



# mold

## Steps Toward Clarity

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*A White Paper by the Mold Working Group*

Commercial Real Estate/Multifamily Finance Board of Governors (COMBOG) Loan Origination Committee



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## PREFACE

The issues posed by dampness and mold inside buildings approach a crossroad. In 2004, publication of “Damp Indoor Spaces and Health” by the National Academy of Sciences revealed the extent of public misperception surrounding health effects and exposure to mold and dampness, and the extensive future research required to understand what impact dampness and mold may have on commercial buildings and their occupants. While fundamental work remains to be done, there is enough information already known today to help the commercial real estate finance industry understand mold and dampness and develop effective strategies for avoiding or minimizing the risks and misperceptions associated with these conditions.

The purpose of this document is to provide the reader with an informative look at mold and damp indoor spaces: how knowledge in this area has evolved and what may be done now to effectively deal with mold and dampness. It is a basic guidance and educational document, addressed to a lending and servicing industry audience, rather than a standard, comprehensive essay or a legal treatise. Necessarily it must be something of a snapshot, because even during the period of its preparation, there will have been developments in research that are certain to have an impact on knowledge of these areas in both the short-term and long-term.

The working group provided key industry personnel copies of the draft White Paper for a 45-day comment period in advance of the final publication. It was critical that the industry have an opportunity to review, challenge and to confirm the soundness and accuracy of the information provided in this document. The goal was to give the readers the most updated information possible. Also, because of the rapidity with which this area is evolving, the Mold Working Group anticipates the issuance of periodic supplements to this document as significant developments occur and the lending industry digests them.

In the meantime, future understanding depends upon the laying of a solid foundation of knowledge. This guideline has extensive footnotes and uses appendixes to provide additional documentation supplementing the White Paper. The White Paper is a resource document that can be used by any reader when seeking additional detailed information on this important issue. It is with that purpose that the Working Group has issued this first report.

The Mold Working Group

Commercial Real Estate/Multifamily Finance Board of Governors'  
Loan Origination Committee  
Mortgage Bankers Association

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# **EXECUTIVE SUMMARY**

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## 1. MOLD AND ITS ROLE IN COMMERCIAL REAL ESTATE

### **Why is mold a concern for lenders and servicers in commercial real estate?**

For lenders, servicers, and others involved with real estate loans, dampness and mold growth can lead to problems at several levels. These include:

- Direct damage to building or contents. Mold or dampness can damage building materials and contents requiring the owner or manager to expend funds for repairs and remediation. If these sums are substantial, a borrower's ability to repay a loan and the collateral value of the structure may be negatively affected.
- Loss of use/loss of rental value. Areas affected by significant amounts of mold or dampness may become unusable, unfit for rental, or rentable only at a reduced rate. Unaffected sections of a building may have to be closed off to effect repairs. This loss of income can have a negative impact on cash flow in addition to costs associated with remediation.
- Stigma damages. Even after a successful remediation, the stigma associated with a prior mold outbreak (picture remediation contractors going in and out of a building in "moonsuits") may reduce the market value of or ability to rent space in an affected property, with direct negative effects on collateral value or cash flow a possible result. In multifamily residential units, residents may break leases with increased frequency or demand other concessions.
- Third party liability. Occupants and users of an affected building may sue for indirect harm or injuries they believe were caused by mold. Workers compensation claims have also been filed by occupants for exposure to mold. While these suits may not ultimately result in large awards, an owner's or manager's costs to defend them are likely to be high enough to have a negative impact on income.

The existence of significant mold or dampness problems in a structure can also have more direct effects upon a lender or servicer. The presence of large amounts of mold in a structure may be a negative constraint on a lender's decision whether to foreclose and resell or continue operations. Mold concerns may also affect the refinancing options available to the borrower, leaving the lender without one possible exit strategy. For servicers, mold and dampness issues can affect operating budgets or maintenance holdbacks and make work-outs or restructuring of non-performing loans more difficult. For lenders and servicers alike, the question of whether to create and impose mold control standards on building owners and managers can be difficult and a possible basis for direct liability to those affected by mold or dampness.

Because financial impacts can arise at any time, both lenders and servicers must understand, prepare and account for mold and dampness issues throughout the life of a transaction. To do this, there first must be candid self-analysis to determine the lender's willingness to assume risks from mold or dampness, critical underwriting internally to assess possible risks of mold exposure in conjunction with knowledgeable consultants and specialists, proper vetting of borrowers and property managers, and, if appropriate, open and ongoing dialogue with owners and managers of property. Each is an important and interrelated part of successfully preventing or minimizing possible adverse impacts of dampness and mold. There is no single set of "best practices" in recognizing and coping with mold issues, but awareness of mold and its effects are the first of a series of "smart practices" all lenders and servicers who wish to succeed in coping with this problem should adopt.

## 2. THE EFFECTS OF MOLD AND DAMPNES ON THE MARKETPLACE

### **Current state of scientific knowledge: National Academy of Sciences study**

Recognizing the growing level of controversy among health officials, property occupants and others regarding the possible effects of mold and other indoor microbial growth and the growing but unreliable body of information and misinformation on mold, the Centers for Disease Control and Prevention (CDC) took a proactive step. It asked the Institute of Health, a wing of the National Academy of Sciences (NAS), to convene a review of available scientific literature with the following mission:

The Institute of Medicine will conduct a comprehensive review of the scientific literature regarding the relationship between damp or moldy indoor environments and the manifestation of adverse health effects, particularly respiratory and allergic symptoms. The review will focus on the non-infectious health effects of fungi, including allergens, mycotoxins, and other biologically active products. In addition, it will make recommendations or suggest guidelines for public health interventions and for future basic science, clinical and public health research in these areas.<sup>1</sup>

The Institute convened a committee of experts in fields including public health, environmental health, building science and medicine. That committee issued its answer to CDC's direction with a thorough study entitled "Damp Indoor Spaces and Health," on May 24, 2004.

As candid in describing what is not known about dampness, mold and strategies for prevention of microbial growth as it is in debunking myths concerning the health effects caused by mold exposure, "Damp Indoor Spaces and Health" provides the first comprehensive delineation of what is known about these issues. It is the first effort to provide a comprehensive framework for further analysis of the interaction between damp spaces, microbes and human health. As such, it is and will remain an important analytical tool for those involved with this area for years to come, and a brief review of its major findings is equally important to guide behavior as science works to fill in the gaps discussed in the report.

### **"Damp Indoor Spaces and Health" and implications for health**

Perhaps the most immediate impact of the NAS Report is its analysis of the scientific literature on health effects allegedly traceable to mold or microbial exposure and its conclusions as to the sufficiency of the evidence to support the burgeoning variety of alleged connections to a myriad of health claims. After noting that its conclusions do not apply to those with compromised immune systems and that mold exposure can cause symptoms in those allergic to a particular species of mold, the Committee detailed both the strengths and limitations in science around a relationship between exposure to damp environments or mold and various ailments.<sup>2</sup>

The Committee measured the evidence for a relationship between dampness and mold health outcomes using a four level scale:

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<sup>1</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 10.

<sup>2</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 11.

- Sufficient evidence of a causal relationship.
- Sufficient evidence of an association.
- Limited or suggestive evidence of an association.
- Inadequate or insufficient evidence to determine whether an association exists.<sup>3</sup>

The Committee did not find any health outcomes meeting its highest level of the scale, “sufficient evidence of a causal relationship,” and that assessment will make it materially more difficult for those asserting legal claims of bodily injury based on mold exposure to proceed. At the lowest end of the scale, the Committee found insufficient or inadequate evidence to support many claims of linkage between mold and dampness and serious illness or disease; among the conditions included in this “insufficient or inadequate evidence” assessment were cancer, neuropsychiatric symptoms, reproductive diseases and rheumatologic and other immune diseases.

### **“Damp Indoor Spaces and Health” and the need for further research**

“Damp Indoor Spaces and Health” is not simply about medical issues; it begins with the basics. It notes that the ideas of dampness and excess water inside buildings are at once both intuitive and misleading. In anecdotal reports, these terms have taken in everything from high relative humidity, condensation and water ponding to water intrusion and other situations in which excess water is present.

According to the Committee, other basic research is equally necessary. Research must be done to characterize the dampness-related emissions of mold and other microbes, of building materials themselves and their decomposition products, and their role in human health outcomes. The next step in the process would be development of information on “the microbial ecology of buildings,” which the Committee describes as “the link between dampness, different building materials, microbial growth, and microbial interactions.”<sup>4</sup> When these questions have more precise answers, research can continue to the next level, which includes studies of the duration of moisture damage in various materials and studies of the interactions between choices of building materials, construction methods, building operation, heating equipment and air conditioning equipment and mold and microbial growth and development.

Even with all of the publicity surrounding the Committee’s conclusions concerning medical issues, its most important conclusion is the simplest. The Executive Summary of “Damp Indoor Spaces and Health” contains the following reminder to all who must deal with mold problems and provides an action plan that can be implemented immediately and reliably:

The most effective way to manage microbial contaminants, such as mold, that are the result of damp indoor environments is to eliminate or limit the conditions that foster its establishment growth.<sup>5</sup>

This assessment applies in any indoor environment and is a logical and scientifically reliable basis for an effective mold control program.

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<sup>3</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 12.

<sup>4</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 15.

<sup>5</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 17.

## **Reactions and responses**

### **Insurance industry**

Before the year 2000, there were few mold claims, which were generally settled for a few thousand dollars. As high profile cases in Texas and California came to the attention of the public and media, public anxiety rose and legal claims increased substantially. The acceleration of cases began in 2000, and in 2001, estimates suggest that at least 10,000 “toxic mold”<sup>6</sup> cases were filed in the United States and Canada, of which just over half were bad faith actions against insurance companies. The amounts required to resolve homeowner “toxic mold” claims sometimes grew to \$100,000 or more, with commercial claims in the millions.<sup>7</sup>

The combination of large awards and inconsistent judicial interpretations of policy provisions has left many insurers understandably concerned about providing any form of coverage for mold. Although statistics suggest that the average cost of remediation for a residential mold claim averages between \$10,000-25,000 and averages about \$200,000 for commercial losses, underwriting remains difficult because the size of the potential universe of legal claims remains uncertain, making computation of an adequate premium difficult, and because of difficulties associated with conducting adequate inspections or controlling the operations.<sup>8</sup> Even though claims for bodily injury based upon mold coverage have not fared well in the courts, often because of the lack of credible expert testimony supporting the claimant’s position, the simple cost of defending them is significant and can be a substantial drain on an insurer’s financial resources. Finding actuarial insurance information on pricing for mold is difficult. Together these factors have made dampness and mold coverage a challenging product for insurers to adjust to in pricing the risk.

Despite these issues, some mold coverage is available. Some commercial property policies make available a separate, low mold damage sublimit – often between \$10,000 and \$25,000 – available for a relatively affordable premium. Outside the limited coverage being provided on standard property policies, there are no insurers providing First Party Property Damage Coverage on a standalone basis.

There are a few insurers who will provide higher limits of coverage by adding mold coverage to their environmental policies via an endorsement; this is not without problems. The first problem is that this coverage does not apply to first party damage. The second problem is that the insured must purchase an environmental policy and that can be expensive. The environmental policy endorsement provides generally two types of coverage for mold: third party claims for on-site clean-up of pre-existing conditions and third party claims for on-site clean-up of new conditions. This endorsement, as with other environmental coverage provided under the policy, is on a “claims made” basis, complete with retroactive dates and an available Extended Reporting Period. There are several notable exclusions under this endorsed cover, which would exclude coverage if certain maintenance activities were not conducted or maintained and would exclude any losses arising out of improper design or construction. These can be two very broad exclusions that could eliminate or limit the actual scope of coverage. Also, most available commercial liability policies providing mold coverage do not provide separate coverage for

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<sup>6</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 18.

<sup>7</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 19.

<sup>8</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 28.

defense costs; instead, payment of legal fees and litigation costs erodes limits on a dollar-for-dollar basis.

To obtain these types of coverage, a potential insured should expect to submit the following: (1) a detailed indoor air quality (IAQ) questionnaire; (2) proof of inspection procedures; (3) operation and maintenance plans including those for moisture control or a mold prevention plan; (4) the insured's guidelines for assessment and remediation of mold; (5) information on prior mold claims; (6) loss runs from the insured's property and liability insurance; and (7) in some cases, tenant lease agreements. Portfolio coverage also is available, but generally only as a part of a broader pollution liability policy with the same restrictions on coverage.

### **The courts**

Mold litigation has generally followed two paths. The first is suits by policyholders against insurers for denial of coverage under property or liability insurance or a defense under liability policies. The second is liability actions by property owners, occupants, and others exposed to mold against individuals or businesses alleging that some negligent or wrongful act, error or omission allowed dampness or mold or both to develop.

The first class of litigation, suits against insurers for claim handling or claim denial, tends to focus on the conduct of adjusters. Lawsuits may allege that the insurer has improperly denied coverage for a mold claim. The court generally must construe policy language and determine whether the policy, whatever type it is, covers mold or dampness damages. Or, the lawsuits may focus on the decision-making process used for review of the claim made on the policy. Some issues include: whether the insurer conducted an appropriate investigation into the cause of the loss – one case describes the issue as to whether the investigation was a pretext for a decision to deny coverage already made;<sup>9</sup> the time and manner the insurance company took to make a decision on coverage; disputes over the amount of coverage the insurance company would pay; and whether the insurance company allowed for adequate remediation to be conducted. Here, legal claims are made for breach of contract and for tort claims of “bad faith,” covenants of good faith and fair dealing<sup>10</sup> or state statutory rights.<sup>11</sup> Some jurisdictions allow all three.

In order to prove health injury, expert testimony is offered to show causation. Expert testimony in all areas of the law has been hotly contested for accuracy and relevance. Under the standard announced by the United States Supreme court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, (Daubert) and since adopted by a majority of the states, the trial judge acts as gatekeeper in scrutinizing expert testimony.<sup>12</sup> Every expert must be able to show that the opinions they offer are sufficiently reliable to be considered as testimony. Daubert imposes several requirements on expert testimony before it may be admitted. The first is that of reliability: has the rate of error from the method used by the expert been determined and found to be small enough to make the conclusions reached using it valid? The second is repeatability: can the same results be obtained if others use the same method? The third threshold is review:

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<sup>9</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 29.

<sup>10</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 30.

<sup>11</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 31.

<sup>12</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 34.

has the method been peer-reviewed, that is, subjected to critical scrutiny by others in the profession and published to face examination by the scientific community?

For mold cases in jurisdictions that follow the ruling in Daubert, a judge must consider two issues before permitting an expert to testify: one, if the type of mold involved could generally cause the type of injury claimed; two, has the plaintiff had a sufficient amount of exposure (inhalation, ingestion) to cause the specific injury plaintiff claims. Daubert sets a high standard for a plaintiff to be able to offer expert testimony in mold cases. The lack of credible scientific evidence that links mold to particular illnesses has caused many personal injury claims to fail in trial court or be reversed on appeal.<sup>13</sup> It is difficult to prove a certain level of mold exposure in an indoor space rises to the level of harmful, since there is no medical or scientific based standard for mold levels.<sup>14</sup> This in turn makes it hard to establish the scientific or medical causal connection between mold exposure and health effects. Also, plaintiffs' claims have covered wide and varied health problems, with symptoms that can be attributable to other explanations.

### **Federal agency responses**

To date, the response of federal environmental agencies to mold have been mixed, with a trend toward suggestion or guidance rather than actual standards or regulations.

The United States Environmental Protection Agency (EPA) has not classified mold as a hazardous substance for purposes of any environmental statute it administers and has not focused on mold as a substance to be regulated. Instead, EPA looked at mold as part of the larger issue of indoor air quality, and consistent with this approach has conducted surveys and literature studies.<sup>15</sup> EPA did focus on design of ventilation systems in what it calls "high performance" buildings and schools. These include "IAQ Design Tools for Schools" and "I-BEAM,"<sup>16</sup> an interactive software package designed to assist building managers and operators in ensuring adequate air quality in new and existing structures. EPA's initial guidance document, "Mold Remediation in Schools and Commercial Buildings," remains available from the agency, and has been kept current through revisions.

Of the governmental offices, the United States Department of Housing and Urban Development (HUD) has developed the most active requirements with respect to mold, although its activities are limited to the residential area. In June 2004, HUD began distributing a new form that notifies HUD prospective purchasers of single-family homes of the dangers of radon gas and mold.<sup>17</sup> HUD's recommendation that mold contamination be placed on a par with radon in residential homes has caused a huge controversy. While HUD's new policy does not apply to commercial transactions, the determination that mold and radon cause a similar amount of risk to humans gives mold an elevated status that current studies suggest is not warranted.<sup>18</sup>

To date, Fannie Mae and Ginnie Mae, two of the three government-backed mortgage and lending institutions, have not established limits or standards for mold contamination or

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<sup>13</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 35.  
<sup>14</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 36.  
<sup>15</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 37.  
<sup>16</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 38.  
<sup>17</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 42.  
<sup>18</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 43.

remediation. They do encourage borrowers to have a thorough Operations and Maintenance Plan (O&M Plan) on properties where mold may be an issue. Freddie Mac, also government-backed, now requires a mold management plan tailored to each specific property.<sup>19</sup>

### **Private industry organizations**

One organization that is moving forward to offer a standard on inspections for mold is ASTM International (ASTM). Over two years ago, the ASTM Environmental Assessment, Risk Management and Corrective Action Committee created a task group charged with developing inspection guidelines for visible mold and water damage in commercial buildings, including multifamily properties.<sup>20</sup> The inspection form is expected to be a separate document, which can be used by itself or in conjunction with other property review options, like the ASTM Phase I Environmental Site Assessment (Phase I) or Property Condition Assessment (PCA).

Several organizations have provided information that is currently available for purchase. The National Multi Housing Council (NMHC) and National Apartment Association (NAA) published a document of “best practices” for apartment owners and managers to “manage mold growth and moisture problems on their properties.”<sup>21</sup> The document covers how to develop maintenance procedures and practices for apartment buildings around mold and moisture problems, including training, routine maintenance, remediation and clean up process, documentation of a potential problem, and communication with residents.<sup>22</sup> To complement the document, NMHC has a “virtual mold kit” and NAA has a “Mold Action Kit,” also available for purchase. The National Association of Homebuilders (NAHB) offers a report on the health effects of indoor mold.<sup>23</sup> NAHB gathered scientific and medical experts to review the scientific literature currently available and assess if there is a “reliable and reasonable scientific basis ... [for] a causal link between indoor molds and any medically recognized human ailment.”<sup>24</sup>

### **Capital markets - rating organizations**

Rating agencies offer investors an opinion of the relative risks inherent in commercial mortgage-backed securities (CMBS). The assessment of various environmental conditions are a subset of the risk evaluation process, as the presence of negative environmental conditions can severely impact the value of commercial real estate and the liabilities of all involved parties.

