



MOLD'S GROWING IMPACT ON THE CONSTRUCTION INDUSTRY

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I. Introduction

A growing crisis now facing the construction industry relates to the ever-shrinking availability of insurance coverage. The availability of coverage is part of the lifeblood for contractors because an inability to obtain insurance will prevent contractors from obtaining work, especially on public projects. If contractors have work under way and they are unable to renew coverage, an automatic breach and potential termination will result. Even contractors with seemingly good risk histories are facing this dilemma. When coverages are made available, such are often at dramatically increased costs, which may cause contractors to consciously or unconsciously seek to otherwise cut corners to turn a profit. The causes for the current insurance crisis are well known and have been thoroughly discussed.

The concurrent emergence of mold as an insurance risk has compounded the problem, with the result that coverage concerns may be reaching critical mass. Some commentators have opined that the current mold hysteria will never result in the type of litigation explosion caused by asbestos.¹ However, the current atmosphere is causing very real problems for contractors, not only with regard to coverage, but also with regard to new concerns on the job site. Contractors are now experiencing, first hand, the doctrine that perception is reality, particularly when a public project owner is advised that a mold or potential mold problem has developed in a new building. Fueled in large part by sensational news accounts pronouncing mold as the “silent killer,” owners somewhat understandably react out of fear or, at minimum, out of an abundance of caution.² Consequently, entirely new categories of “construction defects” are being claimed. The emergence of new codes or regulations may result in the creation of more *de facto* defects.

¹ See the excellent commentary by Randy J. Maniloff in *Mold: 5 Reasons Why It Is Not “The Next Asbestos,”* MEALEY’S LITIGATION REPORT: INSURANCE, Vol. 16, Issue 25 (May 7, 2002). Maniloff observes that mold, unlike asbestos, does not lend itself to “mass tort” lawsuits, with the result that the plaintiff’s bar will be unable to generally commence large class-action suits and will also unlikely be able to identify and sue large groups of potential defendants. Maniloff further observes that the insurance industry’s total exposure for asbestos is \$30,000,000,000 and is projected by some analysts to reach \$250,000,000,000. While some mold cases have resulted in awards in the millions of dollars, mold has a long way to go to approach the level of exposure caused by asbestos.

² Although the science behind the mold fear is inconclusive at best, public figures such as Erin Brockovich have pronounced that the science has simply not yet caught up to the reality when it comes to mold. In September 2002, the Texas Medical Association’s Council on Scientific Affairs issued a report, *Black Mold and Human Illness*, which concludes that adverse health effects from *Stachybotrys* mold spores in water-damaged buildings are not supported by peer-reviewed reports in medical literature. This report is available at <http://www.texmed.org/has/CSA%20Black%20Mold.doc>.

Insurance and coverage issues deserve and require separate treatment and will not be exhaustively covered in this paper. However, assuming coverage is available to contractors, contractors must now undertake aggressive programs to attempt to prevent, or least mitigate, mold and mildew problems on their projects. Concurrent with those efforts, contractors must be aware of existing contractual protections while remaining vigilant during the course of work. For their part, owners as well as design professionals must accept that mold issues are also design and cost considerations for projects overall.

II. Background

Mold may be the single greatest risk management challenge facing the construction industry today. Claims of “toxic” mold have been swept up by the mass media to help fuel what can best be described as national hysteria. Television news magazines broadcast special reports on “black” or “toxic” mold, while the national nightly news carries stories of homeowners who lose their homes to mold and public schools that closed because parents fear for the health of their children.

Based upon the media attention devoted to mold, one would think mold is a biblical plague that has recently descended upon man. Of course, mold is not new and has been around longer than man. Mold is everywhere. It is in the air we breathe, the food we eat, all of our homes and work places. Mold has been an every day part of our lives since the beginning of time and will continue to be so, no matter what steps are taken to eradicate mold from the indoor environment. In fact, the Old Testament contains what can be loosely described as the first mold remediation specification. Leviticus, Chapter 15, states that:

33 And the Lord spoke to Moses and Aaron, saying:

34 When you shall be come into the land of Chanaan, which I will give you for a possession, if there be the plague of leprosy in a house,

35 He whose house it is, shall go and tell the priest, saying: It seemeth to me, that there is the plague of leprosy in my house,

36 And he shall command, that they carry forth all things out of the house, before he go into it, and see whether it have the leprosy, lest all things become unclean that are in the house. And afterwards he shall go in to view the leprosy of the house.

37 And if he see in the walls thereof as it were little dints, disfigured with paleness or redness, and lower than all the rest,

38 He shall go out of the door of the house, and forthwith shut it up seven days,

39 And returning on the seventh day, he shall look upon it. If he find that the leprosy is spread,

40 He shall command, that the stones wherein the leprosy is, be taken out, and cast without the city into an unclean place:

41 And that the house be scraped on the inside round³about, and the dust of the scraping be scattered without the city into an unclean place:

42 And that other stones be laid in the place of them that were taken away, and the house be plastered with other mortar.

43 But if, after the stones be taken out, and the dust scraped off, and it be plastered with other earth,

44 The priest going in perceive that the leprosy is returned, and the walls full of spots, it is a lasting leprosy, and the house is unclean:

45 And they shall destroy it forthwith, and shall cast the stones and timber thereof, and all the dust without the town into an unclean place.⁴

Mold is not a new phenomenon, and there is no readily apparent explanation as to why it has suddenly been thrust into the media spotlight. However, what is readily apparent is that mold hysteria has created a multi-billion dollar industry with a mantra that “mold is gold.” Not surprisingly, personal injury attorneys are in the very center of the mold explosion. As a result, the construction, insurance, and real estate markets are literally besieged by mold litigation and the quest to locate and eradicate mold from the indoor environment.

For proof of the “toxic” mold explosion, one need look no further than the personal computer. There are tens of thousands of web pages relating to “toxic mold.” These websites encompass everything from “Toxic Mold Survivors, Toxic Mold Information and Support Group”⁵ to the “Sick Building Syndrome, Lawyer Network.”⁶ At least one site, “Toxic Mold & Tort News Online,” even provides state-by-state information about mold litigation attorneys.⁷ Through the Internet, people who are interested in or concerned about mold have a limitless supply of articles and information about “toxic” mold.

The greatest concern about the media coverage afforded mold is the one-sided nature of the debate. A review of the websites, television programs, and magazine articles quickly demonstrates that they are essentially marketing tools meant to inform the world of the hazards associated with mold exposure; and many are designed to connect those exposed to mold with personal injury attorneys in their geographic area. Within a few minutes, even the most inept computer browser could easily find hundreds of articles on the health hazards associated with mold exposure, a local attorney “specializing” in mold claims, and any number of industrial hygienists and mold remediation contractors ready to eradicate any signs of indoor mold.

³ A web search of “toxic mold” on October 22, 2002, provided 53,008 hits, many of them plaintiff’s attorneys and mold remediation contractors advertising their services.

⁴ *Leviticus* 14:33-45 (Douay Rheims).

⁵ Available at <http://groups.yahoo.com/group/ToxicMoldSurvivors.com>.

