately resulting in the damages. ■

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