The rating agencies also take note of the insurance industry’s specific exclusions of mold insurance coverage. The exclusions have placed an even greater importance on the Phase I and PCA reports required of loans that are intended for securitization. As a guideline, rating agencies have minimum expectations for the evaluation of mold in the site assessment process. The scope of the Phase I and/or PCA required by CMBS issuers should include the requirement for a specific visual mold inspection component. The scope should also include the requirement that mold inspection results, as well as specific recommendations for further investigation, remediation and/or monitoring if mold problems are identified, should be part of the consultant’s written report results. If evidence of mold is discovered, then mold remediation

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<sup>19</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 44.  
<sup>20</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 45.  
<sup>21</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 46.  
<sup>22</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 47.  
<sup>23</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 48.  
<sup>24</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 49.

should be completed before securitization. If remediation is to be completed post securitization, rating agencies will typically require additional credit enhancement in the transaction, with the expectation that clean-up costs be reserved at 125% to 150% of the estimated costs, with the reserve posted either in cash or a letter of credit from a rated provider.

Rating agencies also expect issuers to stay abreast of changes in EPA and other governmental standards and ASTM guidelines regarding the identification and remediation of mold-related environmental problems. Rating agencies recommend, in addition to the Phase I evaluation, insurance protection, if reasonably available through insurance carriers who are appropriately rated, and recommend properties incorporating a mold prevention and maintenance plan (MPMP).<sup>25</sup>

### 3. MANAGING MOLD AND THE RISKS IT PRESENTS

The hazards posed by mold, both real and perceived, can be treated using the techniques of risk management, the process by which an individual or a business assesses its aversion to all risks generally or to certain risks specifically; measures the magnitude and likelihood of occurrence of particular risks; and then devises actions or strategies of coping with those risks. The process of risk management involves a considerable amount of ongoing assessment and self-reflection; a business with high tolerance to certain forms of risk may experience those risks and find that: a) an acceptable level of risk is present, b) the risks are less likely to occur than previously believed or c) strategies exist to successfully avoid or transfer the risk.

#### **Identification and assessment**

The risk management process of identification and risk assessment involves a number of significant decisions. The internal assessment of risk threshold will vary from one business to another, but here are three points to keep in mind.

The first premise, no matter how averse a business is to risk, is that there is some possibility of a mold problem in any building or structure, and in any geographical area.<sup>26</sup> Thus, any risk assessment will start from the premise that mold or dampness issues can arise anywhere and cannot be ignored.

The second premise for any evaluation of mold and dampness risk is that mold does not have one life span. It can arise at any time during the life of a property and if the mold is removed, but the problem is not properly fixed, then the mold will continue to reappear. Therefore, a business should consider the importance of oversight and management to detect and fully deal with on-going mold risks.

The third premise for any mold analysis is that all parties involved, from those making the assessment to those who will be dealing with mold and dampness problems, will need to maintain a constant proactive approach, a level of training and education to recognize the

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<sup>25</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 52.

<sup>26</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 53.

problems and the capability to effectively communicate and deal with the issue. A business that is unwilling to start from these premises is less likely to be successful in dealing with mold and dampness related risks.

## **Methods for avoidance or reduction of mold-related risks**

There are well-recognized methods for successfully avoiding, reducing or transferring mold and dampness risk, each of which has a role to play in the creation of a successful risk management plan for mold. In reviewing these approaches, the reader should be aware that no listing of prevention or remediation schemes is exhaustive. What follows is a set of options that should be viewed as examples, rather than as a single standard for mitigating mold risk. Businesses and lenders can use what follows as opportunities for mold prevention, reduction and/or remediation.

### **New construction**

The fight against dampness and mold begins at the moment the first sketch for a new structure is put on paper. Many experts on mold-related issues emphasize the importance of architecture and engineering in constructing a new building. Advanced planning may help mitigate future issues and it is possible to create a strategy for new construction that minimizes the possible development of future mold problems. Education and training of key construction staff is also an important component of successfully avoiding mold and water damage. When building a new structure or starting some types of major renovation, repair or remodeling projects of an existing structure, consider the following key steps:

*Selection of professionals.*  
*Contract design and terms.*  
*Selection of contractors.*  
*Design and engineering.*  
*Materials and construction techniques.*  
*Inspection.*

### **Existing buildings and facilities**

Preventing water leaks from occurring makes mold development less likely. As a reminder, water accumulation in walls can develop from improper design and/or materials and mold problems can occur even without evidence of leaking. Thus, preventative maintenance is the first and most important part of any MPMP.

Preventative maintenance begins with inspections, and the MPMP may consider including regular inspections of the property. In some instances, monthly inspections are appropriate; in others, the proper interval may be quarterly or annually. In each situation, the inspections should be comprehensive and properly documented.

Increased inspection intervals may be appropriate after identifying problem areas that exist in the structure or after significant challenges such as hurricanes or seismic events. As with routine inspections, these should be well documented, regardless of whether the findings

are positive or negative. In developing a site-specific inspection protocol for inclusion in an MPMP consider the following:

*Automated control systems.*  
*Building envelope.*  
*Cooling towers and air conditioning equipment.*  
*Below grade areas.*  
*Exhaust systems.*  
*Furnaces, boilers, heaters and stoves.*  
*Grouting and sealants.*  
*Humidity control.*  
*Landscaping and grading.*  
*Moisture-generating appliances.*  
*Plumbing, pipe and sprinkler systems.*  
*Roofing, gutters, drain spouts and flashing.*  
*Vents and ductwork.*

### **Getting help**

While it is true that many mold issues can be resolved by common sense and thinking ahead, the variety of factors that can be considered and the number of places where mold can be an issue in a building suggest that establishing an advance relationship with a competent mold professional may be appropriate in many circumstances. Many lenders, developers, managers and servicers are well acquainted with the need for consulting with architectural, engineering or environmental professionals and, access to knowledge about mold before a need arises can be very beneficial.

As with other professional relationships, whether to retain mold professionals in advance or engage a mold professional if a problem arises is a business decision. Selection of a mold professional is no different in concept from selection of an architect or engineer; ability, experience and price all play a role in the decision. Also to be taken into account is the professional's willingness to provide services tailored to one's particular needs. It is suggested that references be requested and, to the extent that state licensing boards or regulatory bodies provide information on complaints or disciplinary action, these may be checked. Once the professional is selected, the terms of the relationship can be agreed upon and set down in writing. These may include the scope of work to be performed, price, and an agreed upon limitation as to the range of the professional's discretion to address an issue without prior consultation or discussion.

### **Transfer of mold risks: obligations of building tenants**

Risk transfer is the process by which the person or business that presently is designated to bear the costs or likelihood of a problem associated with a particular risk or problem shifts some or all of that responsibility to another. It is common in commercial real estate to associate risk transfer with insurance, but there exist other methods for risk transfer which can be used effectively.

The first method for transfer of mold risks is through contractual indemnification or some form of contractually mandated reserve or holdback. Contractual indemnification provisions are commonly used in a variety of contexts, including those in which a borrower agrees to indemnify a lender for the lender's liability for environmental problems on a piece of real estate on which it has made a loan. These can be accompanied by a holdback of loan proceeds sufficient to fund any remediation that may prove necessary. A combination of indemnification and reserve/holdback can be used to address borrower or tenant related mold issues.

Other contractual limitations may also be used to shift or limit mold risks that may be caused by tenants or borrowers. These include contractual provisions that limit permissible uses on the property, require any build-out to be done to particular standards, and mandate that tenants or borrowers create a MPMP for their portion of the premises and share inspection reports and remediation information with the owner, manager, lender or servicer. Lease provisions may make mold remediation the tenant's sole responsibility; may establish preventative maintenance requirements such as keeping the premises clean and free from excessive moisture; or require reporting any indication of mold, leaks or dampness. The lease may also establish use requirements such as limits on the number of plants in the unit or parameters for operation of heating and air conditioning equipment. Finally leases and loan documents may provide for any reasonable inspection by owners, property managers, lenders and servicers and give them the right to intervene to correct, at tenant or borrower cost, any mold problems or any conditions that might lead to mold problems that they find.

Education can play a key role in the process of transferring mold risks. The tenant or borrower who understands the problems associated with mold and dampness and the practical steps that one can take to prevent mold development is far more likely to cooperate and voluntarily take the necessary steps to create and implement a working MPMP. Thus, education of tenants on mold and how to prevent its development, particularly in multifamily residential units, can be an important step in limiting later problems.

An active effort to educate tenants and borrowers about mold hazards is a suggested part of any successful MPMP. When coupled with effective and enforceable documentation setting forth tenant obligations with respect to mold, these efforts are likely to play a significant part in preventing development of mold.

## **Remediation**

### **Step one: eliminate the moisture**

The most important step in dealing with a mold or water damage problem is prompt discovery and timely response.

### **Step two: isolating the outbreak**

Careful and thorough visual inspection, accompanied by the judicious use of existing tools, often is enough to isolate the extent of a mold infestation without sampling. In general, if mold is visible, there is no need for sampling.

If sampling is necessary, there can be additional costs and time involved. There may be some situations where air sampling for mold contamination may be warranted. This will depend on the type of facility and occupancy. Among the examples of situations where sampling may be appropriate are the following:

- to determine whether or not a ventilation system has been contaminated;
- as part of a medical evaluation if residents contend they are experiencing symptoms allegedly related to fungal exposure;
- to determine if mold is present when visual inspection or bulk sampling is inconclusive;
- to document that remediation efforts were successful at removing contamination especially if litigation is involved or threatened; and/or
- if required by contract or loan documents or to provide necessary assurance to prospective lenders or purchasers.

If and when any type of sampling is done, one may consider the importance of hiring a Certified Industrial Hygienist or other persons similarly qualified and that an accredited laboratory performs the analysis. The American Industrial Hygiene Association (AIHA) accredits laboratories for microbial analysis through the Environmental Microbiology Laboratory Accreditation Program. Scrupulous adherence to proper procedures, preservation of material for split or later sampling, chain of custody records and similar steps are particularly important in cases where litigation or enforcement proceedings may be underway or threatened.

### **Step three: conducting the remediation**

Whether or not sampling is necessary, the next step in the process is to conduct remediation. Serious property damage and continuous mold growth may persist if water damage restoration is not done or done improperly. Some industry resources, the EPA, the New York City Guidelines, and the Institute of Inspection, Cleaning and Restoration Certification (IICRC) S500, provide detailed information about all aspects of water damage restoration projects in a safe and effective manner.<sup>27</sup>

During remediation at any level, questions often arise as to whether material can be cleaned and reused or discarded. Guidance is available on this point.

According to the EPA, as a general rule of thumb, non-porous and semi-porous materials like metal, glass, plastic, wood and concrete can be cleaned and reused if structurally sound. Remediation is accomplished by repeatedly wiping all affected surfaces with a high quality detergent solution, scrubbing as needed, until all visible signs of mold are removed. The process is completed by rinsing the area with clean water, but in some circumstances, a disinfectant may be used to complete the rinsing process. If a disinfectant is used, allow the area to dry overnight; if not dry the area immediately. It is suggested that water not remain on the treated surface more than 24 to 48 hours to prevent the conditions necessary for mold to redevelop.

Porous materials, including ceiling tiles, insulation, wallboard, carpeting, furnishings, drapes and clothing, are more difficult. In some cases, it is possible to clean them (it may be

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<sup>27</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 61.

possible to wash or dry clean clothing, drapes, curtains or slip covers, for example), but if cleaning is not possible, porous material may need to be discarded in such a way as to prevent the mold from contaminating other non-affected material.

#### **Step four: when is remediation complete?**

There is no exact answer to this question.<sup>28</sup> EPA advises that the clean-up process is complete when the source of water or moisture has been removed and/or fixed completely, and when the mold is completely removed.

### **Monitoring Program**

Scheduled periodic monitoring of the facility is suggested in order to address potential new mold issues as they occur and to reassess existing actions undertaken in an ever changing environment. The monitoring program may also include as examples, physical inspections after storms or other unexpected excess water related events (i.e., sprinklers or broken pipes).

### **The human side of mold risk**

Training, communication and documentation can play a vital role in effective proactive remediation efforts to combat mold issues. A discussion of each of these topics, as part of any MPMP, is encouraged. Also, during the planning and implementation of a remediation, all three play a role in an effective process. It is suggested that lenders and servicers during a review of a borrower's MPMP look for education and training references. Carefully considered plans for training, documentation and communication suggest that the borrower is willing to be equally careful in confronting mold risks as they arise.

**Training**  
**Communication**  
**Documentation**  
**Litigation avoidance**

### **Conclusion**

Risk management techniques are an effective tool for addressing risks posed by dampness and mold because they provide a framework by which possible problems can be discovered and addressed. Lenders can apply the same analysis to ascertain their willingness to take on loans that pose mold or dampness risks or as an underwriting tool to determine whether a prospective borrower has taken steps to deal with mold. Properly used and properly updated as necessary, both borrowers and lenders will benefit from proper management of mold risks in the short and long term.

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<sup>28</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 65.

#### 4. LOOKING AHEAD

“Damp Indoor Spaces and Health,” the groundbreaking effort to classify what is and is not known about mold and dampness, revealed how little reliable quantitative information is available. To that end, federal and several state legislatures have begun to examine mold-related questions and request that additional research be conducted to ascertain the role mold plays in indoor spaces. There is a growing commerce in products, devices and technology designed to help deal with mold and dampness. Although it remains too early to determine the exact direction each is taking, trends can be seen and the beginnings of a real response discerned. The reaction of legislatures, the insurance industry, and scientific, technical and engineering firms to better understand mold and the effects of mold, are all opportunities for greater public education and knowledge.

##### **Legislative action**

There has been some legislative action involving mold and information, disclosure and research at the federal and state levels.

At the federal level, on March 13, 2003, Representative John Conyers of Michigan introduced bill H.R. 1268, formally entitled the United States Toxic Mold Safety and Protection Act of 2003 (Conyers Bill).<sup>29</sup> The Conyers Bill would have affected both commercial and residential business, most specifically public housing, residential and multifamily structures. The legislation sought to provide for the EPA to develop guidelines for mold prevention, inspection, testing and remediation for indoor mold growth and study the health effects of indoor mold. It would have required landlords to give mold disclosures when leasing rental property and to conduct annual indoor inspections of the property and give notices of the results. The Conyers Bill also wanted to require the Department of Housing and Urban Development (HUD) to establish model construction standards and techniques for mold prevention in new buildings. HUD, along with the EPA and the National Institutes of Health, were to sponsor public education programs on mold. Finally, the bill would have required the Federal Emergency Management Agency (FEMA) to create a mold insurance program along the lines of the flood insurance program it presently administers.

Although the Conyers Bill had over 30 co-sponsors, and was referred to several committees, no action was taken by any of them. With the end of the 108th Congress, the bill died and required reintroduction for there to be any consideration or approval by Congress. On March 14, 2005, Representative Conyers introduced the Conyers Bill again, H.R. 1269, which has been referred to the House Financial Services Committee.

At the state level, several legislative initiatives have been introduced. California passed the most comprehensive legislation requiring the development of uniform standards for mold and for disclosure of mold in commercial and residential property transactions, as well as for creation of education materials and a determination by the California Department of Health Services on permissible mold exposure limits.<sup>30</sup> While the legislation was passed on October 7, 2001, it has not been implemented due to a lack of funding. Texas and Louisiana have regulated property review, requiring licenses for mold assessors and persons conducting mold

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<sup>29</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 67.

<sup>30</sup> See “Mold: Steps Toward Clarity,” MBA White Paper, Footnote 68.

remediation services.<sup>31</sup> Montana passed a Mold Disclosure Act in 2003 permitting, but not requiring, a party to a real estate transaction to provide a mold disclosure statement.<sup>32</sup> Maryland's legislature created a Task Force on Indoor Air Quality to study the health risks to workers from mold in office building HVAC systems and to make recommendations to mitigate indoor air quality health risks.<sup>33</sup>

In other states, including Arizona, Connecticut, Florida, Georgia, Illinois, Kentucky, Massachusetts, Michigan, New York, Oklahoma, Pennsylvania, and Rhode Island, legislatures have considered bills addressing mold regulation. These proposed bills have focused on several key areas:

- scientific and health research, involving studies of the effects of mold on individuals in an indoor environment, which may include permissible exposure levels to mold;
- regulation of mold assessment and remediation contractors, including licensure, continuing education standards and financial responsibility requirements;
- educational programs, requiring educational materials or training; and/or
- disclosure requirements or standards in real estate transactions, for tenants, homeowners, lessees and with emphasis on residences.

Results of these legislative initiatives have been mixed. Legislation to regulate mold assessment firms and remediation contractors generally has received support, while legislation mandating disclosures has received a more cautious reception. The diverse state of mold legislation, one with widely differing standards for regulation, disclosure, testing and remediation, will have some impact on lenders. As the states continue to propose their own standards, the lending process may become more cumbersome and driven by state specific requirements. Because of this, lenders and servicers may want to monitor each state legislature where their property resides to ensure that there has been full compliance with all applicable laws and regulations.

## **Mold and dampness technology**

### **Mold and moisture detection techniques**

As the mold assessment and remediation field expands, so do new technologies to improve and ease how mold assessments are conducted. There are currently no technologies that can definitively find and identify hidden mold (i.e., mold behind walls). There are, however, technologies which assist in the identification of elevated moisture levels or water-damaged building materials. And, as previously noted, identifying the source of the moisture is the first step of a mold assessment.

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<sup>31</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 69.

<sup>32</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 70.

<sup>33</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 71.

## Materials technology

Because mold requires cellulose and other organic materials to grow, an obvious attack on mold development is through materials that deny mold the nutrition it needs or which kill the mold as it develops.

For years, wood was pressure treated with chromated copper arsenate (CCA) to protect it from termites and fungus. Because CCA contained arsenic, a known carcinogen, EPA banned use of CCA-treated wood as of January 2004 except in certain very limited applications. New substances have become available to replace CCA and the search remains underway to find other chemicals which can retard or deter mold growth without themselves posing a health hazard.

A second approach has been to coat or treat building products to prevent mold infestation. These can be applied to any exposed surface of the material, integral treatments or barrier treatments. Surface treatments generally are applied as a part of the production process and often are colored to indicate their presence. The advantage of a surface treatment is that requires no handling in the field. Its disadvantage is that retains its effectiveness only as long as the barrier is not breached. Mistreatment on the job site can render such treatments ineffective.<sup>34</sup> Integral treatments introduce a fungicide into the material during production; pressure treated wood is an example. Here the primary issue is one of cost and whether a consumer is willing to trade fear of exposure to mold for fear of exposure to the fungicide.<sup>35</sup> Finally, there are penetrating barriers which contain chemicals that protect the materials surface and which diffuse into it if water is introduced, thereby providing additional protection.<sup>36</sup> Some of these can be applied at the time of construction, presumably after any chance of damage to the barrier is over.

Another method of preventing mold development is to use materials which do not provide the nutrients mold need to grow. Products such as glass-fiber reinforced concrete, precast concrete, fiber reinforced polymers, epoxy concretes, and so-called paperless wallboard, which are wrapped with fiberglass rather than paper, claim to limit the growth of mold on wallboard materials.<sup>37</sup> Here the issue is cost and availability. In the meantime, manufacturers of traditional building products have accelerated the pace at which they are producing mold-resistant materials.