⁶ Available at <http://www.sickbuildingsyndromelawyernetwork.com>

⁷ Available at <http://www.toxic-mold-news.com>

What is particularly troubling about the media blitz surrounding mold is the heavy slant towards alleged mold-induced illnesses. Unfortunately, articles on the scientific gaps in mold-related research and the problems connecting mold exposure to many of the alleged symptoms do not sell newspapers or television commercials. From the mass media's perspective, the sensational aspects of the mold debate make for more interesting and exciting stories. Similarly, the industrial hygienists, environmental consultants, remediation contractors, testing laboratories, and others involved in the mold industry have very little incentive to publish or even discuss the possibility that mold hysteria is vastly outpacing the science supporting the potential health hazards. Put simply, you can only sell mold-related services to the extent that people believe that mold is dangerous and should be purged from the places where they work and live. There is very little published information focusing on the question of whether the reaction and fear are justified by science. However, perception becomes reality, and the public perception of mold is that it is highly toxic to humans.

As a result of the extensive media coverage surrounding "toxic" mold, any mold problem that develops on a construction project is likely to spawn worker's compensation claims, personal injury lawsuits, and demands for immediate and very costly remediation efforts. For contractors, these reactions translate into huge financial losses, project delays, and very bad publicity. Mold problems are often addressed on the basis of the "better safe than sorry" approach. In other words, when the owner hears that some scientists and others in the mold industry believe that mold causes brain damage and any number of other serious health effects, it is almost impossible to convince them that mold hysteria is overblown. From the owner's perspective, if there is any chance that mold could be as deadly as some believe, then the mold must be eradicated, regardless of the costs associated with the remediation. It is always easier to believe the worst, particularly when the best defense is that "the science does not support the health concern." As always, it is virtually impossible to prove a negative.

The sheer magnitude of the mold-marketing machinery, coupled with the fact that mold is everywhere in the air we breathe, should be enough to convince everyone in the construction industry that mold issues are here to stay and must be incorporated into all risk management programs. For the benefit of any "non-believers," a review of some of the mold litigation reported around the country illustrates the magnitude of the problem.

- ⌚ In New York City, 125 tenants sued two apartment building owners for \$8 billion in damages for a variety of mold-related personal injury and property damage claims.⁸
- ⌚ A Texas jury awarded a homeowner a \$32 million verdict against her homeowners' insurance carrier for, among other things, fraudulent claims handling in connection with a claim for water damage. Ultimately, the water caused mold to develop in the house, and the plaintiff and her family complained of various mold-related illnesses.⁹ Significantly, the judgment

⁸ MEALEY'S EMERGING TOXIC TORTS, Vol. 8, Issue 6, *New York Building Owners Face \$8 Billion in Claims for Mold, Fungi Contamination* (June 25, 1999).

⁹ Farmers Insurance News Alert, <http://members.tripod.com/alanhawk/fi-447.html>, citing Ballard, et al. v. Fire Ins. Exch., et al., Index No. 99-05252 (Travis County Dist. Ct. June, 1 2001).

included \$5 million for mental anguish.¹⁰ However, on December 19, 2002, the Texas Court of Appeals reversed in part and affirmed in part this well-known decision.¹¹

- ⌚ In Florida, a jury issued a \$14.2 million verdict against the construction manager and its sureties on the Martin County Courthouse Project.¹² The Martin County Courthouse Project was substantially complete on December 12, 1988, and fully occupied in early 1989. Shortly after occupancy, the County complained to the construction manager about leaking windows, excessive humidity, and the discovery of mold within the building envelope. A subsequent investigation revealed water infiltration through the exterior synthetic hardcoat system. In addition, the investigation discovered various problems with the HVAC systems throughout the building. By 1992, the County had received numerous health complaints, and approximately 25% of the building occupants had moved out. In September 1992, the County filed suit against the construction manager, the architect, the masonry contractor, and the construction manager's sureties. Thereafter, on December 8, 1992, the County evacuated the entire building and moved the courthouse into temporary facilities.

Prior to trial, the County settled the claims against the architect and masonry contractor for \$2,750,000 and proceeded to trial against the construction manager and its sureties. Ultimately, the jury concluded that the mold and water problems were caused by construction defects and returned a verdict of \$11,550,000 against the construction manager and its sureties. After the Court reduced the verdict by the amount received by the County in its earlier settlement with the architect and the mason and added pre-judgment interest from 1988 through 1996, the judgment against the construction manager and its sureties soared to \$14,211,156.

The Martin County case is illustrative for several reasons. First, the County elected to evacuate the building, despite the fact that neither of its mold experts specifically recommended such an action.¹³ The County testified that it could not “in good faith and good conscience” allow people to enter the building under the circumstances. The decision to evacuate the building (an event that greatly increased the County's damages) is particularly interesting in light of the fact that the construction manager alleged that its tests revealed that the mold levels inside the building were two to ten times lower than mold levels discovered in the air outside of the courthouse. Unfortunately, the jury never reviewed the construction manager's tests results because the trial court ruled they were inadmissible as a result of the construction manager's failure to comply with a pretrial

¹⁰ Home Owners for Better Building, <http://www.hobb.org/farmersverdict.shtml>, citing Verdict Sheet from Ballard, et al. v. Fire Ins. Exch., et al., Index No. 99-05252 (Travis County Dist. Ct. June 1, 2001).

¹¹ Allison v. Fire Ins. Exch., No. 03-01-00717-CV, 2002 WL 31833440 (Tex. Ct. App. Dec. 19, 2002). The appeals court found sufficient evidence that the insurer breached its duty of good faith and fair dealing and affirmed the actual damages award of \$4 million. However, the court found insufficient evidence of fraud and reversed the jury's award for punitive damages and mental anguish damages.

¹² Centex-Rooney Constr. Co., Inc. v. Martin County, 706 So. 2d 20 (Fla. Dist. Ct. App. 1997).

¹³ Centex-Rooney, 706 So. 2d at 24.

discovery order.¹⁴ The reported decisions do not provide much detail as to why the County's experts did not recommend the evacuation of the building or what the construction manager's test results actually showed. However, this case raises the question of whether the science of mold supported the extreme measures undertaken by the County. If their own experts did not believe that the mold levels required evacuation and the test results showed that there were higher levels of mold in the outside air, was the evacuation of the courthouse actually necessary or driven by the "better safe than sorry" approach?

- ⌚ In Buncombe County, North Carolina, a contractor paid \$6.7 million to an owner for mold discovered in a partially completed hotel. This case arose as a result of a sudden and catastrophic release of water into the nearly completed structure. The contractor immediately attempted to investigate the cause of the water discharge, but the owner elected to terminate the contract and hire its own professionals to determine the cause of the problem.

In response, the contractor sued the owner for \$421,000 representing the unpaid contract balance; and the owner counterclaimed for the damages caused by the water discharge, including mold-related damages. Ultimately, the case was settled when the contractor waived its claim for the contract balance and agreed to pay the owner \$6.7 million in damages.

Interestingly, the contractor then asserted a tortious interference with contract claim against an outside consultant retained by the owner.¹⁵ According to the complaint, the consultant advised the owner to terminate the contractor and deny the contractor access to conduct its own investigation. The contractor further alleged that the consultant recommended that the owner take no action to remediate the water damage until the consultant had an opportunity to assess the problem. It was during this period of investigation that the contractor claims the mold developed. Ultimately, the Court dismissed the claims against the consultant because the contractor was not licensed in North Carolina.

Again, what is interesting about the Buncombe County case is the knee-jerk reaction of the project owner. The contractor was immediately terminated without any opportunity to conduct its own investigation. The owner then retained its own experts who ultimately elected to conduct extensive and costly mold remediation throughout the structure.

In addition to the cases cited above, there are dozens of mold-related personal injury and property damage claims pending all around the country. Often these cases are brought as class actions by groups who believe they were exposed to "toxic" mold. The defendants include contractors, design professionals, owners, developers, material suppliers, maintenance companies, and anyone else involved in the design, construction,

¹⁴ *Centex-Rooney*, 706 So. 2d at 25.

¹⁵ *RCDI Constr., Inc. v. Spaceplan/Architecture, Planning & Interiors, P.A., et al.*, 148 F. Supp. 2d 607 (W.D.N.C. 2001).

or maintenance of a building. The damages assessed in mold cases often soar into the tens of millions of dollars, but even if a claim is defeated, hundreds of thousands of dollars will have been spent on legal fees, expert witnesses, and the other costs and expenses associated with complex litigation.

Mold has become a serious construction defect problem that can destroy a construction company. Mold is a contractor's worst nightmare and creates very serious and complicated risk management issues. Contractors need to be aware of mold, understand how and why mold grows, and adopt a risk management program that specifically contemplates mold avoidance procedures. These procedures should include, at a minimum, the following: an education program designed to make all construction personnel aware of the potential for mold and other problems associated with moisture; alerting estimators and field personnel of design-related issues that could contribute to moisture problems; periodic inspection of all enclosed areas that have the potential for the accumulation of moisture; and an action list if excessive moisture is detected on a project. Preventing mold growth is the only cost-effective way to deal with this problem.

Prevention efforts can also be facilitated with a thorough understanding of the advantages and disadvantages of new building materials and techniques. As a corollary, contractors must be aware of the types of existing materials that have become known as perfect "food" sources for mold growth. Similarly, contractors should be aware of applicable building codes, including emerging rules and regulations applicable in their locality.

Project owners also have a significant role in preventing mold growth, as do the design professionals retained by owners. If a problem develops, contractors must be aware of the rights and responsibilities already existing under their contract documents. For the future, contractors must endeavor to appropriately allocate risk, not only within the owner/contractor relationship, but also as between the contractor and its subcontractors and suppliers.

III. Risk Management and Prevention

Common sense, overlain by an understanding of mold-related issues, drives mold risk management and prevention. Mold requires a food source, a sufficient ambient temperature, and moisture. Contractors need to establish programs to achieve appropriate levels of education, recognition, and, if needed, reaction to mold issues. Because this entire area is evolving, nothing is carved in stone and adjustments need to be made, based on experience.

A. Education

Case studies may serve as the best illustration for emerging mold issues. Appendix A (Scenario 1) sets forth the basic project dilemma faced by a contractor when mold starts to grow in new construction. Appendix B (Scenario 2) illustrates risks to construction managers in an agency capacity, when work by trade contractors fosters mold growth. Each of the two case study scenarios touches on pure "in the field" risk

management needs. The threshold key to effective risk management is a mandate that personnel at every level be sufficiently educated concerning the physical conditions that permit mold growth. Apart from taking proactive steps to prevent such conditions from occurring or persisting, all personnel must also be encouraged not only to recognize when such conditions develop, but also to react promptly in order to prevent any problems from spreading. Contractors should mandate that subcontractors also take this responsibility. Key elements to education include the following.

1. Mold food

Traditional building materials create a smorgasbord for mold. Most wood, paper, or other cellulose or carbon-based materials provide a food source for mold growth. These categories encompass virtually all construction materials, but for masonry, steel, stone, ceramic, marble, glass, or most plastics. Drywall, adhesives, ceiling tiles, insulation, paint, plywood, fabrics, rugs, carpets, furniture, and almost all other materials used in construction are, however, on the mold diet. Compounding the problem is the fact that recurring shortages in the lumber supply has created a “greening” of lumber, which means that the wood itself sometimes has a higher moisture content than typically seen historically.

One of the more notorious mold culprits identified in recent years is artificial or “fake” stucco, known as an exterior insulation finish system (“EIFS”). EIFS is a building system that integrates a resinous exterior cladding with an underlying continuous layer of insulation, which is wrapped around the exterior of buildings. Such a system is typically comprised of five layers: an exterior finish, a reinforcing mesh to protect the system, an insulator (normally polystyrene), an adhesive substance binding the insulator to the building, and a substrate to which the insulator is attached. Defective installation of the system can result in a source for water infiltration (as well as retention) into a structure, but the EIFS materials themselves can also serve as a food source for mold.

The “mold is gold” mantra may be most applicable for the company that first develops cost-effective alternatives or treatment methods for traditional building materials. To some extent, alternatives already exist. For example, one very well-known major manufacturer of gypsum wallboard has a proprietary product incorporating an outer layer of fiberglass sheathing. According to the manufacturer, it is strongly resistant to mold and mildew. In the product literature, it is recommended for primary use in shaft walls, stairwells, or other area separation wall applications. It is likely not currently cost effective as a full substitute for drywall.

Other products known to exist include alternatives for exterior wooden siding, made of concrete composite materials that are fire resistant as well as mold resistant. A number of manufacturers also tout mold- and mildew-resistant paint, paint additives, and other coating products, some of which promise to inhibit mold growth for 180 days after application.¹⁶

¹⁶ For instance, the Healthy Walls website at <http://www.healthywallproducts.com> encourages architects to specify its products in all their designs in order to retard mold growth. The web advertisement announces that “Bodily injury claims for toxic mold are growing at epidemic proportions” and then pronounces that “The Next Dimension in Mold Retardants Has Arrived.”

Some advocate a greater use of pre-cast concrete or glass-fiber reinforced concrete. There are also potential uses for fiber reinforced polymers and epoxy concrete. All such alternatives, to varying degrees, impact cost and constructability.

Other efforts are being made with building products such as ceiling tiles and the backing on carpeting. However, all of these efforts typically have one thing in common: their development is growing out of a need to address mold and mildew concerns. Notably, however, there has been some thought that the indoor air quality concerns have effectively worsened the mold risk. For example, particle board-type products at one time contained formaldehyde, which is thought to have possibly inhibited mold growth. Over the last few years, formaldehyde has been also deemed unsafe, with the result that less-resistant sources of mold food were substituted.

2. Temperature

Temperature presents a simple issue. If a work area is cold, mold typically will not grow. In fact, mold thrives best in a temperate climate, typically above 70 degrees Fahrenheit.¹⁷ Thus, construction on an open site during the winter in the Northeast may avoid mold. However, if such a site is then temporarily enclosed and heated, great caution must be taken to insure that the temporary heat and enclosure does not create a literal greenhouse effect for mold.

3. Moisture

Moisture, even if only in the form of high humidity, is the third basic ingredient for mold. The reality is that all construction projects, to some degree, get wet. However, moisture is perhaps the one critical element over which contractors may under certain circumstances have some control. Water infiltration, as well as humidity levels, can often be controlled through proactive measures. If water infiltration occurs, prompt recognition and reaction to the problem, prior to any mold growth, is imperative. Apart from actual rain/water infiltration, something as simple as a daily monitoring of the ambient humidity within any enclosed construction should be a relatively easy task. Once wet, it either must dry or be otherwise dealt with.

Some contractors have started to utilize aggressive dehumidification techniques during the course of construction. A very recent report advises that a contractor on a 106,000 sq. ft. school project utilized desiccant dehumidifiers¹⁸ and indirect fired heaters out of a desire to control moisture content inside the building, specifically in reaction to excessive litigation in Texas concerning mold and mildew. However, the contractor discovered that removing moisture further aided drying times of concrete, wallboard

¹⁷ Mold can grow at temperatures as low as 40 degrees and may even simply go dormant at lower temperatures.