In light of the emerging field of mold assessment of remediation, new technologies to assist the assessor and remediator are constantly being introduced in the marketplace. In this unregulated industry it is buyer beware. Contractor and product liability must be taken into consideration if using unqualified products. Arming yourself with information and knowledge enables the user to integrate these new technologies to ease the assessment and remediation process.

Although the future looks bright for new mold technologies, at this point the same cannot be said for new insurance products addressing mold risks. Uncertainties associated with mold claims, differing interpretation of standard policy provisions and the continuing lack of standards

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<sup>34</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 78.

<sup>35</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 79.

<sup>36</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 80.

<sup>37</sup> See "Mold: Steps Toward Clarity," MBA White Paper, Footnote 81.

for exposure and remediation combine to make insurers extremely reluctant to provide mold or microbial coverage except as a part of a separately negotiated environmental liability policy. Shock verdicts on homeowner's claims also reverberate through commercial insurers.

## 5. CONCLUSION

The Executive Summary serves as a brief overview of the myriad of issues involved in understanding mold and water damage. To gain further insight and information on the effects of mold on commercial real estate, industry reactions, managing mold risks and looking toward future solutions, please read the full White Paper. Again, the White Paper is meant to serve as additional guidance and resource to enable the reader to make informed decisions, based on individual situations, business models and transaction requirements.

# **WHITE PAPER**

## **WHITE PAPER – Table of Contents**

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## 1. A BRIEF HISTORY OF AN EVOLVING PROBLEM: MOLD AND ITS ROLE IN COMMERCIAL REAL ESTATE

### a. What is mold?<sup>1</sup>

Mold, the name commonly given to forms of microscopic fungi which reproduce by the creation of spores, is among the most ancient forms of life on this planet. There are thousands of different types of mold and they exist in and out of doors, in all climates and temperatures throughout the world. We see mold growth as a colored blemish or area, frequently green, blue, gray, brown or white and sometimes powdery or fuzzy in appearance, on surfaces where conditions are favorable for its growth. We smell odors from actively growing mold colonies which we describe as earthy, musty, moldy or mildew-like. We talk about bread mold, mildew and penicillin, without fully recognizing that each is a different form or species of mold.

Molds break down dead organic material and return the resulting simpler organic compounds back into the environment; this process can be found at work in nature by examining a compost heap or by turning over a pile of dead leaves on the ground in the forest. Each of these situations also demonstrates the conditions molds need to flourish: a source of organic nutrients ranging from bread to cellulose and almost everything in between, water or dampness, and sufficient warmth for the mold to grow. Because molds exist everywhere and because mold spores can travel freely, any place where organic materials for nourishment, sufficient water or dampness and enough warmth are available is a possible place for a mold colony to develop.

### b. How did mold become an issue of public concern?

Although it had been recognized for many years that molds can trigger allergic or similar reactions in sensitive individuals, and that some forms of mold produce potentially toxic chemicals known as mycotoxins, until the early 1990s molds were generally considered to be more of a problem for mothers to check bread for and janitors to clean up than a serious or pervasive risk to health or buildings. However, the situation changed by 1994.

In 1993, physicians in Cleveland, Ohio, noticed that over a short period of time, children from a single neighborhood began to suffer from dangerous bleeding inside their lungs, a condition known as acute idiopathic pulmonary hemorrhage or AIPH. In an effort to find a cause for what appeared to be a sharply delineated outbreak of AIPH, physicians and public health officials soon discovered that stachybotris and aspergillus mold, each of which was known to produce mycotoxins, heavily infested the homes in which each of the victims lived. Finding no other apparent common factors that could account for the common illness among the children, the researchers simply concluded that the outbreak of AIPH was associated with exposure to mold and the toxic chemicals it produced (Cleveland study).<sup>2</sup>

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<sup>1</sup> Much of the material in this section is drawn from publications of the Texas Department of Health, particularly "Protecting Your Home From Mold." This document is available at [http://www.tdh.state.tx.us/beh/iaq/protecting\\_your\\_home\\_from\\_mold.html](http://www.tdh.state.tx.us/beh/iaq/protecting_your_home_from_mold.html).

<sup>2</sup> See Centers for Disease Control, "Acute pulmonary hemorrhage/hemosiderosis among infants – Cleveland, January 1993 – November 1994," 43 MORBIDITY AND MORTALITY WEEKLY REVIEW 881 (1994); Centers for Disease Control, "Update: acute pulmonary hemorrhage/hemosiderosis among infants – Cleveland, 1993-1996," 46 MORBIDITY AND MORTALITY WEEKLY REVIEW 33 (1997), "the Cleveland study".

Although the researchers did not state that mold exposure had caused the AIPH and later would retract even their claim of association between mold exposure and AIPH, the publication of these findings changed mold from an annoyance to a publicly recognized “toxic condition” associated with serious medical problems.<sup>3</sup> Because the study came from the Centers for Disease Control and Prevention (CDC), it gave the issue a greater sense of urgency than it might otherwise have caused. It certainly put mold-related conditions in a spotlight that had never been seen before outside of an allergist’s office.

The Cleveland study strongly influenced public perception of mold and its possible impact on health. Perception then led to litigation, particularly as homeowners’ insurers declined to pay for mold remediation projects. Lawsuits against homeowners’ insurers, and to a lesser extent home builders and subcontractors, resulted in a number of large jury verdicts, which increased the publicity surrounding mold. (The fact that many of those verdicts were reduced or reversed on appeal did not receive a similar level of publicity.) Inevitably, the public’s concern about mold in single-family residential spaces carried over to other indoor spaces, including those in multifamily residential structures and commercial buildings such as offices, schools, hotels and health care facilities.

c. Why is mold a concern for lenders and servicers in commercial real estate?

Because mold spores can travel freely, they are just as likely to be found inside commercial spaces as they are in a family home. Commercial spaces contain the same factors necessary for growth of mold – organic materials, moisture or dampness, and warmth – that exist in private residences. It is common to find mold spores in the air inside commercial buildings, and on most surfaces, including walls and furnishings. Unless the spores have an opportunity to land on a favorable surface and begin to grow, they cause little concern by themselves. Routine cleaning and maintenance of the facility and furnishings generally helps to keep levels of these molds low and minimizes the likelihood of active mold growth.

Concern greatly increases, however, when there are significant amounts of active mold growth, a situation that is most likely to develop when there are excessive levels of moisture or water damage, from an ongoing water leak, a flood, water intrusion (as from a leaky roof or foundation), residual moisture or even high levels of humidity or dampness inside a structure. High levels of moisture or water damage may be a result of a single event or may develop slowly over time. Active mold colonies produce spores, which can travel and create new regions of mold in other areas of the structure, where the proper growth conditions exist, exacerbating the problem.

Dampness and mold growth can themselves cause the breakdown of organic structural materials such as insulation, wall board, wood and cellulose, as well as building contents ranging from furniture to important files and records. In time, unchecked or undiscovered mold growth can cause damage to structural elements and render a building uninhabitable. The presence of mold and mold spores in the air inside a building can also have a negative impact on indoor air quality<sup>4</sup> and may create aesthetic issues for those who must work there.

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<sup>3</sup> See Centers for Disease Control, “Update: acute pulmonary hemorrhage/hemosiderosis among infants – Cleveland, 1993-1999,” 49 MORBIDITY AND MORTALITY WEEKLY REVIEW 180 (March 10, 2000).

<sup>4</sup> Also referenced as “IAQ” in this White Paper.

For lenders, servicers, and others involved with real estate loans, dampness and mold growth can lead to problems at several levels. These include:

- Direct damage to building or contents. Mold or dampness can damage building materials and contents requiring the owner or manager to expend funds for repairs and remediation. If these sums are substantial, a borrower's ability to repay a loan and the collateral value of the structure may be negatively affected.
- Loss of use/loss of rental value. Areas affected by significant amounts of mold or dampness may become unusable, unfit for rental, or rentable only at a reduced rate. Unaffected sections of a building may have to be closed off to effect repairs. This loss of income can have a negative impact on cash flow in addition to costs associated with remediation.
- Stigma damages. Even after a successful remediation, the stigma associated with a prior mold outbreak (picture remediation contractors going in and out of a building in "moonsuits") may reduce the market value of or ability to rent space in an affected property, with direct negative effects on collateral value or cash flow a possible result. In multifamily residential units, residents may break leases with increased frequency or demand other concessions.
- Third party liability. Occupants and users of an affected building may sue for indirect harm or injuries they believe were caused by mold. Workers compensation claims have also been filed by occupants for exposure to mold. While these suits may not ultimately result in large awards, an owner's or manager's costs to defend them are likely to be high enough to have a negative impact on income.

The existence of significant mold or dampness problems in a structure can also have more direct effects upon a lender or servicer. The presence of large amounts of mold in a structure may be a negative constraint on a lender's decision whether to foreclose and resell or continue operations. Mold concerns may also affect the refinancing options available to the borrower, leaving the lender without one possible exit strategy. For servicers, mold and dampness issues can affect operating budgets or maintenance holdbacks and make work-outs or restructuring of non-performing loans more difficult. For lenders and servicers alike, the question of whether to create and impose mold control standards on building owners and managers can be difficult and a possible basis for direct liability to those affected by mold or dampness.

Because financial impacts can arise at any time, both lenders and servicers must understand, prepare and account for mold and dampness issues throughout the life of a transaction. To do this, there first must be candid self-analysis to determine the lender's willingness to assume risks from mold or dampness, critical underwriting internally to assess possible risks of mold exposure in conjunction with knowledgeable consultants and specialists, proper vetting of borrowers and property managers, and, if appropriate, open and ongoing dialogue with owners and managers of property. Each is an important and interrelated part of successfully preventing or minimizing possible adverse impacts of dampness and mold. There is no single set of "best practices" in recognizing and coping with mold issues, but awareness of mold and its effects are the first of a series of "smart practices" all lenders and servicers who wish to succeed in coping with this problem should adopt.

d. Does mold have more of an impact on certain kinds of property or in certain areas?

Although it must be emphasized that no geographic area or type of structure is immune from mold or dampness, it is nonetheless true that exposure to mold varies geographically and according to type of structure. From a geographic standpoint, California, Texas, Florida and Hawaii appear generally to have higher incidence of reported mold in commercial structures, although again, it should be stressed that mold outbreaks can occur anywhere. With respect to building type, data collected over the last twelve months suggests that multifamily housing and affordable housing projects, healthcare facilities, including hospitals, nursing homes and assisted living facilities, and hospitality facilities including hotels, motels and resorts pose the highest risk.

Concerns arise over multifamily, healthcare and hospitality facilities more frequently for several reasons.<sup>5</sup> First, opportunities for a mold or dampness problem increase when there is a high turnover in occupancy, as often is the case in these classes of property. These classes of property also have uses and structural characteristics – many individually controlled HVAC systems, appliances and plumbing systems, for example – that make dampness and mold more likely to occur. Facilities such as healthcare and hospitality are also expected to provide sections of the property that are a sterile environment, which has expensive management and maintenance responsibilities. Because these property types are associated with one's health and residence, they have generated more mold claims and lawsuits. Accordingly, special care should be given to mold-related issues in loans or transactions involving these types of structures.

On the other hand, other commercial property types generally pose less concern. Retail, warehouse, light industrial and heavy industrial facilities typically do not present mold hazards at a level found in multifamily, healthcare and hospitality facilities. In all industrial categories, however, concerns have begun to arise over workers' compensation losses tied to mold exposure, especially from workers involved in mold remediation or clean-up efforts. The extent to which workers' compensation claims based upon mold exposure will grow remains unknown, but they represent another uncertainty that must be accounted for in the mold equation.

e. Perception or reality?

As the public reaction to the Cleveland study demonstrates, and as the industry has learned from its experiences with other environmental issues, the public's perception, which may be influenced by a lack of knowledge, fear, and misinformation, guides the debate and response to questions involving damp indoor spaces and mold. Perception is often a more formidable force than reality.

For lenders, servicers and others in the commercial real estate industry, the predominance of perception over reality is both a challenge and an opportunity. The "value" of a piece of property is a reflection of the marketplace – i.e., the public's perception of what willing buyers would pay and willing sellers would take for it – so the role of fear and misperception in evaluating mold becomes important. At the same time, a lender or servicer with a superior understanding of how to evaluate the real effects of dampness or mold on a piece of property

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<sup>5</sup> Schools are also closely scrutinized for mold concerns, but fall outside the scope of the paper discussions, since they are not included in the definition of commercial property.

may be in a position to properly assess the risk, determine the actual underlying collateral value and find opportunities for profit.

Because issues associated with dampness and mold can arise at any time over the life of a loan, often without obvious warning, lenders and servicers must understand the real nature of the problem and be alert to avoid falling prey to misperception. By developing a real understanding and by being ready with a plan, which anticipates problems and offers solutions, mold and dampness concerns can be overcome.

## 2. THE EFFECTS OF MOLD AND DAMPNES ON THE MARKETPLACE

### a. Introduction

The current marketplace's reaction to mold can be described as inconsistent. Some in the medical field have tried to link exposure to mold and dampness to an ever-growing array of medical conditions ranging from allergic reactions to neuropsychiatric symptoms, often without any reliable support from credible tests or studies.<sup>6</sup> Most insurance companies have retreated from providing coverage for mold-related losses of any kind, prompting social, legislative and even political reaction.<sup>7</sup> High profile litigation involving homeowners and commercial entities made headlines as juries returned large verdicts.<sup>8</sup> There were few, if any, reliable standards or metrics against which to measure the magnitude of a mold presence and even fewer ways to measure the possible impacts of mold inside a building.

Concern within the scientific community had also grown significantly. When the CDC published a follow-up report, which determined that the 1993 outbreak of ALPH in Cleveland should not be linked to mold exposure, there was a substantial wave of controversy and debate in response.<sup>9</sup> Even though that debate did not make the front pages of popular journals, charges and counter-charges flew concerning the motivation for and the accuracy of CDC's change of position.

### b. Current state of scientific knowledge: National Academy of Sciences study

Recognizing the growing level of controversy among health officials, property occupants and others regarding the possible effects of mold and other indoor microbial growth and the growing but unreliable body of information and misinformation on mold, the CDC took a proactive step. It asked the Institute of Health, a wing of the National Academy of Sciences (NAS), to convene a review of available scientific literature with the following mission:

The Institute of Medicine will conduct a comprehensive review of the scientific literature regarding the relationship between damp or moldy indoor environments and the manifestation of adverse health effects, particularly respiratory and allergic symptoms. The review will focus on the non-infectious health effects of fungi, including allergens, mycotoxins, and other biologically active products. In addition, it will make recommendations or suggest guidelines for public health interventions and for future basic science, clinical and public health research in these areas.<sup>10</sup>

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<sup>6</sup> Ranging from memory loss to amnesia and motor skills problems.

<sup>7</sup> Some insurance coverage is still currently available, see discussion below. However, by March 2003, most of the exclusions/limitations were already filed in most states.

<sup>8</sup> See, e.g., *Allison v. Fire Ins. Exch.*, 98 S.W.3d 227 (Tex. App. – Austin 2002, pet. dismissed by agreement).

<sup>9</sup> See Centers for Disease Control, "Update: acute pulmonary hemorrhage/hemosiderosis among infants – Cleveland, 1993-1999," 49 MORBIDITY AND MORTALITY WEEKLY REVIEW 180 (March 10, 2000).

<sup>10</sup> See The National Academy of Sciences, "Damp Indoor Spaces and Health" (2004), Executive Summary, page 1-2.

The Institute convened a committee of experts in fields including public health, environmental health, building science and medicine. That committee issued its answer to CDC's direction, a thorough study entitled "Damp Indoor Spaces and Health," on May 24, 2004.

As candid in describing what is not known about dampness, mold and strategies for prevention of microbial growth as it is in debunking myths concerning the health effects caused by mold exposure, "Damp Indoor Spaces and Health" provides the first comprehensive delineation of what is known about these issues. It is the first effort to provide a comprehensive framework for further analysis of the interaction between damp spaces, microbes and human health. As such, it is and will remain an important analytical tool for those involved with this area for years to come, and a brief review of its major findings is equally important to guide behavior as science works to fill in the gaps discussed in the report.

i. "Damp Indoor Spaces and Health" and implications for health

Perhaps the most immediate impact of the NAS Report is its analysis of the scientific literature on health effects allegedly traceable to mold or microbial exposure and its conclusions as to the sufficiency of the evidence to support the burgeoning variety of alleged connections to a myriad of health claims. After noting that its conclusions do not apply to those with compromised immune systems and that mold exposure can cause symptoms in those allergic to a particular species of mold, the Committee detailed both the strengths and limitations in science around a relationship between exposure to damp environments or mold and various ailments.<sup>11</sup>

The Committee measured the evidence for a relationship between dampness and mold health outcomes using a four level scale:

- "Sufficient evidence of a causal relationship," in which enough scientifically valid and reliable evidence exists to demonstrate a causal relationship between exposure to mold or dampness and a particular medical condition.
- "Sufficient evidence of an association," in which an association between the agent (dampness or mold exposure) and the health outcome or effect has been observed in studies in which chance, bias and confounding variables can be ruled out with reasonable certainty.
- "Limited or suggestive evidence of an association," the Committee's criterion for situations where there is some evidence of linkage between exposure to dampness or mold and the outcome but chance, bias and confounding variables in the evidence cannot be ruled out.
- "Inadequate or insufficient evidence to determine whether an association exists," for situations where there is no evidence to support the link between exposure to mold or dampness, or what evidence there is lacks scientific reliability.<sup>12</sup>

The Committee did not find any health outcomes meeting its highest level of the scale, "sufficient evidence of a causal relationship," and that assessment will make it materially more difficult for those asserting legal claims of bodily injury based on mold exposure to proceed. At the lowest end of the scale, the Committee found insufficient or inadequate evidence to support many claims of linkage between mold and dampness and serious illness or disease; among the

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<sup>11</sup> The Tables documenting the Committee's findings are set forth in full in Appendix B.

<sup>12</sup> See "Damp Indoor Spaces and Health" (2004), Executive Summary, page 7.

conditions included in this “insufficient or inadequate evidence” assessment were cancer, neuropsychiatric symptoms, reproductive diseases and rheumatologic and other immune diseases.

A number of factors support the Committee’s assessments. First, most evidence linking mold exposure to illness or some other health outcome rests upon case reports, in which a physician notices that the outcome arises after a particular occurrence of apparent exposure. Such reports are viewed epidemiologically (and legally) as hypotheses rather than conclusions. Second, too often claims of mold-related illness rest merely upon the alleged presence of a darkened area or other physical evidence resembling mold in the area where the person lives. Since the mere presence of an area that may resemble mold or mildew is not enough to infer exposure to a toxin, the studies that jump from the existence of a suspected moldy patch to causation are not scientifically valid. In more general terms, the Committee’s findings are an implied statement that existing scientific and medical research on mold-related health outcomes simply is not rigorous enough to support the conclusions being drawn.