¹⁸ Desiccant dehumidification systems have typically been used to reduce mold and mildew for manufacturing and storage facilities; refrigerated warehouses and ice rinks; health facilities; schools, restaurants, and theaters; and other areas requiring a large amount of ventilation air and where occupants generate a lot of moisture.

compound, and substrate surfaces, with a resulting accelerated construction schedule overall. The prevention of mold was a further bonus.

A related issue concerns the exchange or circulation of air within the project/structure. Well-ventilated open construction sites seldom have mold problems, even in moist or wet conditions. Enclosed (and often dark) areas are the prime targets for mold, particularly when air circulation/exchange is poor. Affirmative steps to insure air circulation as well as dehumidification, if necessary, are prudent.

B. Recognition

Scenario 1 (Appendix A) clearly presented the contractor with advance notice that a mold food source existed, together with the likelihood that sufficient temperatures would exist to permit growth. The problem for the contractor in this scenario was that the presence of moisture within the crawl space was a latent development. In fact, the moisture itself was likely generated solely through extremely elevated levels of humidity by reason of the subsurface conditions and a design omission concerning drainage and ventilation in the crawl space. This was coupled with the fact that the crawl space, once construction of the floor was complete, became hidden from view so that visual detection did not occur until the mold had substantially grown. As a result, a multi-million dollar remediation effort was required; and the contractor narrowly avoided liability for the complete demolition and reconstruction of the nearly finished structure.

This scenario presents a true dilemma for contractors. However, contractors must now be vigilant to be on the lookout for the potential that these prime mold-growing conditions may develop in any enclosed space. Detection of humidity in these circumstances, together with a plan to dehumidify, may prevent such a nightmare scenario.

Under Scenario 2 (Appendix B), both new and existing food sources were present and the presence of moisture was visually apparent. The problem confronting the construction manager/agent in this scenario was that the owner had become non-responsive in reacting to the CM's recommendations and the trade contractors themselves failed to take appropriate steps to protect their work product or otherwise discharge their work site obligations. However, the most glaring issue in Scenario 2 was that no one involved on the project understood or recognized the potential that mold growth could result or become a problem. As a result of the lack of education, recognition of the brewing problem did not occur; and, although the CM urged the owner to take action, no true reaction occurred until the mold had gained a footing.

Some of the more prudent contractors have started to establish guidelines and programs in an effort to educate their workforce. An example of one program now being followed by a contractor/construction manager is annexed as Appendix C. These types of programs should always be passed down to subcontractors as well. Suggested language for doing so is annexed as Appendix D.

Education connotes understanding. Recognition requires the realization that an event has occurred. Because mold grows on construction materials, the first opportunity

to recognize mold as an issue arises when materials are delivered to the site. Contractors must inspect material shipments to insure that they do not deliver a pre-existing mold problem. However, another factor to consider is the scheduling of deliveries in order to minimize the time that materials are stored on site prior to incorporation into the project. A related issue concerns material storage and whether the materials are stored inside or outside or are otherwise protected.

During construction, any source of moisture should be carefully reviewed, especially if potential mold food sources have been incorporated into the work. It is often impossible to avoid some wetting of construction materials, but they can usually dry in due course. However, care should be taken to not cover up wet materials with additional construction, prior to drying.

The roof, as well as any other opening into the incomplete structure, should also be closely evaluated. Scenario 2 provides ample illustration of opportunities for recognition in such a setting. Common sense should be the guide.

C. Reaction

The time frame for avoiding a full-blown mold crisis can be relatively small. Once a potential mold-growing condition is recognized, the clock may literally be ticking. Prompt action can mean the difference between the relatively straight-forward problems and costs associated with removing and replacing wet construction materials, and the exponentially more damaging remediation of mold-covered work.

Flow charts showing reaction and decision-making triggers for various types of moisture damage are annexed as Appendix E.¹⁹ These charts depict common sense timelines for reaction.

If no mold has started to grow, careful removal of wet construction, sufficiently beyond the wet areas, together with any other necessary drying precautions, may be sufficient. Depending upon the sources or causes of the moisture, insurance coverage may also be available for these limited and controllable expenses.

If mold has appeared, the problem becomes more complex. There are no mandated guidelines for remediation, although both the New York City Department of Health and the U.S. Environmental Protection Agency have promulgated guidelines.²⁰ Often, criteria are tailor-made. Annexed as Appendix F is a “Work Safety Plan” specifically tailored for use on an actual project. Until firm codes and guidelines are established, contractors can and should refer to the NYCDOH and EPA materials, together with what other contractors have developed, based on experience.

¹⁹ Derived in part from *Managing Water Infiltration into Buildings*, Environmental Health and Safety, available at www.dehs.umn.edu/iaq/flood.html.

²⁰ See discussion in Section IV, below.

IV. Impact of Building Codes and Emerging Guidelines and Legislation

Adherence to existing building codes can prevent conditions conducive to mold growth. However, one of the biggest debates in the mold arena surrounds the development of national, or state, industry standards for acceptable levels of exposure to mold, once it develops. Currently, there are no federal or state standards mandating acceptable mold exposure limits for the indoor environment. In addition, while there are various protocols and guidelines available for proper mold prevention and remediation, there are no nationally accepted standards for mold remediation. Furthermore, mold remediation contractors are not licensed, certified, or registered. And while these issues are being considered by various entities, contractors and the other stakeholders in the construction industry are often left in a precarious position regarding proper standards on mold-related construction and remediation issues.

While no standards for mold exposure limits or remediation procedures have been mandated by any federal or state regulator, in March 2001, the U.S. Environmental Protection Agency (“EPA”) released a document entitled *Mold Remediation in Schools and Commercial Buildings*,²¹ which provides guidelines on preventing, investigating, evaluating, and removing or cleaning up moisture and mold problems. The subtitle of this article is “Moisture Control is the Key to Mold Control.” The EPA concludes that it is “impossible to eliminate all mold and mold spores in the indoor environment. However, mold growth can be controlled indoors by controlling moisture indoors.” This mantra is repeated in other available guidelines.²² The EPA suggests that “[c]ontractors and other professionals who respond to mold and moisture situations in commercial buildings and schools may also want to refer to these guidelines.”

It should be emphasized that what is suggested in this EPA article are “guidelines,” not “standards.” In order for an agency of the federal government, such as the EPA, to promulgate regulations, it must be authorized by Congress to do so. And to date, Congress has not authorized the EPA, or any other agency, to promulgate any standards relating to mold.

However, on June 27, 2002, U.S. Congressman John Conyers, a Democrat from Michigan, introduced federal legislation that purported to address many of the issues concerning mold. The bill, H.R. 5040, the United States Toxic Mold Safety and Protection Act, failed to pass. It was also called the Melina Bill, after the daughter of his office manager, who has apparently suffered health effects from the mold in their new home. The bill, among other things, required the EPA, CDC, and National Institutes of Health (“NIH”) to examine the effects of different molds on human health and to develop accurate scientific information on the hazards presented by indoor mold. The bill

²¹ These recommendations are available at www.epa.gov/iaq/molds.

²² Another example is found at the website for the Centers for Disease Control and Prevention (“CDC”), National Center for Environmental Health, which sets forth recommendations for preventing and abating mold in buildings and homes. *Questions and Answers on Stachybotrys chartum and other molds* is available at www.cdc.gov/nceh/airpollution/mold/stachy.htm. In this document the CDC suggests that “[a]s part of routine building maintenance, buildings should be inspected for evidence of water damage and visible mold.” The document also notes that “[s]tandards for judging what is an acceptable, tolerable, or normal quantity of mold have not been established.”

directed the EPA and the Department of Housing and Urban Development (“HUD”) to establish guidelines that would identify conditions that facilitate indoor mold growth and measures that could be implemented to prevent such growth. The bill requested that EPA and HUD establish guidelines for certifying mold inspectors and remediators and authorized programs to educate the public about the dangers of indoor mold. In addition, the bill required, to whatever extent possible, local jurisdictions to modify building codes to minimize mold hazards in new construction. And the bill required mold inspections for multi-unit residential property, public housing, and all property purchased or leased using funds guaranteed by the federal government. This bill is expected to be re-introduced in 2003.

Recently, the EPA posted on its website a new publication, *A Brief Guide to Mold, Moisture, and Your Home*.²³ This guide provides information and guidance for homeowners and renters on how to clean up residential mold problems and how to prevent mold growth. This commonsense guide observes that “[t]he key to mold control is moisture control.” It emphasizes that mold should be cleaned up quickly and that the water problem must be fixed.

In addition to the EPA, the New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology, has published *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*.²⁴ These guidelines, often referenced by the construction and insurance industries, offer recommended levels and methods for abatement, depending on the extent, location, and makeup of the mold. It emphasizes that mold contamination can be prevented through “proper building and HVAC system maintenance and prompt repair of water damage.” This document explicitly states that it is a guideline and not a legal mandate. It further observes that there are no federal, New York State, or New York City regulations for evaluating potential health effects of “fungal contamination and remediation.” This guideline also contains information on containment and worker protection.

A number of states have introduced bills addressing the mold issue, and more will surely follow. California, however, became the first state to enact legislation seeking to set permissible exposure limits to “toxic” mold and to adopt regulations and remediation standards to protect the public from “toxic” mold hazards.²⁵ Effective on January 1, 2002, the California Toxic Mold Protection Act (S.B. 732) requires, among other things, the Department of Health Services (“DHS”) to convene a task force (comprised of health, medical, and remediation experts; consumers; and insurers, among others) to advise the DHS on the development and adoption of the following: (1) permissible exposure limits for mold in indoor environments; (2) mold identification standards for the environmental assessment of molds in indoor environments; and (3) mold remediation procedures. The DHS is directed to consider the feasibility of adopting exposure limits and, if feasible, to adopt them. In addition, if permissible exposure limits cannot be established, general

²³ This guide is available at www.epa.gov/iaq/molds/moldguide.html.

²⁴ This guideline is available at www.ci.nyc.us/htm/doh/html/epi/moldrpt1.html.

²⁵ It should be noted that the California legislature inexplicitly has not yet budgeted the \$3 million to implement the new law for the first four years.

guidelines must be set to enable enforcement agencies to assess the health threat posed by the presence of mold.

Another new California law, A.B. 284, effective on January 1, 2002, establishes a DHS mold program. The new law requires the California Research Bureau, in consultation with the DHS, to perform a study of, and publish findings on, fungal contamination in indoor environments by January 1, 2003. This law was designed to assist the State of California in providing guidance to the public about options for avoiding and remediating problems posed by mold contamination.

Other states, including New York, have introduced legislation to establish programs for addressing mold issues. Introduced on March 26, 2002, New York A.B. 10610, the Toxic Mold Protection Act, would authorize the Department of Health, in consultation with a broad-based task force, to consider the feasibility of adopting permissible exposure limits to molds in indoor environments. In the event that the Department does find that adopting permissible exposure limits to mold in indoor environments is feasible, then the Department must, among other things, consider the development of permissible exposure limits that target the general population. In addition, the Department, in consultation with the task force, would be required to consider the adoption of assessment standards for molds and standards for identification of molds.

Pennsylvania Senate Resolution 171, adopted on June 18, 2002, urges the Department of Health to develop a task force to, among other things, advise the Department on the development of exposure limits to mold, standards for assessment of molds in indoor environments, and standards for identification and remediation of mold. The task force must present its findings to the General Assembly within one year of the task force being established.

It is ironic that one of the many reasons for the increasing problem of mold and mildew in buildings is the fact that Title 24 of the U.S. Code of Federal Regulations, relating to energy conservation, created new construction methods and materials, so that buildings don't "breathe" as freely, trapping moisture inside buildings. In the 1970s, 80s, and 90s and into this millennium, building standards and construction practices have changed. One theory is that sealed windows and tighter building envelopes are partly to blame for occurrence of mold-related issues. The result has been buildings that are tightly sealed but may lack adequate ventilation, potentially leading to moisture buildup and a mold-rich environment.

Heating, ventilation, and air-conditioning ("HVAC") systems can be both a source of mold and a distributor of mold spores.²⁶ Certainly, at a minimum, HVAC systems should be designed to meet ventilation standards in local building codes. But those building codes must differentiate among climates and their relative impact on the

²⁶ On July 1, 2002, the Maryland State Task Force on Indoor Air Quality (IAQ) published a thorough report on the prevention of HVAC-related illnesses. The report concluded, among other things, as follows: "there is currently an inadequate scientific base of knowledge to justify adopting health-based standards for most [airborne] substances, and . . . most IAQ problems can be prevented by regular preventive maintenance [of HVAC systems], and early identification and correction of the problems that invariably occur in buildings." This report is available at <http://www.dllr.state.md.us/labor/indoorairquality/iaq/finalreport.pdf>.

building envelope. Until recently, most HVAC equipment was not designed to inhibit mold. The systems are now designed with sloped drain pans and air handling units that are more accessible for cleaning.

Building codes need to be re-examined to ensure that the best practices and standards are set forth to inhibit the growth of mold. The International Building Code (“IBC”), first published in 2000, is a combination of the National Building Code, Uniform Building Code, and the Standard Building Code.²⁷ In the current “mold environment,” it seems likely that different entities will examine building codes to determine if proper provisions are in place to prohibit mold growth in construction projects and renovations. Central to this consideration will be how to prevent accumulation of moisture, through effective design, construction, and maintenance.

Concerned over the growing mold issue and the comments from its membership, the Associated General Contractors of America (“AGC”) has formed a Mold Litigation Task Force to draft a document to educate its contractor members, as well as the owner and design professional community, about managing the risk of mold in the building process. The document is intended to set forth reasonable expectations about the proper allocation of the risk of mold among the various entities involved in the design and construction process. This document is expected to be ready for release in Spring 2003.

Although there is a great deal of mold remediation work available, mold remediation contractors are not licensed and regulated. While indoor air quality investigations have been conducted for years and there are established protocols, mold remediation is a relatively new industry. A number of groups in the industry are urging the certification of mold testing and mold abatement companies. In addition, state licensing of mold remediation contractors would create a pool of more knowledgeable and responsible remediation contractors. The certification and licensing of mold remediation contractors is complicated by the fact that, while there are “guidelines,” there are no accepted standards for mold remediation.

A further complication is that there are no standards for acceptable levels of exposure to mold and no standard cleanup regulations for mold. So “how clean is clean”? To what standard does a remediation contractor abate? And how is it possible to promulgate a standard for acceptable levels of exposure to mold? There are thousands (often cited as 20,000, up to over 100,000) known species of molds and about 100 species of “toxic” molds, or molds that produce mycotoxins, which may cause some physical reactions in some individuals. And, there are many different human susceptibilities to illnesses that might be associated with mold. The potential health effect of exposure to mold is generally species-specific. Accordingly, it is difficult to determine air concentration levels for individual molds. Different people vary in their responsiveness to molds, so then the question becomes what kind of person to use as a standard for

²⁷ The Tampa, Florida-based Institute for Business and Home Safety (“IBHS”) observes on its website, available at www.ibhs.org, that “[b]uilding codes and standards regulate the design, construction and maintenance of buildings. They help protect the health, safety and general welfare of a building’s users. Building codes establish the minimum acceptable standards for protecting people and property.” The IBHS deems the IBC to be technically sound for all regions and all climates.

devising benchmark levels. The least sensitive? This would satisfy almost no one. The most sensitive? This would create an untenable standard.