In a legal environment where the alleged health effects of mold exposure have seemed to grow with every lawsuit, the importance of the Committee’s findings in deterring or limiting claims by allegedly injured persons and limiting claims for damages or extensive remediation because of perceived health risks cannot be exaggerated. The fact that the Committee found insufficient evidence to support a link between mold exposure and blood in the nose and airway passages in healthy infants is exceptionally significant, as it provides independent confirmation for the CDC’s prior change of position on the subject.<sup>13</sup>

On the other hand, the significance of these conclusions has tended to mask the Committee’s remaining recommendations, which recommended further scientific study and suggest appropriate means for limiting development of mold, while research turns subjective impressions about the severity of a mold problem or the need for remediation into objective standards and criteria. Chapter 6 of the report relies upon studies conducted by the American Society for Testing and Materials, Environmental Protection Agency, and the City of New York Department of Health as guidance for determining when remediation should occur and what should be done. The Committee’s citation of these reports as a reliable basis for assessing when remediation is necessary will also help to rebut the claims of those who have argued that more stringent remediation standards are necessary.

ii. “Damp Indoor Spaces and Health” and the need for further research

“Damp Indoor Spaces and Health” is not simply about medical issues; it begins with the basics. It notes that the ideas of dampness and excess water inside buildings are at once both intuitive and misleading. In anecdotal reports, these terms have taken in everything from high relative humidity, condensation and water ponding to water intrusion and other situations in which excess water is present.

Because dampness itself may have adverse health effects and cause deterioration of building materials along with other unknown consequences, the first research step becomes developing standard definitions of dampness, metrics and dampness-assessment protocols. As the Committee noted, “Precise, agreed upon definitions will allow important information to be

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<sup>13</sup> Medically known as acute idiopathic pulmonary hemorrhage – when a healthy infant child shows signs of bleeding in the airway and respiratory distress.

gathered about the determinants of dampness problems in buildings and the mechanisms by which dampness and dampness-related effects and exposures affect occupant health.”<sup>14</sup> In other words, a common language and common units of measurement are a necessary precondition for further meaningful scientific research results. And since the availability of moisture generally is the key factor in determining indoor mold growth, finding a uniform unit of measure for moisture provides the critical first step in quantifying the conditions under which mold and microbes grow.

According to the Committee, other basic research is equally necessary. Research must be done to characterize the dampness-related emissions of mold and other microbes, of building materials themselves and their decomposition products, and their role in human health outcomes. The next step in the process would be development of information on “the microbial ecology of buildings,” which the Committee describes as “the link between dampness, different building materials, microbial growth, and microbial interactions.”<sup>15</sup> When these questions have more precise answers, research can continue to the next level, which includes studies of the duration of moisture damage in various materials and studies of the interactions between choices of building materials, construction methods, building operation, heating equipment and air conditioning equipment and mold and microbial growth and development.

If the Committee’s assessment of the need for basic scientific research on issues relating to dampness and the basic characteristics of mold and microbes is broad, so, too, is its assessment of the need for basic toxicological research focused on establishing reliable models for human exposure and a dose response curve for human health effects from mold exposure.<sup>16</sup> This research must run the gamut from establishing biomarkers for exposure to fungal or microbial agents to large-scale epidemiological studies for evaluating causal effects associated with exposure to these agents. When completed, it will provide the first quantitative explanation of how these diverse factors interact with each other.

Even with all of the publicity surrounding the Committee’s conclusions concerning medical issues, its most important conclusion is the simplest. The Executive Summary of “Damp Indoor Spaces and Health” contains the following reminder to all who must deal with mold problems and provides an action plan that can be implemented immediately and reliably:

The most effective way to manage microbial contaminants, such as mold, that are the result of damp indoor environments is to eliminate or limit the conditions that foster its establishment growth.<sup>17</sup>

This assessment applies in any indoor environment and is a logical and scientifically reliable basis for an effective mold control program.

“Damp Indoor Spaces and Health” may be as important for what it says is not known as what it says is known. Nonetheless, by its comprehensive effort to understand and demystify mold and microbial contamination and because of its sponsor, the Committee’s report is the first

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<sup>14</sup> See “Damp Indoor Spaces and Health” (2004), Executive Summary, page 4.

<sup>15</sup> *Id.*, at 5.

<sup>16</sup> A dose-response curve is a semi-quantitative measurement of the health effects that follow from ingestion of a given dose of any substance. For example, taking two acetaminophen tablets may make a headache go away, while taking a hundred reliably causes liver failure.

<sup>17</sup> See “Damp Indoor Spaces and Health” (2004), Executive Summary, page 10.

comprehensive and scientifically based effort to understand this problem. As such, it is and will be the basis on which scientific research and standards are developed in this area in the future.

c. Reactions and Responses

Before the year 2000, there were few mold claims, which were generally settled for a few thousand dollars. As high profile cases in Texas and California came to the attention of the public and media, public anxiety rose and legal claims increased substantially. The acceleration of cases began in 2000, and in 2001, estimates suggest that at least 10,000 “toxic mold”<sup>18</sup> cases were filed in the United States and Canada, of which just over half were bad faith actions against insurance companies. The amounts required to resolve homeowner “toxic mold” claims sometimes grew to \$100,000 or more, with commercial claims in the millions.<sup>19</sup> As an example, in Texas, total homeowner’s insurance legal claims involving mold grew from about \$420 million in 2000 to just over \$1 billion in 2001 and to \$2.2 billion for 227,000 claims in 2002.<sup>20</sup> By mid-2003 Texas insurers estimated that they had paid out just under \$4 billion for mold claims.<sup>21</sup>

i. Insurance industry

Insurance companies’ reaction to the problem resulted in new policy provisions to limit or exclude coverage for mold in liability and property policies. In responding to legal claims under commercial general liability policies, insurers whose policies do not contain specific exclusions for mold, tend to rely upon the absolute pollution exclusion, which was developed during the last wave of environmental and toxic litigation. The focus of litigation on mold and the pollution exclusion has been on whether mold is a pollutant and whether the existence of mold, the presence of mold spores or emissions inside a home or other structure constitutes the “release” of a pollutant triggering the pollution exclusion. Courts’ interpretations have been mixed.

As litigation against builders, contractors, architects and engineers over alleged design or construction defects proliferates, there is likely to be more litigation focusing on insurance coverage and whether the “business risk” exclusions in commercial liability policies exclude coverage when defective design or construction result in dampness or mold intrusion.<sup>22</sup> The interface between construction defect litigation and insurance policies is complicated and highly fact specific, with courts in different states drawing radically different conclusions from similar

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<sup>18</sup> “Toxic mold” is used in quotes because rarely were the cases brought to court actually settled based on mold claims themselves. See section on “The Courts,” *below*.

<sup>19</sup> Information on lawsuit filings nationwide comes from industry sources such as the International Risk Management Institute, “Mold and Fungi Insurance Claims” (August 2004), available at <http://www.irmi.com/Expert/Articles/2004/Zalma08.aspx>.

<sup>20</sup> Information on Texas mold claims comes from the Texas Department of Insurance and is available on line at <http://www.tdi.state.tx.us/commish/mold.html>. The total losses reported by Texas Department of Insurance included claims where mold is known or alleged.

<sup>21</sup> “Mold Claims in Texas,” available at [http://www.tcais.org/insurance/mold\\_facts.php](http://www.tcais.org/insurance/mold_facts.php), and Capozzi, “Mold claims growing in number and size – Up Front,” RISK AND INSURANCE, March 2002.

<sup>22</sup> “Business risk” exclusions address claims for repairs or replacement of the insured’s own work product. Insurers include them in liability policies so as not to become the guarantors of their insureds’ failure to meet contractual specifications or warranties. See, e.g., *Weedo v. Stone-E-Brick, Inc.*, 81 N.J. 233, 405 A.2d 788 (1979).

policy language.<sup>23</sup> The addition of mold to this already complex area is only likely to make the intricate situation worse.

With respect to most property policies, whether insuring against all risks of loss or “special perils,” the current, standard all risk policy for most insurers excludes coverage for loss or damage caused by or resulting from rust, corrosion, fungus, decay, deterioration, latent defect, any property/characteristic that causes the insured property to damage or destroy itself, or dampness or dryness of the atmosphere.

As with liability policies, much depends upon policy language and the disposition of the court hearing the matter. It is generally settled that mold may be a cause of loss or a form of damage resulting from a covered loss occurrence, and whether coverage exists often depends upon which characterization applies.<sup>24</sup> The key provisions in many policies are clauses that exclude coverage for “loss by mold.” Does it mean, as some cases hold, that there is no coverage if mold is involved<sup>25</sup> or does it mean that if mold develops as a result of a covered cause of loss, there is coverage?<sup>26</sup> Or does it mean that even if there is mold present and it causes another condition which leads to damage, that there is coverage?<sup>27</sup> Because homeowners’ policies and commercial property policies use similar or identical language far more often than personal and commercial liability policies do, particularly in exclusions relating to mold, the construction of a policy covering a single cottage or bungalow may have repercussions reaching the largest commercial policies.

The combination of large awards and inconsistent judicial interpretations of policy provisions has left many insurers understandably concerned about providing any form of coverage for mold. Although statistics suggest that the average cost of remediation for a residential mold claim averages between \$10,000-25,000 and averages about \$200,000 for commercial losses, underwriting remains difficult because the size of the potential universe of legal claims remains uncertain, making computation of an adequate premium difficult, and because of difficulties associated with conducting adequate inspections or controlling the operations.<sup>28</sup> Even though claims for bodily injury based upon mold coverage have not fared well in the courts, often because of the lack of credible expert testimony supporting the claimant’s position, the simple cost of defending them is significant and can be a substantial drain on an insurer’s financial resources. Finding actuarial insurance information on pricing for mold is difficult. Together these factors have made dampness and mold coverage a challenging product for insurers to adjust to in pricing the risk.

Today, more than 43 states have accepted and approved mold exclusions for insurance policies sold in their states, as insurers have attempted to limit their exposure for mold losses

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<sup>23</sup> Compare, e.g., *Grinnell Mut. Reins. Co. v. Lynne*, 686 N.W.2d 118 (N.D. 2004), with *Roger R. Proulx & Co. v. Crest-liners, Inc.*, 98 Cal. App. 4th 182, 119 Cal. Rptr. 2d 442 (2d Dist. 2002).

<sup>24</sup> See, e.g., *Liristis v. American Family Mut. Ins. Co.*, 204 Ariz. 140, 61 P.3d 22 (2002); *De Laurentis v. United Services Automobile Ass’n*, \_\_\_ S.W.3d \_\_\_ (Tex. App. – Houston [14th Dist.], February 26, 2004).

<sup>25</sup> See generally *Burditt v. West American Ins. Co.*, 86 F.3d 475 (5th Cir. 1996).

<sup>26</sup> *De Laurentis*, above. This is the position of the Insurance Services Office, writer of most commonly used insurance forms.

<sup>27</sup> See, *Bruce Oakley Inc. v. Farmland Mut. Ins. Co.*, 245 F.3d 1027 (8th Cir. 2001)(heat from mold that damaged other goods was cause of loss rather than mold itself, and hence not excluded).

<sup>28</sup> See Environmental Risk Resource Association at [www.erraonline.org](http://www.erraonline.org).

prospectively. The march toward broader exclusions and sharper disputes between insurers and policyholders continues.

Despite these issues, some mold coverage is available. Some commercial property policies make available a separate, low mold damage sublimit – often between \$10,000 and \$25,000 – available for a relatively affordable premium. Outside the limited coverage being provided on standard property policies, there are no insurers providing First Party Property Damage Coverage on a standalone basis.

There are a few insurers who will provide higher limits of coverage by adding mold coverage to their environmental policies via an endorsement; this is not without problems. The first problem is that this coverage does not apply to first party damage. The second problem is that the insured must purchase an environmental policy and that can be expensive. The environmental policy endorsement provides generally two types of coverage for mold: third party claims for on-site clean-up of pre-existing conditions and third party claims for on-site clean-up of new conditions. This endorsement, as with other environmental coverage provided under the policy, is on a “claims made” basis, complete with retroactive dates and an available Extended Reporting Period. There are several notable exclusions under this endorsed cover, which would exclude coverage if certain maintenance activities were not conducted or maintained and would exclude any losses arising out of improper design or construction. These can be two very broad exclusions that could eliminate or limit the actual scope of coverage. Also, most available commercial liability policies providing mold coverage do not provide separate coverage for defense costs; instead, payment of legal fees and litigation costs erodes limits on a dollar-for-dollar basis.

To obtain these types of coverage, a potential insured should expect to submit the following: (1) a detailed IAQ questionnaire; (2) proof of inspection procedures; (3) operation and maintenance plans including those for moisture control or a mold prevention plan; (4) the insured’s guidelines for assessment and remediation of mold; (5) information on prior mold claims; (6) loss runs from the insured’s property and liability insurance; and (7) in some cases, tenant lease agreements. Portfolio coverage also is available, but generally only as a part of a broader pollution liability policy with the same restrictions on coverage.

## ii. The courts

Litigation over mold has generally followed two paths. The first is suits by policyholders against insurers for denial of coverage under property or liability insurance or a defense under liability policies. The second is liability actions by property owners, occupants, and others exposed to mold against individuals or businesses alleging that some negligent or wrongful act, error or omission allowed dampness or mold or both to develop.

The first class of litigation, suits against insurers for claim handling or claim denial, tends to focus on the conduct of adjusters. Lawsuits may allege that the insurer has improperly denied coverage for a mold claim. The court generally must construe policy language and determine whether the policy, whatever type it is, covers mold or dampness damages. Or, the lawsuits may focus on the decision-making process used for review of the claim made on the policy. Some issues include: whether the insurer conducted an appropriate investigation into the cause of the loss – one case describes the issue as to whether the investigation was a

pretext for a decision to deny coverage already made;<sup>29</sup> the time and manner the insurance company took to make a decision on coverage; disputes over the amount of coverage the insurance company would pay; and whether the insurance company allowed for adequate remediation to be conducted. Here, legal claims are made for breach of contract and for tort claims of “bad faith,” covenants of good faith and fair dealing<sup>30</sup> or state statutory rights.<sup>31</sup> Some jurisdictions allow all three.

Tort actions by owners, occupants, and others exposed to mold against individuals or businesses over mold or dampness have taken a number of different courses. Theories against property owners, management companies or landlords have centered on negligent failures to prevent or remediate water damage or mold outbreaks. With contractors, engineers and architects, claimants generally have alleged negligent design, construction defects or improper selection of products or materials.<sup>32</sup> Product manufacturers and suppliers face claims for designing or manufacturing products susceptible to water damage or mold. Repair and remediation contractors as well as owners, homeowner and condominium owners associations, landlords and property management companies also face claims for defective remediation or maintenance. There also have been claims by property purchasers against sellers for failure to disclose moisture or mold problems or for violations of “representations and warranties” concerning moisture and mold in sale documents.<sup>33</sup>

Because claims for contractual relief and tort actions for negligent errors, acts and omissions each can involve claims of mold exposure to individuals (many claims against insurers allege that the policyholder was forced to return to mold infested premises because of a refusal to remediate or improper remediation), courts frequently must confront the question of whether exposure to mold causes health injury. In order to prove health injury, expert testimony is offered to show causation. Expert testimony in all areas of the law has been hotly contested for accuracy and relevance.

Under the standard announced by the United States Supreme court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, (Daubert) and since adopted by a majority of the states, the trial judge acts as gatekeeper in scrutinizing expert testimony.<sup>34</sup> Every expert must be able to show that the opinions they offer are sufficiently reliable to be considered as testimony. Daubert imposes several requirements on expert testimony before it may be admitted. The first is that of reliability: has the rate of error from the method used by the expert been determined and found to be small enough to make the conclusions reached using it valid? The second is repeatability: can the same results be obtained if others use the same method? The third threshold is review: has the method been peer-reviewed, that is, subjected to critical scrutiny by others in the profession and published to face examination by the scientific community?

For mold cases in jurisdictions that follow the ruling in Daubert, a judge must consider two issues before permitting an expert to testify: one, if the type of mold involved could generally cause the type of injury claimed; two, has the plaintiff had a sufficient amount of exposure

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<sup>29</sup> See, e.g., *State Farm Mut. Auto. Ins. Co. v. Traver*, 980 S.W.2d 625 (Tex. 1998).

<sup>30</sup> See, e.g., *Traver, supra*, n. 25. See also *Textron Financial Corp. v. National Union Fire Ins. Co. of Pittsburgh, Pa.*, 118 Cal. App. 4th, 13 Cal. Rptr. 3d 586 (4th Dist. 2004).

<sup>31</sup> See, e.g., Fla. Stat. Ann. § 624.155; see also *Old Republic National Title Ins. Co. v. HomeAmerica Credit, Inc.*, 844 So.2d 818 (Fla. 5th DCA 2003).

<sup>32</sup> See, e.g., *Engle Homes, Inc. v. Jones*, 870 So.2d 908 (Fla. 4th DCA 2004).

<sup>33</sup> See, e.g., *Anderson v. USAA Cas. Ins. Co.*, 221 F.R.D. 250 (D.D.C. 2004).

<sup>34</sup> 509 U.S. 579 (1993).

(inhalation, ingestion) to cause the specific injury plaintiff claims. Daubert sets a high standard for a plaintiff to be able to offer expert testimony in mold cases. The lack of credible scientific evidence that links mold to particular illnesses has caused many personal injury claims to fail in trial court or be reversed on appeal.<sup>35</sup> It is difficult to prove a certain level of mold exposure in an indoor space rises to the level of harmful, since there is no medical or scientific based standard for mold levels.<sup>36</sup> This in turn makes it hard to establish the scientific or medical causal connection between mold exposure and health effects. Also, plaintiffs' claims have covered wide and varied health problems, with symptoms that can be attributable to other explanations.

Litigation expenses and expert costs in such litigation can be extremely high. However, the stigma or consequential damages, such as a loss of rents associated with a mold claim, can have a worse overall effect than an adverse judgment. Borrowers will continue to bring mold related lawsuits and even if the borrower's claims are eventually defeated in court, each situation must be fully reviewed by any lender, at significant costs in time and expenses.

### iii. Federal agency responses

To date, the response of federal environmental agencies to mold have been mixed, with a trend toward suggestion or guidance rather than actual standards or regulations.

The United States Environmental Protection Agency (EPA) has not classified mold as a hazardous substance for purposes of any environmental statute it administers and has not focused on mold as a substance to be regulated. Instead, EPA looked at mold as part of the larger issue of indoor air quality, and consistent with this approach has conducted surveys and literature studies.<sup>37</sup> EPA did focus on design of ventilation systems in what it calls "high performance" buildings and schools. These include "IAQ Design Tools for Schools" and "I-BEAM,"<sup>38</sup> an interactive software package designed to assist building managers and operators in ensuring adequate air quality in new and existing structures. EPA's initial guidance document, "Mold Remediation in Schools and Commercial Buildings," remains available from the agency, and has been kept current through revisions.