V. Contractual Protection and Responsibilities

The insurance coverage crisis facing contractors has been exacerbated by the “mold is gold” environment. However, existing standard form contracts contain provisions through which contractors can spread the mold risk and, under certain circumstances, seek relief. Contractors can also attempt to structure their contracts and subcontracts to gain greater control as well as protection in the future.

A. Primary existing contract forms and clauses

The American Institute of Architects (“AIA”) and the Associated General Contractors of America (“AGC”) promulgate the most widely used contract forms in the industry. Both sets of documents contain provisions relating to the rights and responsibilities of the various construction project participants and also provide potential recourse for a contractor in the face of differing, changed, or hazardous conditions. Under the most recent AIA A201 set of General Conditions, a claim for concealed or unknown conditions can be made as follows:

If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the contract documents.... The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor’s cost of, or time required for, performance of any part of the Work will recommend an equitable adjustment in the Contract Sum or Contract Time or both....²⁸

The most recent form of General Conditions promulgated by the AGC provides that:

If the conditions at the Work Site are (a) subsurface or other physical conditions which are materially different from those indicated in the Contract Documents or (b) unusual or unknown conditions which are materially different from conditions ordinarily encountered and generally recognized and inherent in Work provided for in the Contract Documents, the Contractor shall stop Work and give immediate written notice of the condition to the Owner and the Architect/Engineer. The

²⁸ The American Institute of Architects, AIA Document A201 (ed. 1997), General Conditions of the Contract for Construction ¶ 4.3.4.

Contractor shall not be required to perform any work relating to the unknown condition without the written mutual agreement of the parties. Any change in the Contract Price and/or the Contract Time as a result of the unknown condition shall be determined as provided....²⁹

Both the AIA and AGC General Conditions provide for what are commonly referred to as Type I and Type II differing or changed site conditions. To the extent potentially applicable to a mold situation, the Type II provision could apply. Although no cases have yet been found attempting to apply such a clause to mold, it has been recognized that toxic substances fall under this category.³⁰ One problem that may be faced is that such clauses are typically geared toward an unanticipated discovery of conditions that were already in place but had gone undetected prior to construction. However, the language used in these clauses does not necessarily limit coverage. Another problem, however, would arise in circumstances in which the contractor itself could be said to have caused the mold growth by its own deficient construction activities. Situations may arise where the clauses can be asserted, possibly including circumstances such as presented in Scenario 1. Under the AGC form, the Contractor under Scenario 1 could have argued that it was not required to perform any further work relating to the mold without a further written mutual agreement of the parties.

Both the AIA and AGC documents also address circumstances in which “hazardous materials” are encountered. The AIA document provides as follows:

If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance.... When the material or substance has been

²⁹ The Associated General Contractors of America, AGC Document No. 200, Standard Form of Agreement and General Conditions between Owner and Contractor ¶ 3.16.2.

³⁰ See *Reliance Ins. Co. v. County of Monroe*, 198 A.D.2d 871, 604 N.Y.S.2d 439 (4th Dept. 1993). (contractor entitled to equitable adjustment for a Type II differing site condition in the form of toxic substances seeping into tunnel boring operations underneath a river when the contractor could not have anticipated the conditions from inspection or general experience and when the condition varied from the norm).

rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay and start-up....

To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractor, Architect, Architect's Consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or relating to performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death...and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work) and provided that such damage, loss, or expense is not due to the sole negligence of a party seeking indemnity.³¹

Under the AGC General Conditions:

A Hazardous Material is any substance or material identified now or in the future as hazardous under any federal, state or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirements governing, handling, disposal and/or cleanup. The Contractor shall not be obligated to commence or continue work until any Hazardous Material discovered at the Work Site has been removed, rendered or determined to be harmless by the Owner as certified by an independent testing laboratory and approved by the appropriate government agency.

If after the commencement of the Work, Hazardous Material is discovered at the Work Site, the Contractor shall be entitled to immediately stop Work in the affected area. The Contractor shall report the condition to the Owner, the Architect/Engineer, and, if required, the government agency with jurisdiction.

The Contractor shall not be required to perform any Work relating to or in the area of Hazardous Material without written mutual agreement.

The Owner shall be responsible for retaining an independent testing laboratory to determine the nature of the material encountered and whether

³¹ AIA Document A201 (ed. 1997), General Conditions of the Contract for Construction ¶¶ 10.3.1, 10.3.2 and 10.3.3.

the material requires corrective measures and/or remedial action. Such measures shall be the sole responsibility of the Owner, and shall be performed in a manner minimizing any adverse effects upon the Work. The Contractor shall resume Work in the area affected by any Hazardous Material only upon written agreement between the parties after the Hazardous Material has been removed or rendered harmless and only after approval, if necessary, of the governmental agency with jurisdiction.

If the Contractor incurs additional costs and/or is delayed due to the presence or remediation of Hazardous Material, the Contractor shall be entitled to an equitable adjustment in the Contract Price and/or the Contract Time.

To the extent not caused by the negligent acts or omission of the Contractor, its Subcontractors and sub-Subcontractors, the agents, officers, directors and employees of each of them, the Owner shall defend, indemnify and hold harmless the Contractor...from and against any and all direct claims, damages, losses, costs and expenses including but not limited to attorney's fees, costs and expenses incurred in connection with any dispute resolution process, arising out of or relating to the performance of the work in any area affected by Hazardous Material. To the fullest extent permitted by law, such indemnification shall apply regardless of the fault, negligence, breach of warranty or contract, or strict liability of the Owner.³²

Some case law has determined that mold may not be a pollutant in the classical sense and that it may not constitute a Hazardous Material as typically encompassed under state or federal guidelines.³³ However, the language quoted above from the standard form agreements promulgated by the AIA and AGC is, once again, potentially broad enough to cover mold as a "material or substance" or as an "other substance or material that may be considered hazardous." Under both sets of conditions, the Owner is charged with the responsibility of obtaining the services of professionals to deal with such a substance or material, and broad indemnification obligations are further imposed upon the Owner. Even though the Owner could theoretically be charged with responsibility for incurring such initial expenses, if the Contractor is ultimately shown to be the primarily responsible party for a mold condition, the Contractor will likely, at the end of the day, be required to bear the economic loss. However, under both Scenario 1 and Scenario 2, the responsibility of the contractor/construction manager is not so clear-cut and such provisions could be helpful.

B. Potential additional contract requirements

As with job site safety, all participants on a project must now take responsibility not only to prevent, but also to promptly react to potential mold development. From a contractor's perspective, all subcontracts should require that the contractor's mold

³² AGC Document No. 200, Standard Form of Agreement and General Conditions between Owner and Contractor ¶¶ 3.13.1 through 3.13.6.

³³ See *Cooper v. American Family Mut. Ins. Co.*, 184 F. Supp. 2d 960 (D. Ariz. 2002).

prevention program be incorporated and followed, with strict adherence to the education, recognition, and reaction requirements. It goes without saying that, to the greatest extent possible, indemnification and insurance provisions should also be crafted not only to provide coverage for contractual obligations, but also to provide the contractor and owner with additional insured status. In order to insure that appropriate coverages have been obtained, contractors may also consider requiring subcontractors to sign, in advance, a form letter directing the subcontractor's insurance agent to produce a copy of the subcontractor's full insurance policies on demand. A suggested form for this purpose is annexed as Appendix G. (Also see Appendix D).

C. Owner/design professional responsibilities

Owners must be made to understand that they also play an active role in preventing mold growth. Under Scenario 2, the owner was a small municipal type of entity, which maintained a decision-making process rife with political implications. As a result, owner representatives charged with reporting to the governing body chose to hide anything that could be seen as a potential political problem, with the result that requests for action by the construction manager were later determined to have never been timely reported, even though the construction manager followed the contractually mandated chain of communication. That owner, of course, now wants the construction manager to pay for full mold remediation costs, together with attendant reconstruction and project completion.

More traditionally recognized owner responsibilities can exist. Under Scenario 1, the pre-existing subsurface conditions likely contributed to the mold development. An appropriately expanded mold provision, similar to the hazardous substances provisions discussed above, could fill part of this gap. Also, under Scenario 1, the design errors of the design professional are imputable to the owner.

The development of a moisture or mold problem is not always the contractor's fault, despite what is often portrayed in articles and case law. As a general rule, contractors extend an implied warranty that their performance will be in a "good and workmanlike manner" and frequently further agree to provide express warranties under the contract. However, owners extend an implied warranty of the adequacy of detailed designs, plans, and specifications.³⁴ For example, under Scenario 2, the contractor constructed the project, including the crawl spaces, as designed. The problem developed because the design was not sufficient with regard to ventilation or moisture control, with the result that the owner, as well as the design professional, had to accept some responsibility. Furthermore, there was a potential that the contractor was not fully informed concerning pre-existing subsurface water.³⁵

³⁴ United States v. Spearin, 248 U.S.132 (1918). In addition to the famous *Spearin* doctrine, owners also have an implied duty of full disclosure of information material to a contractor's performance. *See, e.g., City of Indianapolis v. Twin Lakes Enterprises, Inc.*, 568 N.E.2d 1073 (Ind. Ct. App. 1997).

³⁵ There is an exhaustive body of law concerning the *Spearin* doctrine and related issues, which is beyond the scope of this paper. For a more complete discussion of quality of work issues, see J. William Ernstrom & John W. Dreeste, *Proving (and Defending) Quality of Work Issues*, in *MANAGING AND LITIGATING THE COMPLEX SURETY CASE 383* (Philip L. Bruner ed., 1998).

Part of a contractor's obligations typically includes compliance with laws, ordinances, rules, regulations, and similar requirements.³⁶ Still, contractors are not obligated to ascertain if the contract documents conform to code and are not responsible for taking extraordinary steps to verify that the design is in compliance. An exception exists if code non-conformance is patently obvious. Code non-conformance, resulting in additional expenses, may result in a contractor's entitlement to additional compensation.³⁷ What remains to be seen is the extent to which new mold-specific codes or regulations will enlarge contractors' responsibilities.

The focus of contractors is typically on preventing, identifying, and curing leaks into a structure. From a design standpoint, the focus can shift to all aspects relating to drainage of a project and construction site. Controlling rain and groundwater are extremely important factors in design and in the control of mold. Utilizing the force of gravity, drainage must be designed to get water away from a building, its enclosure assemblies, openings, components, and materials as soon as possible. Drainage elements are built into assemblies, such as walls, roofs, and foundations, as well as windows, doors, and skylights. Each of these elements is initially a design consideration and responsibility.³⁸

Contractors may be deemed obligated to construct in accordance with uniform codes where the contract provides that work should comply with all relevant laws and applicable codes and regulations.³⁹ However, if the contract documents affirmatively specify a method of performance not in compliance with applicable state or local law, the contractor may still be entitled to recover increased costs of compliance, notwithstanding the general boilerplate terms.⁴⁰ In other words, if the owner and design professional get what they ask for, the contractor should not carry all blame when its conformance to a design results in problems.

Profit margins in construction are razor thin. This presents a particular problem in public construction projects, where competitive bidding typically requires contract award to the lowest responsible bidder. Owners and architects can and should assume a role in mold and mildew prevention by building into their specifications requirements that bidders incorporate and include the various monitoring and prevention techniques discussed above. If carried as a separate bid line item, contractors will not only be faced

³⁶ See Article 3.7 AIA A201 (ed. 1997).

³⁷ See *Green v. City of New York*, 128 N.Y.S.2d 715 (N.Y. App. Div. 1954) (where city prepared plans and specifications setting forth certain construction requirements contrary to an applicable local law, the contractor was entitled to recover additional costs of compliance even though the contract provided that contractor would comply with rules and regulations).

³⁸ Issues relating to design responsibilities and defects can also consume an entire paper and is beyond the scope of this presentation.

³⁹ See *Spotsylvania County School Bd. v. Seaboard Surety Co.*, 415 S.E.2d 120 (Va. 1992) (contractor was required to comply with building code requirements during construction, as well as upon contract's completion, but violation of building code must constitute a substantial violation of contract in order to justify termination).

⁴⁰ See *Hemphill Contracting Co., Inc., ENGBCA No. 5698, 94-1, BCA ¶ 26, 491* (1993). The contract included a standard permits and responsibilities clause requiring the contractor to comply with all applicable state and local laws and ordinances, but also affirmatively specified a work method contrary to those local laws and ordinances. The contractor incurred extra expenses to comply with the local laws and ordinances, which were subsequently enforced, and was entitled to recover.

with a requirement that affirmative preventive measures be taken, but also the cost for such measures will be built into the bid. This concept should not be difficult for owners to understand, especially if the project relates to public buildings, such as schools or similar facilities carrying a high level of concern for safety.⁴¹ Unlike the problems faced by public owners upon the discovery that asbestos in pre-existing structures could be dangerous, owners now have the opportunity to prevent a potential problem by also taking affirmative, proactive steps during initial design and planning for construction.

VI. Conclusion

Mold, unlike asbestos or other typical traditional differing site conditions, is something that contractors, owners, and architects can all largely control through preventative measures. Even if protective measures are not built into a design/specification, all project participants must, as a matter of policy, be educated with regard to how, why, and where mold grows. See Appendix H for a list of websites with useful information on mold and mold-related issues. The personnel assigned to the project must not only be trained to recognize potential risk factors, but also be charged with promptly reacting whenever those factors are detected. For contractors, the development of mold on a project may cost them their own gold; and a few ounces of prevention is far outweighed by the several pounds required for the cost of a cure.

⁴¹ In addition, contractors bidding on and awarded renovation projects for schools and other commercial buildings are well advised to take proactive steps to protect themselves from potential liability for damage claims for pre-renovation mold. Many school districts have responded to the tightened state budgets the last several years by mandating less HVAC system maintenance and by turning off the system during the summer recess. Such situations are likely to create mold-happy environments for which a renovating contractor should not be held liable.

APPENDIX A

SCENARIO 1: THE CONTRACTOR AND THE CRAWL SPACE*

The Contractor in this scenario was hired to construct an assisted-living facility for senior citizens. The Project in general required straight-forward construction, with a masonry foundation, wood framing, and drywall interior. However, no basement was included. Instead, a crawl space was required. The designed construction sequence required the Contractor to build the Project foundation and crawl space first, with the remainder of the building following from the ground up.