Occupational Safety and Health Administration (OSHA) presently has "no specific standards" for mold or fungi.<sup>39</sup> OSHA has taken no steps in this area since its 1994 rulemaking proposal, which attempted to create a comprehensive standard for indoor air quality, with permissible levels for everything from second-hand tobacco smoke to Legionnaire's disease.<sup>40</sup> The 1994 rulemaking proposal refers to many different substances adversely affecting indoor air quality, but makes only passing reference to molds and mycotoxins, possibly reflecting the lack of general awareness of issues relating to mold and dampness prior to the Cleveland study. OSHA never proposed a rule in the wake of the Cleveland study and its only official standards on air quality are its two standards relating to ventilation in industrial workplaces and

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<sup>35</sup> See *Allison v. Fire Ins. Exch.*, above.

<sup>36</sup> See discussion on this point in "Damp Indoor Spaces and Health," above.

<sup>37</sup> See, e.g., "Building Assessment and Survey Evaluation ['BASE']," available at <http://www.epa.gov/iaq/largebldgs/>.

<sup>38</sup> I-BEAM is short for IAQ Building Education and Assessment Model.

<sup>39</sup> See <http://www.osha.gov/SLTC/molds/standards.html>.

<sup>40</sup> 59 Fed. Reg. 15968.

construction sites.<sup>41</sup> Action from OSHA appears unlikely at any point in the foreseeable future, in the absence of a legislative directive.

Of the governmental offices, the United States Department of Housing and Urban Development (HUD) has developed the most active requirements with respect to mold, although its activities are limited to the residential area. In June 2004, HUD began distributing a new form that notifies HUD prospective purchasers of single-family homes of the dangers of radon gas and mold.<sup>42</sup> HUD's recommendation that mold contamination be placed on a par with radon in residential homes has caused a huge controversy. While HUD's new policy does not apply to commercial transactions, the determination that mold and radon cause a similar amount of risk to humans gives mold an elevated status that current studies suggest is not warranted.<sup>43</sup>

To date, Fannie Mae and Ginnie Mae, two of the three government-backed mortgage and lending institutions, have not established limits or standards for mold contamination or remediation. They do encourage borrowers to have a thorough Operations and Maintenance Plan (O&M Plan) on properties where mold may be an issue. Freddie Mac, also government-backed, now requires a mold management plan tailored to each specific property.<sup>44</sup>

#### iv. Private industry organizations

Private organizations thus far have predominately worked to understand the issues surrounding mold. To conduct a website search for mold information would result in millions of possible data sources. Many organizations are looking at simply providing better information for their clients and are not offering actual standards.

One organization that is moving forward to offer a standard on inspections for mold is ASTM International (ASTM). Over two years ago, the ASTM Environmental Assessment, Risk Management and Corrective Action Committee created a task group charged with developing inspection guidelines for visible mold and water damage in commercial buildings, including multifamily properties.<sup>45</sup> The inspection form is expected to be a separate document, which can be used by itself or in conjunction with other property review options, like the ASTM Phase I Environmental Site Assessment (Phase I) or Property Condition Assessment (PCA).

Several organizations have provided information that is currently available for purchase. The National Multi Housing Council (NMHC) and National Apartment Association (NAA) published a document of "best practices" for apartment owners and managers to "manage mold growth and moisture problems on their properties."<sup>46</sup> The document covers how to develop

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<sup>41</sup> 29 C.F.R. § 1910.94 and § 1910.57, respectively.

<sup>42</sup> See, Form HUD-9548-E, "Radon Gas and Mold Notice and Release Agreement" – during the sale of a residential property subject to HUD's oversight, the prospective purchaser receives a form that states the potential health problems of mold and radon gas and requires the execution of a release of liability for HUD, the contractor and the sales agent for any possible mold or radon gas on the property.

<sup>43</sup> See discussion on health in "Damp Indoor Spaces and Health." *Above*.

<sup>44</sup> Freddie Mac has established a four point requirement for their multifamily program: professional inspections; a moisture management plan; increased servicer scrutiny during the annual inspections; and special inspections by qualified professionals until the issue is resolved.

<sup>45</sup> ASTM E50.02 Task Group on Mold.

<sup>46</sup> See, National Multi Housing Council and National Apartment Association, press release: "NMHC/NAA Publish Operations & Maintenance Plan for Mold/Moisture Control," on website at <http://www.nmhc.org/Content/ServeContent.cfm?ContentItemID=2251>, January 16, 2002.

maintenance procedures and practices for apartment buildings around mold and moisture problems, including training, routine maintenance, remediation and clean up process, documentation of a potential problem, and communication with residents.<sup>47</sup> To complement the document, NMHC has a “virtual mold kit” and NAA has a “Mold Action Kit,” also available for purchase. The National Association of Homebuilders (NAHB) offers a report on the health effects of indoor mold.<sup>48</sup> NAHB gathered scientific and medical experts to review the scientific literature currently available and assess if there is a “reliable and reasonable scientific basis ... [for] a causal link between indoor molds and any medically recognized human ailment.”<sup>49</sup>

The National Institute of Building Sciences (NIBS), a Congressionally authorized non-profit, non-governmental organization, brings together representatives of the government and private sector to address building and construction problems. It was formed to create new research and technology initiatives, to review current industry standards required for reasonable professional practice, covering such areas as asbestos clean up and lead paint, as well as drafting base standards where none currently exist. NIBS has established the Buildings and Mold Alliance with the objective of creating a series of guidance documents aimed at fostering a deeper industry-wide understanding of mold-related real estate issues that could eventually lead to industry standards or regulations on mold.

Other organizations have indirectly discussed mold. The American Council of Governmental Industrial Hygienists (ACGIH), which has issued exposure standards for numerous other substances, is attempting to develop but has not issued a standard for mold exposure. The American National Standards Institute (ANSI) has issued indoor air quality standards, but these are phrased in terms of adequacy of ventilation and the ability to remove particulates from industrial activities – e.g., grinding wheel and similar particulates – rather than mold.<sup>50</sup>

#### v. Capital markets - rating organizations

Rating agencies offer investors an opinion of the relative risks inherent in commercial mortgage-backed securities (CMBS). The assessment of various environmental conditions are a subset of the risk evaluation process, as the presence of negative environmental conditions can severely impact the value of commercial real estate and the liabilities of all involved parties.

In the case of mold, the total or partial closure of a property would likely have a serious impact on cash flow, thus resulting in diminished yield payments to bond investors. Remediation costs, litigation expenses, or the potential damage to the marketability of a property may also negatively impact net cash flow. The rating agencies also take note of the insurance industry’s specific exclusions of mold insurance coverage.

The exclusions have placed an even greater importance on the Phase I and PCA reports required of loans that are intended for securitization. As a guideline, rating agencies have minimum expectations for the evaluation of mold in the site assessment process. The scope of

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<sup>47</sup> *Id.*

<sup>48</sup> See, National Association of Home Builders, “Scientific Literature Review of Mold: A Report on the Health Effects of Indoor Mold.”

<sup>49</sup> See, <http://www.nahb.org/generic.aspx?sectionID=205&genericContentID=14147>.

<sup>50</sup> See, e.g., ANSI Standard 62-2001, cited and relied upon by OSHA in establishing industrial air quality standards.

the Phase I and/or PCA required by CMBS issuers should include the requirement for a specific visual mold inspection component. The scope should also include the requirement that mold inspection results, as well as specific recommendations for further investigation, remediation and/or monitoring if mold problems are identified, should be part of the consultant's written report results. If evidence of mold is discovered, then mold remediation should be completed before securitization. If remediation is to be completed post securitization, rating agencies will typically require additional credit enhancement in the transaction, with the expectation that clean-up costs be reserved at 125% to 150% of the estimated costs, with the reserve posted either in cash or a letter of credit from a rated provider.

Rating agencies also expect issuers to stay abreast of changes in EPA and other governmental standards and ASTM guidelines regarding the identification and remediation of mold-related environmental problems. Rating agencies recommend, in addition to the Phase I evaluation, insurance protection, if reasonably available through insurance carriers who are appropriately rated, and recommend properties incorporating a mold prevention and maintenance plan (MPMP).<sup>51</sup>

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<sup>51</sup> MPMP is also sometimes referred to as an Operations and Maintenance Plan (O&M Plan).

### 3. MANAGING MOLD AND THE RISKS IT PRESENTS

#### a. Introduction

The hazards posed by mold, both real and perceived, can be treated using the techniques of risk management, the process by which an individual or a business assesses its aversion to all risks generally or to certain risks specifically; measures the magnitude and likelihood of occurrence of particular risks; and then devises actions or strategies of coping with those risks. The process of risk management involves a considerable amount of ongoing assessment and self-reflection; a business with high tolerance to certain forms of risk may experience those risks and find that: a) an acceptable level of risk is present, b) the risks are less likely to occur than previously believed or c) strategies exist to successfully avoid or transfer the risk.

This section focuses on the risk management process from the standpoint of the business that is exposed to the risk directly, which typically would be the borrower or the property manager. This process is equally important for lenders and servicers because it offers suggestions as to what a borrower can do to address mold-related problems. The borrower who uses mold-smart design and construction techniques or has a comprehensive MPMP will be assessed differently, for risk concerns, by a lender. Understanding risk management analysis for mold is important for a servicer because they may suddenly find themselves in a position of having to deal with a mold problem or having to force a borrower to take steps to actively mitigate a mold problem in order to protect the property. Risk management analysis therefore can be relevant for all involved in the commercial loan process.

All risk management processes follow the same general pattern. The first step is to identify the risks and assess their frequency and severity. Second, the party conducting the assessment will come to a decision on a threshold severity or frequency (or both) of risks it may be willing to accept. Next is to assess possible actions that can be taken with respect to the risk, that is, whether to avoid, reduce, transfer or retain it. Once the assessment is completed, a plan to implement the results of the assessment can be developed and implemented. Finally, once all steps have been taken to remediate the problem, a monitoring program can be developed to verify the completion and quality of the work. At all points, the assessment, planning, implementation and monitoring process should be the subject of ongoing modification and rethinking to determine whether the plan in place is too much or too little to meet the risks at hand.

#### b. Identification and assessment

The risk management process of identification and risk assessment involves a number of significant decisions. The internal assessment of risk threshold will vary from one business to another, but here are three points to keep in mind.

The first premise, no matter how averse a business is to risk, is that there is some possibility of a mold problem in any building or structure, and in any geographical area.<sup>52</sup> Thus,

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<sup>52</sup> See discussion on this point in “Does mold have more of an impact on certain kinds of property or in certain areas?” *Above*.

any risk assessment will start from the premise that mold or dampness issues can arise anywhere and cannot be ignored.

The second premise for any evaluation of mold and dampness risk is that mold does not have one life span. It can arise at any time during the life of a property and if the mold is removed, but the problem is not properly fixed, then the mold will continue to reappear. Therefore, a business should consider the importance of oversight and management to detect and fully deal with on-going mold risks.

The third premise for any mold analysis is that all parties involved, from those making the assessment to those who will be dealing with mold and dampness problems, will need to maintain a constant proactive approach, a level of training and education to recognize the problems and the capability to effectively communicate and deal with the issue. A business that is unwilling to start from these premises is less likely to be successful in dealing with mold and dampness related risks.

c. Methods for avoidance or reduction of mold-related risks

There are well-recognized methods for successfully avoiding, reducing or transferring mold and dampness risk, each of which has a role to play in the creation of a successful risk management plan for mold. In reviewing these approaches, the reader should be aware that no listing of prevention or remediation schemes is exhaustive. What follows is a set of options that should be viewed as examples, rather than as a single standard for mitigating mold risk. Businesses and lenders can use what follows as opportunities for mold prevention, reduction and/or remediation.

i. New construction

The fight against dampness and mold begins at the moment the first sketch for a new structure is put on paper. Many experts on mold-related issues emphasize the importance of architecture and engineering in constructing a new building. Advanced planning may help mitigate future issues and it is possible to create a strategy for new construction that minimizes the possible development of future mold problems. Education and training of key construction staff is also an important component of successfully avoiding mold and water damage. The steps discussed in this section may be considered for use in a new structure, and may also apply to some renovation, repair or remodeling projects of an existing structure.

*Selection of professionals.* Building professionals have been selected for many reasons ranging from aesthetic appeal to cost, but in a world where design flaws may lead to poor indoor air quality and eventual mold growth, choice of design and engineering professionals who understand and appreciate the need to provide a sound structure and good indoor air quality is a helpful first step to avoiding the long term costs of a mold problem.

To facilitate a better chance for avoidance of mold or moisture problems, the selection criteria for architects, engineers, contractors and other professionals will make mold-preventative design a priority. For example, specifications, request for purchase (RFP) and bidding criteria each may include the importance of mold to the owner, developer or lender. If your risk assessment determines that a property may have higher mold risk, then experience with mold-related issues should be evaluated and references checked. With on-line databases, it is even possible to obtain some knowledge as to whether the professionals have been

involved in past litigation over mold. Insurance and bonds can also be checked; actual policies should be reviewed because certificates of insurance rarely provide substantive information concerning applicable policy terms and exclusions.

*Contract design and terms.* Most owners, developers and lenders are used to standard form contract documents such as the American Institute of Architects (AIA) standard owner-architect and/or owner-contractor contract, which take into account numerous different contingencies. Similar attention can be given to mold-related issues in scope of work forms, contract or subcontract documentation, critical path or other scheduling and in warranties. Scope of work forms can specify the importance of preventing mold problems from developing. Contract forms may provide incentives for mold-smart construction and disincentives for errors, acts and omissions likely to result in mold development (ranging from failure to complete the roofing or the building envelope on time to storage methods for materials that will be placed inside the project to lack of a sufficiently trained labor force, among others).<sup>53</sup> Sequencing issues can also be addressed so that later operations do not allow water penetration in areas previously sealed.

*Selection of contractors.* Similar considerations may govern the selection of contractors. Experience with mold-related issues and the materials and techniques to be used in the construction process can be verified, including the on-site management and sources of labor. The general contractor's choice of subcontractors may also prove important, their references and credentials likewise may be reviewed. The contractor's choice of storage areas for materials may be checked to ensure materials, especially those that provide nutrients for mold, are well protected. Advance discussions concerning possible problem areas, workforce issues and storage of materials may help prevent questions and issues later. Also, it is suggested that schedules be flexible enough to allow for unforeseen circumstances, the need for remediation to be performed, or new materials to be brought to the site. Creating a process for communication of concerns and problems is a central part of the relationship with all contractors. Another commonly applied risk management technique that is helpful is to ask the contractor for a certificate of insurance detailing the coverage they have in place for all liability, including pollution liability which also provides for mold coverage.

*Design and engineering.* Mold conscious construction begins literally from the ground up. Designs of roofs, grading and skin that prevent moisture intrusion, selection of materials that deny mold the nutrients it needs to grow, and placement of equipment, pipes and drains so that they are easily accessible to inspection and repair are all among the measures that can be taken "on the front end" to help prevent later problems. HVAC and ventilation design may be a priority, as adequate air circulation is an important deterrent to mold growth. Keep in mind any possible build outs for tenants will complicate the design process or introduce additional opportunities for water intrusion, and may warrant inspection and review prior to completion.

*Materials and construction techniques.* Mold conscious design and proper construction techniques work together to help prevent water damage and mold. Contractors may have a corporate Mold Intrusion Action Plan and depending on the size of the property, may decide to develop a property-specific mold plan of action. Continuous proper supervision during the construction process helps to ensure that the construction process itself does not cause mold

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<sup>53</sup> The use of staff leasing organizations to reinforce work forces should also be considered in developing contract language, because workers from such labor pools tend to lack training in mold-related techniques.

problems. As an example, untreated lumber, installed in a structure after being allowed to sit out in the rain, brings the moisture in and retains it inside the structure as the building is completed. Mold may then develop on the lumber itself and spread from there. Gaps in roofing or a building envelope during construction can also allow for water intrusion.

*Inspection.* It is useful to pick a construction or remediation inspector where there is a comfort level among the parties. Consider the inspector's experience and knowledge about evaluating mold-related problems, as applicable in a given situation. It may be beneficial for the inspectors to have the authority to stop work or cause errors to be corrected immediately, so as to avoid later problems. If the inspector has a broader authority, then the work force on the job site should be informed that the inspector's decisions will be enforced. Increased inspections for water intrusion may be warranted after any significant rainfall or storm, as well as at key points during the construction process. If the inspector is chosen by the owner and works on behalf of the owner, then the lender may want to hire a separate inspector to periodically review the construction or remediation process.

ii. Existing buildings and facilities

Preventing water leaks from occurring makes mold development less likely. As a reminder, water accumulation in walls can develop from improper design and/or materials and mold problems can occur even without evidence of leaking. Thus, preventative maintenance is the first and most important part of any MPMP.

Preventative maintenance begins with inspections, and the MPMP may consider including regular inspections of the property. In some instances, monthly inspections are appropriate; in others, the proper interval may be quarterly or annually. In each situation, the inspections should be comprehensive and properly documented.

All multifamily and commercial properties should be comprehensively inspected for mold based on the borrower's loan documents timetable or at least as often as a site inspection is required. This may include a review of any leases, and a written reminder to any tenants of their contractual obligations; visual inspection for mold, water stains or other evidence of dampness problems; and inspections for signs of water intrusion along roof lines, window joints, drains and supply lines, sprinkler systems and all areas below grade, including sump pumps. Include attention to planters, floor drains,<sup>54</sup> uninsulated piping, swimming pools and fountains. All inspections, findings and remediation measures should be documented.<sup>55</sup>

Increased inspection intervals may be appropriate after identifying problem areas that exist in the structure or after significant challenges such as hurricanes or seismic events. As with routine inspections, these should be well documented, regardless of whether the findings are positive or negative. In developing a site-specific inspection protocol for inclusion in an MPMP consider the following:

*Automated control systems.* Many modern buildings have computer controlled climate control systems, which operate using an array of sensors and automated programs so that

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<sup>54</sup> Optional floor drain questions: Are they properly connected and sealed? Where do they discharge?

<sup>55</sup> See discussion on this point in "The human side of mold risk retention – training, communication, and documentation." *Below.*

equipment rooms and control rooms rarely are continuously occupied. These systems can be tested periodically and the reader may consider adding an alarm system that will alert maintenance personnel to higher humidity levels. Access to control systems and other elements that generate moisture can be set up to only allow access by permit, creating some method for building management to be alerted when work on these systems is underway and complete.

*Building envelope.* Building exteriors can be a complex system of concrete, wood, plastic, glass, metal and masonry, with grout, glazing, caulk and glues, each with a different propensity to shrink, break down, decompose, or crack. Each interface between materials in the exterior envelope is a possible avenue for entry of water, and so periodic inspections of the entire envelope are suggested. Also, certain forms of building materials can pose special problems. Maintaining awareness of what materials have been used in a building and then monitoring any on-going problems that arise will help limit possible mold problems. The frequency for these inspections will vary depending upon the type, age and condition of the building materials, but a full inspection of the entire envelope from ground to roof can be included in any MPMP.

*Cooling towers and air conditioning equipment.* Elements of an air conditioning system are a potential source for dampness and mold contamination, and thus one may decide to check each element of the system carefully to ensure that water is not leaking or building up improperly. With cooling tower systems, one can inspect for leaks, overflows and the cleanliness of the water. All connections, particularly roof connections can be inspected for integrity and any rust can be removed, followed by painting the sealed area.

A similar protocol works with air conditioning systems that serve individual suites or units. All pipes and connections, particularly those inside a unit, may be regularly checked and repaired as necessary. Drip pans can be checked to ensure that they are dry and that the drain is fully functional and adequate in size to carry off any moisture that may develop. Filters may be replaced regularly and insulation checked to ensure it is not allowing condensation to build up will also help prevent mold.

*Below grade areas.* These can be inspected for standing water, rising groundwater, dampness and leaking pipes. If any water or dampness is found, it is suggested that the water be removed immediately and its source located to prevent any spread. In addition to checking for standing water, inspect crawl spaces for the integrity of the moisture barrier, operation of sump pumps and the integrity of pest control devices. Below grade walls can also be checked for signs of moisture or dampness, and, if present, drains on exterior walls may be checked for proper operation.

*Exhaust systems.* Dryer, bathroom/toilet room and kitchen exhaust systems can play an important role in preventing moisture build-up. Exhaust fans and systems could be examined to ensure proper operation and that exhaust is not being pumped into crawl spaces or attics. In the case of multifamily residences, extra care may be warranted with the appliances, not only because of the number of appliances but because the likelihood that leaks will go unreported increases.

*Furnaces, boilers, heaters and stoves.* Furnaces, boilers, heaters and stoves may use water and generate steam. Checks on these devices can include regular examination and

maintenance of gaskets, water treatment systems, and inspections of the pipes and the boiler breeching system for corrosion.

*Grouting and sealants.* In areas such as lavatories, tiled showers or at joints in counters where water is present, one may conduct periodic inspections to ensure the integrity of grout and sealant to prevent moisture from getting into wall spaces.

*Humidity control.* Humidity is acceptable when maintained below 60%, and ideally, 30% to 50% if possible. Levels can be checked periodically, particularly where restaurants, health clubs, pools, commercial laundry operations or fountains are present. Where humidity levels rise above 60% in a building, one might consider operating the HVAC continuously.

*Landscaping and grading.* Exterior grading and landscaping can be inspected to ensure that it is not sloped in such a way as to allow moisture or run-off to accumulate or pond against the outer walls of the building. Mulch and soil is best if not placed against the building above the original grade line, which generally is determined by the level of the exterior moisture coating or barrier. Watch for irrigation systems that spray water against the building.

*Moisture-generating appliances.* These include the obvious and some appliances that are less obvious. A regular inspection and maintenance program for refrigerators, dishwashers, washers, humidifiers, icemakers, hot water tanks, drinking fountains, water filters and treatment systems, hot tubs, pools, spas, fountains and planters can be established. All may be inspected periodically for leaks, tightness of piping and connections, and operation of drains, grease traps, steam traps and supply lines. Equipment vibration and movement can be monitored; equipment kept level is most favorable. Plastic drainpipes can be checked for brittleness and cracks periodically, especially around joints and sharp turns. Consideration may be given to installation of pans or waterproof liners under these appliances with drains sufficient to remove a volume of water greater than the supply.

*Plumbing, pipe and sprinkler systems.* Proactive maintenance of plumbing and piping systems may mitigate mold and dampness. Drain lines can be checked for proper operation and flow. All water pipes can be checked periodically for corrosion, deterioration or electrolysis from the use of dissimilar materials. Connections can also be checked to ensure tightness. Pipe supports, which are an integral part of the plumbing system, may be checked to ensure that none have been removed or altered and that those present are functioning properly. Sprinkler systems can be tested periodically.

*Roofing, gutters, drain spouts and flashing.* The roof, gutters, skylights, davits, roofing connections, rooftop equipment and drains can be inspected for proper operation, leaks, blockage or failure. Attics may be inspected for water leaks and compromised pest control devices. Repair roofs that allow water to pond as soon as possible. Roof drains can be checked to ensure they are clear of leaves, construction debris, trash, and animal debris.

Because the activities of workers and contractors can cause damage to roofing material, one may want to monitor any roof maintenance or repair. The roof's condition may be a discussion point with the contractors and workers in advance of any operations. Completed work can be inspected immediately upon conclusion.

*Vents and ductwork.* Air vents can be checked periodically to see if they are open and functional and to ensure that mold or other microbial build-up has not occurred. Vent filters may be replaced or cleaned regularly to ensure proper airflow.

iii. Getting help

While it is true that many mold issues can be resolved by common sense and thinking ahead, the variety of factors that can be considered and the number of places where mold can be an issue in a building suggest that establishing an advance relationship with a competent mold professional may be appropriate in many circumstances. Many lenders, developers, managers and servicers are well acquainted with the need for consulting with architectural, engineering or environmental professionals and, access to knowledge about mold before a need arises can be very beneficial.

As with other professional relationships, whether to retain mold professionals in advance or engage a mold professional if a problem arises is a business decision. Selection of a mold professional is no different in concept from selection of an architect or engineer; ability, experience and price all play a role in the decision. Also to be taken into account is the professional's willingness to provide services tailored to one's particular needs. It is suggested that references be requested and, to the extent that state licensing boards or regulatory bodies provide information on complaints or disciplinary action, these may be checked. Once the professional is selected, the terms of the relationship can be agreed upon and set down in writing. These may include the scope of work to be performed, price, and an agreed upon limitation as to the range of the professional's discretion to address an issue without prior consultation or discussion.

d. Transfer of mold risks: obligations of building tenants

Risk transfer is the process by which the person or business that presently is designated to bear the costs or likelihood of a problem associated with a particular risk or problem shifts some or all of that responsibility to another. It is common in commercial real estate to associate risk transfer with insurance, but there exist other methods for risk transfer which can be used effectively.

The first method for transfer of mold risks is through contractual indemnification or some form of contractually mandated reserve or holdback. Contractual indemnification provisions are commonly used in a variety of contexts, including those in which a borrower agrees to indemnify a lender for the lender's liability for environmental problems on a piece of real estate on which it has made a loan. These can be accompanied by a holdback of loan proceeds sufficient to fund any remediation that may prove necessary. A combination of indemnification and reserve/holdback can be used to address borrower or tenant related mold issues. This is a worthwhile tool only if the party accepting responsibility is financially able to absorb a potentially sizable mold remediation project.

Other contractual limitations may also be used to shift or limit mold risks that may be caused by tenants or borrowers. These include contractual provisions that limit permissible uses on the property, require any build-out to be done to particular standards, and mandate that tenants or borrowers create a MPMP for their portion of the premises and share inspection reports and remediation information with the owner, manager, lender or servicer. Lease provisions may make mold remediation the tenant's sole responsibility; may establish

preventative maintenance requirements such as keeping the premises clean and free from excessive moisture; or require reporting any indication of mold, leaks or dampness. The lease may also establish use requirements such as limits on the number of plants in the unit or parameters for operation of heating and air conditioning equipment. Finally leases and loan documents may provide for any reasonable inspection by owners, property managers, lenders and servicers and give them the right to intervene to correct, at tenant or borrower cost, any mold problems or any conditions that might lead to mold problems that they find.

Education can play a key role in the process of transferring mold risks. The tenant or borrower who understands the problems associated with mold and dampness and the practical steps that one can take to prevent mold development is far more likely to cooperate and voluntarily take the necessary steps to create and implement a working MPMP. Thus, education of tenants on mold and how to prevent its development, particularly in multifamily residential units, can be an important step in limiting later problems.

An active effort to educate tenants and borrowers about mold hazards is a suggested part of any successful MPMP. When coupled with effective and enforceable documentation setting forth tenant obligations with respect to mold, these efforts are likely to play a significant part in preventing development of mold.

e. Remediation

This section discusses remediation strategies and offers options for the remediation process. Again, however, it should be noted that the variety of situations that may develop is impossible for this White Paper to predict in advance. What follows should therefore be viewed as a non-exhaustive description of some suggested steps, rather than a comprehensive or mandatory list to follow.

i. Step one: eliminate the moisture

The most important step in dealing with a mold or water damage problem is prompt discovery and timely response. Mold is a living organism. The longer it is active the more it will grow. Therefore, early detection and response is important to containing a mold problem.

As the CDC study stated and as common sense suggests, the only way to truly stop mold growth is to cut off its source of moisture.<sup>56</sup> Thus, when an outbreak of mold is found, the first effort is generally to remove the water that is present and prevent additional water from entering the area. As this is being accomplished, the rest of the remediation plan can be developed.

ii. Step two: isolating the outbreak

As the effort to cut off the moisture source goes forward, an assessment of whether or not there is mold growth and the extent of any growth is helpful. Start with a visual assessment for mold. The assessment begins with identification of the source of the moisture problem (e.g., plumbing leaks or an improperly cycling HVAC system) and the extent of visible mold

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<sup>56</sup> See discussion on this point in “Why is mold a concern for lenders and servicers in commercial real estate?” *Above*.

contamination. Visible mold may represent as little as ten percent of the total mold actually present; therefore, a visual inspection may require going well beyond visible surfaces. A look at ceilings, wallboards, the areas behind wallboards and inside wall or crawl spaces, ductwork and a thorough inspection of HVAC systems will help assess the extent of any mold growth. Use of smell in potentially affected areas may provide evidence of additional invisible infestation.

Instruments may aid in a visual inspection. Using a boroscope to view spaces in ductwork or behind walls or the emerging technology of infrared thermography to locate areas of elevated moisture levels that are the product of mold metabolism can be helpful. Possibly the most valuable complement to visual inspection is the moisture meter. These can be used to measure moisture content in a variety of building materials, including areas where mold might be undetectable to visual inspection. Both moisture meters and infrared thermography can also be used to monitor the process of drying damaged buildings.

Careful and thorough visual inspection, accompanied by the judicious use of existing tools, often is enough to isolate the extent of a mold infestation without sampling. If sampling is necessary, there can be additional costs and time involved.

EPA and City of New York guidelines make clear sampling is not a prerequisite for remediation.<sup>57</sup> First, generally it is not necessary to determine which kind of mold is present in order to start remediation. Second, microbial sampling techniques are insensitive and do not always give accurate measurements. Third, as noted in the CDC study discussed earlier in this paper, there are no accepted standards for mold sampling in indoor environments or for determining what exposure levels are unhealthy.<sup>58</sup> There are no standards for what levels of mold constitute a threshold; therefore, the most common practice is to compare outdoor mold levels to indoor sampled mold levels in the affected area. Fourth, because mold and microbes are everywhere, there is a strong risk that what will be found is not an accurate picture of what is actually occurring.

Also, as discussed earlier, is the question of which professional to choose.<sup>59</sup> As was the case in the early days of environmental “experts” on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or Underground Storage Tanks (USTs), some environmental “professionals” recommended a wide variety of environmental sampling, much of which may not be necessary. Given the costs that may be involved, careful evaluation of professionals to assist in the sampling and remediation process becomes especially important. The methods remain the same; evaluation of experience, references and approach are vital. Dialogue with the professional and careful development of a sampling plan is equally important.

In general, if mold is visible, there is no need for sampling. However, there may be some situations where air sampling for mold contamination may be warranted. This will depend on the type of facility and occupancy. Among the examples of situations where sampling may be appropriate are the following:

- to determine whether or not a ventilation system has been contaminated;

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<sup>57</sup> See Appendix B for further information on these sources.

<sup>58</sup> See discussion on this point in ““Damp Indoor Spaces and Health” and Health.” *Above*.

<sup>59</sup> See discussion on this point in “Selection of professionals.” *Above*.

- as part of a medical evaluation if residents contend they are experiencing symptoms allegedly related to fungal exposure;
- to determine if mold is present when visual inspection or bulk sampling is inconclusive;
- to document that remediation efforts were successful at removing contamination especially if litigation is involved or threatened; and/or
- if required by contract or loan documents or to provide necessary assurance to prospective lenders or purchasers.

There is a wide array of sampling techniques, including air flow devices, sometimes known as “spore trappers,” in which pumps are used to pass air over collection devices which trap particles of mold for later examination and analysis; vacuum sampling, in which areas are sampled by means of a vacuum drawing air through a filter paper to which mold particles cling; and tape tests, in which mold particles are removed from a surface using clear tape. Other methods may include use of sterile swabs, which can be applied to a surface (generally one square inch) and then rubbed onto sterile agar plates which in turn are cultured in a laboratory. Swab tests are effective in determining the kinds of mold present, but can be misleading as to the amount of mold present over larger areas because of the possibility that the area in which the sample was taken had germinating spores. It also is possible to do aggressive sampling, in which surfaces are disturbed during the sampling process, but that process may also provide inaccurate results. Finally there is an option for bulk sampling, in which a portion of the material with visible growth on it is removed for testing. While the actual method for sample removal may vary, it is important that it be performed by qualified personnel.

If and when any type of sampling is done, one may consider the importance of hiring a Certified Industrial Hygienist or other persons similarly qualified and that an accredited laboratory performs the analysis. The American Industrial Hygiene Association (AIHA) accredits laboratories for microbial analysis through the Environmental Microbiology Laboratory Accreditation Program. Scrupulous adherence to proper procedures, preservation of material for split or later sampling, chain of custody records and similar steps are particularly important in cases where litigation or enforcement proceedings may be underway or threatened.

### iii. Step three: conducting the remediation

Whether or not sampling is necessary, the next step in the process is to conduct remediation. Serious property damage and continuous mold growth may persist if water damage restoration is not done or done improperly. Some industry resources, the EPA, the New York City Guidelines, and the Institute of Inspection, Cleaning and Restoration Certification (IICRC) S500, provide detailed information about all aspects of water damage restoration projects in a safe and effective manner.<sup>60</sup>

Similar to the design phase, selection of a properly trained and qualified remediation contractor may be a factor in the success of any remediation effort. As a reminder, selection may take into account the experience, costs involved, references and the sophistication of the project. Some mold may be remediated with an in-house staff, without resorting to difficult and possibly expensive techniques and external resources, but knowing where to draw the line between self-directed remediation and the hiring of a contractor may be difficult. Factors that may have an effect on this decision include the size and area designated; the need for

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<sup>60</sup> See Appendix B for more information.

advanced techniques to conduct the remediation, including containment procedures and OSHA personal protective equipment (PPE) requirements; and whether the project is being done as a proactive or reactive measure.<sup>61</sup> Lenders and servicers may wish to establish guidelines or even delineate affirmative standards when borrowers shall obtain outside assistance in remediation projects.

Perhaps the best starting point for determining the scope of and personnel to be involved in a remediation process is the size of the affected area.<sup>62</sup> Some states have already developed procedures and/or recommendations for remediation. These vary from state to state, and therefore researching the property's state specific laws is suggested. As an example, the New York City Guidelines divide remediation procedures into five levels based on the extent of the mold growth.<sup>63</sup>

- *Level I* – Small, isolated areas (ten square feet or less) such as ceiling tiles or small areas on walls. This kind of remediation can be performed by building maintenance personnel with proper training in procedures and hazards associated with mold. OSHA provides information for when respiratory protection should be provided to workers and at this level, it is not necessary to erect containment barriers or to evacuate adjoining spaces except for sensitive individuals. It is suggested that appropriate procedures for dust suppression and sealed debris removal are followed, and the areas used by workers for access are thoroughly mopped down and vacuumed using a HEPA filtered machine.
- *Level II* – Mid sized isolated areas (10 to 30 square feet) such as individual wallboard panels. Here too remediation can be performed by building maintenance personnel who have received proper training. As in Level One, OSHA offers information on when workers should receive respiratory equipment, but it is not necessary to vacate spaces except where work is being done. Unlike Level I remediation, in Level II situations, containment barriers may need to be erected. Debris disposal and area clean-up are similar in scope and method to Level I clean-ups.
- *Level III* – Large Isolated Areas (30 – 100 square feet) such as several wallboard panels. Beginning with Level III of remediation, consideration whether to hire a trained professional, with experience in microbial remediation, to consult and provide project oversight may be a factor. As with lower level remediation, all workers are properly trained and, as suitable, provided with respiratory equipment meeting OSHA standards, as well as gloves and eye protection. Containment measures for the work space and for adjacent areas are often mandatory, and the space where remediation is underway as well as adjacent areas should be vacated. Dust suppression methods such as misting surfaces are recommended. Particular care may be paid to cleaning up access areas. If remediation will generate substantial amounts of dust or mold concentration is substantial, blanket as opposed to patchy coverage, Level IV procedures may be more appropriate.
- *Level IV* – Extensive contamination greater than 100 contiguous square feet in a single area. Level IV remediation often suggests supervision by qualified

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<sup>61</sup> For information on OSHA's personal protective equipment (PPE) standards, see the OSHA website at <http://www.osha.gov/SLTC/personalprotectiveequipment/index.html>.

<sup>62</sup> The figures which follow are derived not from the visible mold alone but from the total extent of the infestation.

<sup>63</sup> See Appendix B for further information on these guidelines.

professionals. Because of the extent and severity of the contamination, training of personnel is especially important. In Level IV remediation, all personnel may require wearing full-face respirators with HEPA cartridges, gloves and disposable protective clothing covering head and shoes. The work area, including ventilation ducts and grills, fixtures and any other openings, should be completely isolated, with entry and exit only through an airlock and decontamination room. An exhaust fan with a HEPA filter can be used to generate negative pressure in the work area.<sup>64</sup> While it is not necessary, evacuation of people in adjoining workspaces is advisable, especially those who are susceptible to mold exposure. Disposal of mold-contaminated materials proceeds as with other levels, but the air lock and decontamination rooms may need careful cleaning and decontamination. Air monitoring should be conducted before persons are allowed to return.

- *Level V* – HVAC remediation. Level V is reserved for mold remediation in HVAC systems. It is strongly suggested that any such remediation is supervised by qualified personnel who have experience in such remediation projects, unless the infestation demonstrably is small and isolated.

During remediation at any level, questions often arise as to whether material can be cleaned and reused or discarded. Guidance is available on this point.

According to the EPA, as a general rule of thumb, non-porous and semi-porous materials like metal, glass, plastic, wood and concrete can be cleaned and reused if structurally sound. Remediation is accomplished by repeatedly wiping all affected surfaces with a high quality detergent solution, scrubbing as needed, until all visible signs of mold are removed. The process is completed by rinsing the area with clean water, but in some circumstances, a disinfectant may be used to complete the rinsing process. If a disinfectant is used, allow the area to dry overnight; if not dry the area immediately. It is suggested that water not remain on the treated surface more than 24 to 48 hours to prevent the conditions necessary for mold to redevelop.

Porous materials, including ceiling tiles, insulation, wallboard, carpeting, furnishings, drapes and clothing, are more difficult. In some cases, it is possible to clean them (it may be possible to wash or dry clean clothing, drapes, curtains or slip covers, for example), but if cleaning is not possible, porous material may need to be discarded in such a way as to prevent the mold from contaminating other non-affected material.

iv. Step four: when is remediation complete?

There is no exact answer to this question.<sup>65</sup> EPA advises that the clean-up process is complete when the source of water or moisture has been removed and/or fixed completely, and when the mold is completely removed. Common sense and professional judgment both play a role in assessing whether mold is “completely” removed; as a reference point, signs of mold growth or water damage, mold-damaged material and moldy odors are no longer present. If post-remediation sampling is conducted, post-remediation mold levels for indoor air should equate with outside air quality in the vicinity. Results will vary from remediation to remediation.

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<sup>64</sup> Negative pressurization in the work area prevents mold and mold contaminated dust from escaping the work area. Whenever there is a breach, intentional or inadvertent, the lower air pressure inside the work area causes outside air to flow in preventing escape of particles.

<sup>65</sup> See discussion on this point in ““Damp Indoor Spaces and Health” and Health.” *Above*.

f. Monitoring Program

Scheduled periodic monitoring of the facility is suggested in order to address potential new mold issues as they occur and to reassess existing actions undertaken in an ever changing environment. The monitoring program may also include as examples, physical inspections after storms or other unexpected excess water related events (i.e., sprinklers or broken pipes).

g. The human side of mold risk

Training, communication and documentation can play a vital role in effective proactive remediation efforts to combat mold issues. A discussion of each of these topics, as part of any MPMP, is encouraged. Also, during the planning and implementation of a remediation, all three play a role in an effective process. It is suggested that lenders and servicers, during a review of a borrower's MPMP, look for education and training references. Carefully considered plans for training, documentation and communication suggest that the borrower is willing to be equally careful in confronting mold risks as they arise.

i. Training

Training to meet mold risks is a great tool for controlling them, and taking time to ensure that all employees are trained in dealing with mold will enable them to execute the appropriate steps to respond to any mold problems.

Training for low to mid-level building employees may start with an understanding of what it takes for mold to grow and the importance of detecting and isolating moisture intrusion and releases. As a part of their training these employees can be taught to recognize the areas where water or dampness problems can develop in the structure and encouraged to look for other areas where problems can arise. Their training may include the basics of safety around a mold outbreak and the vital importance of promptly notifying management of moisture intrusion or visible mold. Communicating in advance to employees the importance of abiding by corporate policies concerning mold and of all elements of the MPMP can assist in proactive treatment. Following the OSHA model requiring periodic retraining and weekly workplace meetings appears advisable.

Because Level I and II remediations can be conducted by in-house staff, training of employees may also include proper remediation methods and, as necessary, an understanding of when to stop remediation and advise management that professionals are needed. This area of training can encompass worker safety, including proper use of protective equipment and proper methods for disposal of contaminated material.<sup>66</sup> Training can encompass both line workers and extend to management. Training of higher level employees also may include an understanding of what it takes for mold to grow, the importance of proper communication, and of elements of the MPMP in place. It is suggested that management is trained in the importance of prompt response to mold issues. Experience from litigation arising out of other environmental issues strongly suggests that willful neglect by management – i.e., turning a blind eye to evidence of problems – can be the source of liability and a basis for punitive damages. Accordingly, it is important that management and executive level employees be engaged in mold issues from the beginning and ready to respond quickly if a problem is noticed.

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<sup>66</sup> There have been several workers compensation claims from mold remediation workers.

Therefore, a proactive step is to develop training programs and materials at all levels, which are evaluated by a professional prior to implementation and updated periodically to ensure that information and methods being used are timely and appropriate.

It is too much for a single paper to anticipate the proper training programs in every situation, but lenders and servicers can take into account the level of emphasis placed on training by the borrower.

## ii. Communication

Communication at all levels and both to and from each party associated with the property – tenants, property manager, borrower, lender, servicer – help create an atmosphere of inclusion, knowledge and forthright information sharing.

Typically, communication concerning moisture and mold will flow inward first, from occupant to management. It is suggested that occupants, tenants and employees are positively encouraged to report leaks, water intrusion, excessive dampness and perceived mold outbreaks. Some of these reports will turn out to be false or of negligible importance, but the early detection of water intrusion and dampness is a key element and a few early false warnings may be better than a missed or late reporting. Encouragement and the means to communicate through proper internal channels can be included in any MPMP.

Once mold growth is discovered and depending on the extent of remediation required, there are several steps to consider. First, appoint a knowledgeable individual as a liaison with whom the occupants can communicate and ask questions. It is a good idea that the liaison has a basic knowledge of mold, thorough knowledge of the extent of the contamination and what is being done about it, as well as references to web pages and other resources, which occupants can use for confirmation of the information being provided. Because medical questions may arise, it may be appropriate to have an industrial hygienist, physician or similar professional on call to respond promptly. Second, providing regular updates to all who may occupy the property is appropriate. The information may include a discussion on the extent of the outbreak, what is being done to remediate it, the progress of remediation, and, if necessary, why containment areas have been established or protective equipment is being used. Third, after large remediation efforts with significant containment areas or visual sights of workers wearing protective suits, it probably is advisable to retain an outside professional to conduct sampling after the remediation, whose results may be made available to occupants to provide reassurance that the area is safe. In some areas, public health officials may be available and willing to confirm that test results are accurate or that mold remediation has been completed successfully.

Whether to describe symptoms of mold exposure in communicating with tenants is a particularly tricky question. A case involving the allegedly improper spraying of chlordane inside an apartment complex illustrates the potential risks here. In advising residents that the spraying had occurred, the Texas Department of Agriculture, which was responsible for supervision of pesticide use and misuse also advised the residents of symptoms associated with chlordane exposure, including sleeplessness, anxiety, loss of appetite and other similarly amorphous conditions. This did lead to lawsuits by plaintiffs with symptoms described by the Texas Department of Agriculture, all conditions that could be attributed to other reasons than just chlordane.

Probably the best solution to this problem is to avoid making any affirmative disclosure of symptoms in information relating to the remediation. Instead, it probably is better to let this self-selection process play itself out by directing occupants to see their own physicians if they feel they are experiencing symptoms related to mold exposure. While this is not an option free from risk – not every physician will be cognizant of the most recent information on health issues associated with mold, for example – letting those who feel the need go to see their own physician is an effective way to reduce concerns. Those who do so cannot say that they have been coerced or that their concerns have been downplayed, and generally, to the extent that a person has a relationship with a health care provider, getting concerns out into the open is an effective way of resolving them.

An often overlooked point in environmental response and remediation is that remediation itself is communication to all who can see it. It is good to have an appearance of professionalism and accordingly, one may consider where workers will enter and leave the remediation area; what equipment will be present and visible; and any workplace neatness issues, including prompt removal of debris and policing of the area on a daily basis. Simple techniques like requiring tidiness go far to give reassurance that the remediation is being conducted in a professional manner.

Finally, there is the question of communicating with the media as it is likely that the media will find out about major remediation projects. The goal in dealing with media representatives on any environmental issues is not to squelch the story, but to make it into a non-story, that is, to make the situation sufficiently routine or uninteresting that there is no follow-up story. While successful communication with the media could be, and already is, the subject of many books, techniques involved in successful communication with the media are easily summarized. First, establish a press liaison, usually the same person that coordinates communication with occupants. All communication should go through this liaison and all others involved in the project, including contractors and professionals, should decline comment and refer questioners to the liaison. Second, be honest and polite, but controlled: “Yes, there is a remediation underway. Yes, we have advised occupants. Yes, it is being conducted according to sound environmental standards. The protective equipment and enclosures are to ensure worker safety in the immediate area and to prevent dust and particles from spreading so as to negate the purpose of the clean-up, not because there is any greater danger. The material is being disposed of properly. We are working with trained professionals on the project. Before we complete our work we will test the level of mold in the area.” Statements like this delivered uniformly and clearly most often are the best antidote to sensationalism and misinformation. Third, presume that everything is “on the record;” do not give “off-the-record” comments, historical context briefings or other similar statements. Stick to the basic message and do not go beyond it.

### iii. Documentation

Documentation of an MPMP has two purposes, defensive and corroborative. The defensive purpose is important; keeping proper and complete records may be used as a defense to later claims of infestation or illness. The corroborative use of records may be less obvious, but is every bit as important: at the time of a property transaction, having records to show that an MPMP is in place and being executed and that any problems have been successfully and fully resolved will assist in resolving any concerns over possible mold problems in the structure. Lenders may want to consider the depth and breadth of a borrower’s MPMP

documentation as a part of their underwriting process, particularly in loans secured by structures at high risk for mold infestation.

It is important to document every phase of an MPMP, starting with the MPMP itself. It is suggested that workers are trained in the importance of proper and contemporaneous documentation and record keeping to ensure the integrity of information over a long period of time. Moreover, since mold often involves visual evidence having a camera on hand to photograph or record digitally reported contamination or intrusion can be an important defense to later claims of “widespread” infestation later.

A second aspect of documentation to consider is a periodic complete video inspection of an entire unit or suite. Just as homeowner’s insurers have long recommended periodic photographic inventories, having a record of conditions in a space before occupancy and after departure can go a long way to deter later claims. Also, carefully preserve any sampling data, whenever done.

Keep a thorough record of any remediation work, including any sampling or testing performed. “Before” and “after” photographic evidence of a successful remediation also is important.

Document retention is a more difficult question with mold records. Generally, one should understand and follow record keeping processes to meet legal requirements, such as statutes of limitation or IRS dictates. Because mold-related records may play a role in a transaction involving the structure long after a statute of limitations has run and because later medical research may show a link between mold exposure and latent medical conditions, it is prudent to retain mold-related records indefinitely and to transfer copies as part of any change of ownership. Because retention of paper documents and electronic data is presently under increased scrutiny by courts, it is suggested that this issue is reviewed internally and with outside counsel as a part of a comprehensive document retention program.

#### iv. Litigation avoidance

Each of the steps just discussed is an important part of avoiding the risk of litigation over mold issues, because each demonstrates a commitment to prudent operations and to retaining evidence which can be used to defeat a claim based upon dampness or mold infestation. Together they constitute a palpable deterrent to those who might be tempted to take advantage of an unfortunate situation. Paper and procedures are not enough by themselves to be the most effective deterrent to litigation. The human factor is also important.

Previous portions of this paper have discussed the self-selection process by which individuals, some for legitimate reasons, others not, can come to believe that they have been injured by exposure to mold or dampness. While a few will proceed straight to filing a lawsuit, most will voice some kind of complaint first. Dealing with those complaints properly is a key part of deterring litigation.

It has been well said that one of the primary reasons people file lawsuits is because they do not feel their claims have been substantively addressed. Accordingly, any occupant who lodges a complaint about mold or dampness should be treated seriously and with courtesy. Keeping a written record of the complaint and taking steps to address it promptly are significant. The complainant may be kept informed of progress and, if appropriate, be shown how the

complaint is being addressed. Some form of documentation showing how the complaint has been handled can be prepared and delivered to the complainant, and some form of acknowledgement of receipt executed. In most cases, this will be sufficient to resolve matters.

A more difficult situation can arise when the complainant contends that exposure to conditions in the building have resulted in medical problems or issues. It may be tempting to dismiss such claims, but exactly the opposite approach is called for. As with those who feel that they have developed symptoms during a remediation, it probably is better not to provide corroboration that any particular symptoms can be associated with exposure to mold. Instead, the better course probably is to direct the individual to seek medical advice while conducting any investigation that may be appropriate. If the investigation does reveal mold in the area, it may be appropriate to consider whether air sampling is appropriate as a precaution and as an implicit deterrent to later claims.

Whenever a claim is made, once there has been proper resolution, finish with full closure of the issue. Some individuals become tempted to see how far they can push an owner/manager/landlord into providing concessions. A desire to avoid litigation should not become an opportunity for an occupant to take unfair advantage. Reasonable resolution of complaints always is appropriate, and generally all that is required.

#### h. Conclusion

Risk management techniques are an effective tool for addressing risks posed by dampness and mold because they provide a framework by which possible problems can be discovered and addressed. Lenders can apply the same analysis to ascertain their willingness to take on loans that pose mold or dampness risks or as an underwriting tool to determine whether a prospective borrower has taken steps to deal with mold. Properly used and properly updated as necessary, both borrowers and lenders will benefit from proper management of mold risks in the short and long term.

#### 4. LOOKING AHEAD

“Damp Indoor Spaces and Health,” the groundbreaking effort to classify what is and is not known about mold and dampness, revealed how little reliable quantitative information is available. To that end, federal and several state legislatures have begun to examine mold-related questions and request that additional research be conducted to ascertain the role mold plays in indoor spaces. There is a growing commerce in products, devices and technology designed to help deal with mold and dampness. Although it remains too early to determine the exact direction each is taking, trends can be seen and the beginnings of a real response discerned. The reaction of legislatures, the insurance industry, and scientific, technical and engineering firms to better understand mold and the effects of mold, are all opportunities for greater public education and knowledge.

##### a. Legislative action

There has been some legislative action involving mold and information, disclosure and research at the federal and state levels.

At the federal level, on March 13, 2003, Representative John Conyers of Michigan introduced bill H.R. 1268, formally entitled the United States Toxic Mold Safety and Protection Act of 2003 (Conyers Bill).<sup>67</sup> The Conyers Bill would have affected both commercial and residential business, most specifically public housing, residential and multifamily structures. The legislation sought to provide for the EPA to develop guidelines for mold prevention, inspection, testing and remediation for indoor mold growth and study the health effects of indoor mold. It would have required landlords to give mold disclosures when leasing rental property and to conduct annual indoor inspections of the property and give notices of the results. The Conyers Bill also wanted to require the Department of Housing and Urban Development (HUD) to establish model construction standards and techniques for mold prevention in new buildings. HUD, along with the EPA and the National Institutes of Health, were to sponsor public education programs on mold. Finally, the bill would have required the Federal Emergency Management Agency (FEMA) to create a mold insurance program along the lines of the flood insurance program it presently administers.

Although the Conyers Bill had over 30 co-sponsors, and was referred to several committees, no action was taken by any of them. With the end of the 108th Congress, the bill died and required reintroduction for there to be any consideration or approval by Congress. On March 14, 2005, Representative Conyers introduced the Conyers Bill again, H.R. 1269, which has been referred to the House Financial Services Committee.

At the state level, several legislative initiatives have been introduced. California passed the most comprehensive legislation requiring the development of uniform standards for mold and for disclosure of mold in commercial and residential property transactions, as well as for creation of education materials and a determination by the California Department of Health Services on permissible mold exposure limits.<sup>68</sup> While the legislation was passed on October 7, 2001, it has not been implemented due to a lack of funding. Texas and Louisiana have regulated property review, requiring licenses for mold assessors and persons conducting mold

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<sup>67</sup> The bill is also known as the Conyers Bill or the Melina Bill.

<sup>68</sup> Toxic Mold Prevention Act (Senate Bill 732).

remediation services.<sup>69</sup> Montana passed a Mold Disclosure Act in 2003 permitting, but not requiring, a party to a real estate transaction to provide a mold disclosure statement.<sup>70</sup> Maryland's legislature created a Task Force on Indoor Air Quality to study the health risks to workers from mold in office building HVAC systems and to make recommendations to mitigate indoor air quality health risks.<sup>71</sup>

In other states, including Arizona, Connecticut, Florida, Georgia, Illinois, Kentucky, Massachusetts, Michigan, New York, Oklahoma, Pennsylvania, and Rhode Island, legislatures have considered bills addressing mold regulation. These proposed bills have focused on several key areas:

- scientific and health research, involving studies of the effects of mold on individuals in an indoor environment, which may include permissible exposure levels to mold;
- regulation of mold assessment and remediation contractors, including licensure, continuing education standards and financial responsibility requirements;
- educational programs, requiring educational materials or training; and/or
- disclosure requirements or standards in real estate transactions, for tenants, homeowners, lessees and with emphasis on residences.

Results of these legislative initiatives have been mixed. Legislation to regulate mold assessment firms and remediation contractors generally has received support, while legislation mandating disclosures has received a more cautious reception. The diverse state of mold legislation, one with widely differing standards for regulation, disclosure, testing and remediation, will have some impact on lenders. As the states continue to propose their own standards, the lending process may become more cumbersome and driven by state specific requirements. Because of this, lenders and servicers may want to monitor each state legislature where their property resides to ensure that there has been full compliance with all applicable laws and regulations.

b. Mold and dampness technology

Even a cursory review of what turns up on a web-browser search for new scientific developments related to mold and dampness reveals a growing array of technology, products and services that address mold and dampness issues, which generally fall into two choices: (1) mold and moisture detection techniques or (2) materials technology. What follows is a brief overview of trends in mold and dampness technology which is not intended to be either a comprehensive review of the strengths and weaknesses of the methods discussed or an endorsement of any particular technology. This area is evolving quickly so careful evaluation of what works best in any particular situation is important.

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<sup>69</sup> Texas Mold Licensing Law (2003), effective September 1, 2003. Louisiana: Licenses persons who perform mold assessment and mold remediation services (HB 1328 – Act 880), effective July 2, 2003.

<sup>70</sup> HB 536, effective May 5, 2003.

<sup>71</sup> SB 283, effective July 1, 2001.

i. Mold and moisture detection techniques

As the mold assessment and remediation field expands, so do new technologies to improve and ease how mold assessments are conducted. There are currently no technologies that can definitively find and identify hidden mold (i.e., mold behind walls). There are, however, technologies which assist in the identification of elevated moisture levels or water-damaged building materials. And, as previously noted, identifying the source of the moisture is the first step of a mold assessment.

Mold detection techniques have also received media attention including stories on the use of mold-sniffing dogs to detect the presence of chemicals emitted by mold.<sup>72</sup> Mold dogs, as these animals have come to be known, follow in the footsteps of drug-sniffing and explosive-sniffing dogs, both of which are widely used by law enforcement officials, and both of which have come to be generally accepted as a reliable means of detection. Mold sniffing dogs undergo a rigorous training process and work with handlers to locate possible mold infestations in homes and businesses.<sup>73</sup> According to their proponents, mold dogs offer several advantages. First, their sense of smell is far more sensitive than commercially available mold detectors. Second, dogs may be able to locate the highest concentration of mold odors, eliminating or minimizing the need to conduct extensive drilling or exploratory operations. Finally, dogs can conduct searches in crawl spaces and other areas that cannot be reached by other detection methods.

Technology associated with hygrometers, transducers and moisture meters, each of which can be used to detect moisture or humidity, has improved to the point that non-invasive through-the-wall measurement of dampness in tile, wood, wallboard and cement is possible. It also has become possible to use such devices as an alarm to provide warning if moisture or humidity levels rise inappropriately.

Moisture meters are the technology currently utilized to identify water-damaged materials. This affordable and portable tool is easy to use and requires little training. Pinless radio frequency (RF) type meters allow the user to survey building materials by scanning the wall. However, the meter can produce false readings due to interference from metal (e.g., studs, nails, pipes) within the wall cavity. The pin-type meter provides a measure of the extent of water damage in specific locations. However, the penetrating pins can cause surface damage. For both types of meters there are no reference standards for normal moisture content in building materials. In addition, the normal amount of moisture varies between different building materials. Therefore, baseline readings are required for each specific building material being assessed.

An up and coming approach to water damage assessments is the use of infrared thermography. The principles of infrared imaging are based on the fact that all objects emit infrared radiation. The level of radiation increases directly as temperature increases. Infrared imaging equipment provides real-time presentation of temperature patterns that are being

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<sup>72</sup> CNN featured mold dogs in a story on its "Science" segment on April 23, 2004. See "For These Working Dogs, Mold is Gold," available at <http://www.cnn.com/2004/TECH/science/04/20/mold.dogs/>.

<sup>73</sup> One provider of mold dog services states that mold dogs receive over 600 hours of training in which they learn to discriminate between normal household scents and those associated with mold. See <http://www.labrsultsllc.com/training.php>. Another states that is dogs receive 1000 hours of training. See note 50, *supra*.

emitted by an object. Warm spots may indicate the presence of mold, which produces heat as it metabolizes nutrients. Cool spots on a surface may indicate the presence of a crack where water has penetrated. These patterns are displayed as video images in either black and white or color.<sup>74</sup>

This technology does however, have substantial limitations. One, there are limitations on the type of materials that can be observed with thermography. (e.g., while wallboard images can clearly show the temperature differentials, ceramic tile and glass have an insulating effect, insulating the surface from evaporative cooling, thereby creating difficulty in identifying temperature patterns.) In addition, outdoor investigations tend to be much more difficult due to more sources of heating and cooling effects, the many layers of materials in the walls and roof, and atmospheric conditions such as wind, humidity or solar reflection and solar loading, which can skew or limit results.<sup>75</sup> High resolution is imperative to getting clearer and more accurate images, as 320 x 240 pixels are recommended. This portable equipment cost ranges from \$10,000 to \$60,000 and extensive user training is required.

Future technology includes the use of radar as part of a moisture infiltration assessment. Scientists at Georgia Tech Research Institute (GTRI) are conducting research to find ways to view mold behind wallboard using millimeter-wave, extremely high-resolution radar. Researchers intend to examine the effectiveness of these techniques in detecting mold in other indoor building materials, including ceiling tiles typically used in commercial structures. Ultimately, the researchers hope to produce a small, handheld prototype unit – something akin to a stud finder – to lay the technical foundation for a commercial product that contractors could purchase for about \$1,000 to \$2,000 and easily learn to use. Scientists envision a system that would map mold behind a wall. If dampness is indicated by the radar-based device then a contractor could know more precisely where to probe for damage.<sup>76</sup>

Similar to the GTRI study, the Air Conditioning and Refrigeration Technology Institute and the Department of Housing and Urban Development Healthy Homes Initiative have funded a two-year study to determine whether radar, x-rays or gamma rays can be used to detect mold behind walls and partitions. Each process relies upon the fact that mold reflects this electromagnetic radiation beamed at it by these devices differently from uninfected wallboard and other materials. This difference can be detected using available technology and the results can be used to locate concentrations of mold without the need for random drilling and examination into walls. This study, which is expected to be completed in 2005, coincidentally also aims at developing an affordable (\$1,000-\$2,000) device that can be used in the same way as a stud finder.

Evolution of existing sniffer technology also continues. Efforts are underway to make existing devices more sensitive and discriminating. The field, called machine olfaction or electronic nose technology is in its infancy, but is moving ahead rapidly. Mold detection is a recognized subdiscipline in this field.<sup>77</sup>

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<sup>74</sup> See <http://www.stocktoninfrared.com/pulpwork.htm>

<sup>75</sup> See [http://www.irinfo.org/tip\\_of\\_week\\_2003.html](http://www.irinfo.org/tip_of_week_2003.html).

<sup>76</sup> See <http://www.gatech.edu>.

<sup>77</sup> See, e.g., T. Pearce, S. Schiffman, T. Nagle & J. Gardner, "Environmental Monitoring" in HANDBOOK OF MACHINE OLEFACTION: ELECTRONIC NOSE TECHNOLOGY, part 17 (2003).

ii. Materials technology

Because mold requires cellulose and other organic materials to grow, an obvious attack on mold development is through materials that deny mold the nutrition it needs or which kill the mold as it develops.

For years, wood was pressure treated with chromated copper arsenate (CCA) to protect it from termites and fungus. Because CCA contained arsenic, a known carcinogen, EPA banned use of CCA-treated wood as of January 2004 except in certain very limited applications. New substances have become available to replace CCA and the search remains underway to find other chemicals which can retard or deter mold growth without themselves posing a health hazard.

A second approach has been to coat or treat building products to prevent mold infestation. These can be applied to any exposed surface of the material, integral treatments or barrier treatments. Surface treatments generally are applied as a part of the production process and often are colored to indicate their presence. The advantage of a surface treatment is that requires no handling in the field. Its disadvantage is that retains its effectiveness only as long as the barrier is not breached. Mistreatment on the job site can render such treatments ineffective.<sup>78</sup> Integral treatments introduce a fungicide into the material during production; pressure treated wood is an example. Here the primary issue is one of cost and whether a consumer is willing to trade fear of exposure to mold for fear of exposure to the fungicide.<sup>79</sup> Finally, there are penetrating barriers which contain chemicals that protect the materials surface and which diffuse into it if water is introduced, thereby providing additional protection.<sup>80</sup> Some of these can be applied at the time of construction, presumably after any chance of damage to the barrier is over.

Another method of preventing mold development is to use materials which do not provide the nutrients mold need to grow. Products such as glass-fiber reinforced concrete, precast concrete, fiber reinforced polymers, epoxy concretes, and so-called paperless wallboard, which are wrapped with fiberglass rather than paper, claim to limit the growth of mold on wallboard materials.<sup>81</sup> Here the issue is cost and availability. In the meantime, manufacturers of traditional building products have accelerated the pace at which they are producing mold-resistant materials.

While the use of moisture-resistant gypsum panels can help minimize the chances for mold to grow, new panels are only one part of an overall strategy to control moisture on the job site. Building materials must be protected from exposure to water or moisture during storage and construction. Only by combining sound design, installation, inspection and maintenance practices can this be accomplished.

In light of the emerging field of mold assessment of remediation, new technologies to assist the assessor and remediator are constantly being introduced in the marketplace. In this unregulated industry it is buyer beware. Contractor and product liability must be taken into

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<sup>78</sup> See Ross, "New Treatments Aiding in Fight Against Ancient Fungus," available at [http://www.apawood.org/level\\_b.cfm?content=pub\\_ewj\\_0402\\_mold](http://www.apawood.org/level_b.cfm?content=pub_ewj_0402_mold).

<sup>79</sup> *Id.*

<sup>80</sup> *Id.*

<sup>81</sup> See <http://www.bizjournals.com/sanantonio/stories/2002/03/25/focus4.html?page=1>.

consideration if using unqualified products. Arming yourself with information and knowledge enables the user to integrate these new technologies to ease the assessment and remediation process.

c. Mold and insurance

Although the future looks bright for new mold technologies, at this point the same cannot be said for new insurance products addressing mold risks. Uncertainties associated with mold claims, differing interpretation of standard policy provisions and the continuing lack of standards for exposure and remediation combine to make insurers extremely reluctant to provide mold or microbial coverage except as a part of a separately negotiated environmental liability policy. Shock verdicts on homeowner's claims also reverberate through commercial insurers.

i. Claim activity

An interesting scenario to consider is the impact of the insertions of exclusions and limitations on mold and mold related claims on commercial insurance policies in the near future. Given the fact that most all insurers providing property and liability coverage have introduced mold exclusions and/or low limits for this coverage, will the level of claims activity trail off or continue to escalate the way they have over the past four years?

Some industry observers believe that as a result of the limitations and exclusions being included in property and casualty insurance policies, the claims will shift away from the insurance industry. Lenders, Servicers, Property Managers, Contractors (Building, General and Trade) and even Trustees, other potential "deep pocket" defendants, may bear the brunt of this general lack of coverage in addition to isolated potential sources of coverage under professional liability coverage and environmental policies. The Mortgage Banking industry in total and all those who service it are potential targets for litigation should legitimate sources of insurance coverage continue to disappear.

Some believe that claimants will target other insurance policy types, including the insurance agents' and brokers' Professional Liability Coverage (also known as Errors and Omissions or E&O coverage).<sup>82</sup> In fact professional liability insurers are inserting mold exclusions or re-evaluating the exclusions currently included in their policies for potential re-write. Some claims experts believe that payouts under these professional liability policies may begin as soon as 2005. E&O coverage is speculative as an option for claimant's recovery.

The movement of claimants to these potential targets will not necessarily decrease the level of claims occurring and may instead just redirect a portion of claims to other sources of potential negligence.

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<sup>82</sup> The "Mold Claims Chart" created by American Risk Management Resources Network, LLC, shows the movement toward claims on the agent's/broker's Errors and Omissions coverage. The chart is available on the Environmental Risk Resources Association website at <http://www.erraonline.org/domino.pdf>.

ii. Mold insurance products

Tentative efforts by the insurance industry have begun to find new insurance products and overcome the lack of coverage. It has been suggested that first-party and liability insurance providing mold coverage could be underwritten at acceptable rates for structures using only mold-resistant materials. Another concept is to provide diminution-in-value (DIV) coverage for structures being sold. Such a policy would cover the reduction in a structure's value to a buyer or lender after a sale, loan or other similar transaction if mold contamination were discovered in a building which had been properly maintained and inspected prior to the sale. For such a concept to work, proper documentation and an effective inspection policy would be beneficial.

Another form of coverage is available on new construction over 50,000 square feet. This endorsed environmental policy, Real Estate Environmental Liability Insurance (REEL), will provide "third party" losses arising from the "release of pollutants including fungus and/or mold," but no first party coverage is included under this policy from fungus and/or mold. A first party coverage trigger for mold clean up is under development and is likely to be in place in the near future. The environmental policy, by virtue of this endorsement, provides coverage, under a single contract, protecting the interests of the lender, contractor and owner. The positives of a single contract protecting the interests of all three provide a continuity of coverage that is unbroken from the developer to the ultimate owner as the policy is assignable to the ultimate owner. Limits are available from \$10 million to \$25 million and the policy term is three to ten years. The minimum one time single premium and self-insured retention (deductible) is \$100,000. Coverage is contingent on required loss engineering programs pre-funded in the premium costs. Rates range from \$ .70 to \$2.00 per square foot and vary from risk to risk. The insurer continues to provide building science based loss control services on the insured property over the course of the policy term.

The lack of coverage in professional liability policies may spur the growth of "mold endorsed" environmental policies, purchased by commercial clients who are concerned about their individual exposures to loss. The premium cost will be high, but the potential for a large claim loss potentially in the future may offset this deterrent and give rise to an increased demand for new environmental products. This action hopefully will bring additional insurers into the market and begin pushing the premiums down to a more competitive level.

The most that can be said at this time about insurance for mold is that the market is adjusting to demand created by universal mold insurance policy exclusions. The situation appears roughly analogous to what existed in the mid-1980s as both insurers and policyholders adjust to a situation that may not seriously have been contemplated as being within the purview of many policies – pollution liability then and mold liability now. In each case, the market's initial reaction was to retract through stricter exclusions or other limitations on coverage. As time went on, however, and it became clearer that the costs associated with remediation would not be as staggering as had been predicted, standards and protocols for environmental investigation evolved, regulatory agencies developed realistic standards for remediation and the insurance market softened and coverage became available.

Much the same process is at work with mold, and it is hoped that the NAS study will mark the jumping-off point for a viable mold insurance market. In the meantime, the march of technology will do much to make risks associated with mold and dampness more palatable to insurers even without a deeper understanding of the medical issues at work.

## 5. CONCLUSION

In this document, the MBA Mold Working Group has attempted to present an overview of an area that has seized the attention of regulators, those involved in commercial real estate and the public. At this time, misperception of mold and the risks it poses remain widespread, and industry's first task in developing a coherent approach to mold issues is to dispel the myths and misperceptions associated with the subject of dampness and mold. To this end, "Damp Indoor Spaces and Health," the National Academy of Sciences study is a beacon toward understanding and providing a proper assessment of the situation as it really exists. When coupled with a process for dealing with mold, like a MPMP, it can be seen that a framework does exist for rational decision-making about mold issues. The next step is to take advantage of the opportunities that this framework offers, while continuing to develop knowledge in this area.

## APPENDIX – A

### **Mold Resources**

#### **Resources and Information:**

While there are no definitive guidelines or standards for mold in place at this time, trade associations, state and federal government agencies and environmental consultants have developed a great deal of information concerning identifying and remediating existing mold.

#### **Government Agencies**

- The U.S. Environmental Protection Agency (EPA) *Mold Remediation in Schools and Commercial Buildings* ([www.epa.gov/iaq/molds/mold\\_remediation.html](http://www.epa.gov/iaq/molds/mold_remediation.html)) publication is a similar document for use in schools and commercial buildings, including residential buildings.
- EPA article on *A Brief Guide to Mold, Moisture and Your Home* (<http://www.epa.gov/iaq/molds/index.html>)
- EPA also gathered general information on the basics of mold at [www.epa.gov/iaq/molds/moldresources.html](http://www.epa.gov/iaq/molds/moldresources.html) and a list of *Mold Prevention Tips* at <http://www.epa.gov/iaq/molds/prevention.html>
- Centers for Disease Control article *State of the Science on Molds and Human Health* at [www.cdc.gov/nceh/airpollution/mold/](http://www.cdc.gov/nceh/airpollution/mold/)
- Occupational Safety and Health Administration (OSHA), *A Brief Guide to Mold in the Workplace* (<http://www.osha.gov/dts/shib/shib101003.html>), released in October 2003, provides recommendations for the prevention of mold growth and describes measures designed to protect the health of building occupants and workers involved in mold cleanup and prevention.
- U.S. Department of Labor (OSHA) has a list of various articles on Mold, including *Mold, Toxic Molds, and Indoor Air Quality and Fungal contamination in public buildings: A guide to recognition and management* ([www.osha.gov/SLTC/molds/](http://www.osha.gov/SLTC/molds/)).
- The Fannie Mae brochure, *What Every Multifamily Lender Should Know about Mold* outlines the best strategies to proactively manage mold growth through preventive maintenance and proper response once a problem has occurred.
- The Freddie Mac materials, *Multifamily: Moisture Management Plan Handbook*, offers tools to help owners and managers comply with Freddie Mac's requirements for mold and moisture management and mitigation.

## **State Level Links**

- The New York City Department of Health and Mental Hygiene *Guidelines on Assessment and Remediation of Fungi in Indoor Environments (NY City Guidelines)* ([www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html](http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html)) were the first published guidelines to specifically address mold contamination in residential buildings. Developed in response to mold growth problems in many New York City buildings during the 1990's, the *NY City Guidelines* contains information related to: potential health effects, environmental assessment, remediation, and hazard communication.
- California article on *The Condominium Owners' Guide to Mold* at [www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose\\_ce44.cfm](http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_ce44.cfm)
- California article on *Health Effects of Toxin-Producing Indoor Molds in California* at [www.dhs.ca.gov/ehib/ehib2/toxin\\_producing.html](http://www.dhs.ca.gov/ehib/ehib2/toxin_producing.html)
- California Department of Health Services Indoor Air Quality Info Sheet, *Mold in My Home: What Do I Do?* (<http://www.cal-iaq.org/mold0107.htm>)

## **Professional organizational guidance - industry organizations and trade associations**

- American Industrial Hygiene Association (AIHA) offers a glossary of terms involving mold at [www.aiha.org/governmentalaffairs-pr/html/mold-glossary.htm](http://www.aiha.org/governmentalaffairs-pr/html/mold-glossary.htm)
- The National Multi Housing Council (NMHC) *Operation & Maintenance Plan for Mold and Moisture Control in Apartment Properties* identifies "best practices" and concrete steps apartment owners and managers can use to manage mold growth and moisture problems on their properties. This document is available to NMHC Members at [www.nmhc.org](http://www.nmhc.org).
- National Association of Home Builders ([www.nahb.org](http://www.nahb.org)) has mold tips for assessment, prevention, clean up at <http://www.moldtips.com/> and a published document for purchase called *Scientific Literature Review of Mold*
- The Institute of Inspection, Cleaning and Restoration Certification (IICRC) *S500 Standard for Professional Water Damage Restoration*. The document may be purchased at <http://www.iicrc.org/pdf/buydocs.pdf>.
- The Institute of Inspection, Cleaning and Restoration Certification (IICRC) *S520 Standard and Reference Guide for Professional Mold Remediation*, may be purchased at <http://www.iicrc.org/pdf/buydocs.pdf>.
- American Conference of Governmental Industrial Hygienists, *Bioaerosols: Assessment and Control* may be purchased at [http://www.acgih.org/store/Product\\_Detail.cfm?id=349](http://www.acgih.org/store/Product_Detail.cfm?id=349).

## **Other – Legislation, Litigation, Regulation, Science, Insurance**

- Mold Updates ([www.moldupdate.com](http://www.moldupdate.com)) offers a little bit of everything on mold.
- Environmental Risk Resources Association: [www.erraonline.org](http://www.erraonline.org).

APPENDIX – B

“Damp Indoor Spaces and Health” – Scientific Findings<sup>120</sup>

*TABLE ONE: Summary of Findings Regarding Association Between Health Outcomes and Exposure to **Damp Indoor Environments***

*Sufficient Evidence of an Association*<sup>121</sup>

Upper respiratory (nasal and throat) tract symptoms Cough	Wheeze Asthma symptoms in sensitized persons
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*Limited or Suggestive Evidence of an Association*<sup>122</sup>

Dyspnea (shortness of breath) Lower respiratory illness in otherwise healthy children	Asthma development
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*Inadequate or Insufficient Evidence to Determine Whether an Association Exists*

Airflow obstruction (in otherwise healthy persons) Mucous membrane irritation syndrome Chronic obstructive pulmonary disease Inhalation fevers (non-occupational exposures) Lower respiratory illness in otherwise healthy adults Acute idiopathic pulmonary hemorrhage in infants	Skin symptoms Gastrointestinal tract problems Fatigue Neuropsychiatric symptoms Cancer Reproductive effects Rheumatologic and other immune diseases
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<sup>120</sup> See “Damp Indoor Spaces and Health” (2004), Executive Summary, page 7.

<sup>121</sup> “Sufficient evidence of an association” means that an association between the agent (dampness or mold exposure) and the health outcome or effect has been observed in studies in which chance, bias and confounding variables can be ruled out with reasonable certainty.

<sup>122</sup> The Committee used this category for situations where the evidence suggests an association, but chance, bias and confounding variables cannot be ruled out.

**TABLE TWO: Summary of Findings Regarding Association Between Health Outcomes and *the Presence of Mold or Other Agents* in Damp Indoor Environments**

*Sufficient Evidence of an Association*

Upper respiratory (nasal and throat) tract symptoms Cough Hypersensitivity pneumonitis in susceptible people	Wheeze Asthma symptoms in sensitized persons
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*Limited or Suggestive Evidence of an Association*

Lower respiratory illness in otherwise healthy children

*Inadequate or Insufficient Evidence to Determine Whether an Association Exists*

Dyspnea (shortness of breath) Asthma development Airflow obstruction (in otherwise healthy persons) Mucous membrane irritation syndrome Chronic obstructive pulmonary disease Inhalation fevers (non-occupational exposures) Lower respiratory illness in otherwise healthy adults Acute idiopathic pulmonary hemorrhage in infants	Skin symptoms Gastrointestinal tract problems Fatigue Neuropsychiatric symptoms Cancer Reproductive effects Rheumatologic and other immune diseases
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