The Project was built into the side of a hill. As part of the design process, the architect hired an engineer to conduct a geo-technical survey, which revealed that the design needed to take into account the unusual groundwater conditions in and around the Project site. However, for whatever reason, the architect failed to incorporate protective measures into its design. In fact, the design for the crawl spaces showed no ventilation or dehumidification system. In addition, to the extent drainage was incorporated into the crawl space area, the drains were on the up slope, rather than the down slope. After the Project was approximately six months old, mold was discovered growing in the dirt crawl spaces by plumbers and electricians who were performing “rough-ins” for their scope of work. The Owner, after retaining the services of one of the more well-known newly anointed national experts on mold, announced that the mold posed a risk to workers and future residents. The Owner then demanded that all work stop and that the mold be remediated in a manner consistent with the report prepared by its expert. The Owner took four months to reach that decision. From the discovery of the mold through the completion of the ultimate remediation work, 200 days were lost on the Project. Additionally, substantial previously completed work was removed as part of the process, requiring reconstruction as well. The delays, reconstruction, and mold remediation work resulted in millions of dollars of costs and damages to the Contractor.

The Contractor’s investigation during the process revealed the following:

- Soil borings taken within the crawl spaces confirmed the presence of groundwater.
- Groundwater often ponded directly underneath a plastic radon mat that was buried, as designed, beneath a layer of gravel in each crawl space.
- The groundwater was believed to pass through the radon mat as water vapor or other moisture that was “pumped” into the enclosed crawl spaces.

* The material in Scenario 1 depicts entirely hypothetical situations and persons. Any resemblance or similarity to real situations or persons is purely coincidental.

- An investigation of the atmospheric moisture in and around the crawl spaces demonstrated that moisture would condense and gather on the gravel or directly on top of the plastic radon mat as air cooled in the evenings.
- A design failure in properly ventilating or otherwise addressing moisture and humidity problems within the crawl spaces permitted the accumulation and trapping of moisture.
- Had the design included natural and/or mechanical ventilation, as required by applicable building codes, the crawl space areas would have dried out naturally and mold would not have developed.
- At the time the mold was discovered, each of the crawl spaces was visibly wet and had relative humidity levels of approaching or equaling 100%.

OBSERVATIONS:

- **IT COULD HAVE BEEN A LOT WORSE**
- **AN EXPENSIVE EDUCATION**
- **RECOGNITION AND REACTION TRIGGER POINTS**
- **OWNER/ARCHITECT RESPONSIBILITY AND ASSOCIATED CONTRACT CLAUSES**

APPENDIX B

SCENARIO 2 - THE CONSTRUCTION MANAGER GOES TO SCHOOL*

The Construction Manager in this scenario was hired as a School District's Agent with regard to the rehabilitation and expansion of a historic, pre-existing school structure. As the CM/Agent to the Owner, the CM did not hold the construction contracts but did undertake to help approve the contractors, monitor and schedule work, approve (with the architect) progress payments, and in general take whatever other steps were necessary to "manage" the Project.

The Project itself involved two old, pre-existing structures, which were to be joined by a new structure. The older structures were to be rehabilitated, inside and out.

The CM/Owner agreement provided that the Owner was to appoint a designated representative to interface with the CM, who would also be the person to whom the CM was to report. That designated representative would then report to the School Board, which would take appropriate action. Unfortunately, as with many small municipal entities, the School Board itself was a battleground for devisive political activity, with a change in the power structure occurring virtually every election year. The community itself, and, therefore, the Board Representatives, seemed sharply divided with regard to this Project, as well as with regard to how the school system was being run overall. These ongoing battles placed the Superintendent of Schools squarely in the crosshairs of the political battle. The Superintendent chose to do whatever was possible to minimize controversy relating to the Construction of the Project. Unfortunately, these efforts often took the form of failing to advise the School Board of issues that arose and affirmatively advising the CM to deal only with the Superintendent.

The roofing contractor for the Project was simply no good. He rushed to obtain and supply all materials for the Project, notwithstanding that the schedule did not require completion of the roof until later. However, the roofer obtained significant payments and simply appeared to lose interest in adhering to the CM's directives. Ultimately, the surety for the roofer was called in, and the surety verbally agreed that it would do "whatever was necessary" to achieve a watertight condition of the roof, at least through the winter, and would then work with the principal to achieve completion. Neither of those efforts took place.

The Project roof was constantly leaking, but as the winter season approached, little in the way of interior construction and reconstruction had taken place, so that the water infiltration was somewhat manageable and harmless. However, during the winter, and based in large part upon the Superintendent's desire to expedite work and the surety's representations, the CM permitted interior construction and reconstruction work to proceed with the result that traditional mold food sources (drywall, framing, ceiling tiles,

* The material in Scenario 2 depicts entirely hypothetical situations and persons. Any resemblance or similarity to real situations or persons is purely coincidental.

etc.) were put in place. Unfortunately, the failure to achieve a watertight condition caused ongoing water infiltration. The cold weather, however, coupled with the unheated structure, prevented mold growth.

During this timeframe the CM was virtually begging the Superintendent to permit the formal termination of the roofer, and subsequently to formally default the surety. The CM's pleas were buried by the Superintendent, in favor of political expediency. In the meantime, the Board itself was excoriating the CM, both at meetings as well as in the press, for other perceived problems at the Project.

The one definitive act that was taken by the surety was to have the now-ruined unused roof construction materials removed from the roof. Those materials, which had been placed on pallets, were of sufficient weight to cause the pallets to break through the roof membrane. Once the pallets were removed, the membrane suffered severe tears, causing what had been the constant, but somewhat manageable water infiltration, to turn into a veritable deluge. This all occurred as the warmer springtime temperatures approached, with predictable mold-related results.

State Education Department representative inspected the Project after the weather had warmed and reported that the Project was suffering from mold infestation. The CM immediately undertook to create a mold remediation specification in preparation for obtaining bids from remediation contractors. However, before the CM could put that plan in place, the CM was terminated by the Owner and was barred from the site. The CM then sued the Owner for sums due and owing, which was met by the Owner's counterclaim seeking an estimated \$25 million for remediation and other costs and damages.

OBSERVATIONS:

- **RECOGNITION AND REACTION TRIGGER POINTS**
- **OWNER/ARCHITECT RESPONSIBILITY AND ASSOCIATED CONTRACT CLAUSES**
- **TRADE CONTRACTOR RESPONSIBILITY AND ADDITIONAL INSURED STATUS**
- **WHAT ABOUT THE NEXT JOB WHERE WORK IS COMPLETED AND SCHOOL'S IN SESSION?**

APPENDIX C

MOLD PROTOCOL

A. WATER INFILTRATION

1. Any employee who observes water infiltration (unintended) into a completed building or an ongoing construction site must immediately report the condition to the Project Manager.
2. The Project Manager shall immediately take steps to investigate the source of the water infiltration, identify the responsible party (person who performed work that resulted in water infiltration), and devise a procedure to eliminate water infiltration into the building.
3. If the water infiltration persists or cannot be corrected within 12 hours, then the Project Manager must contact the responsible Vice President for further instructions.

B. HANDLING OF WATER-DAMAGED BUILDING MATERIALS AND CONSTRUCTION

1. Closely inspect all building materials delivered to the site for pre-existing water damage as well as existing mold growth.
2. If in-place construction becomes wet, notify the Project Manager immediately. The Project Manager will determine whether or not the work must be removed and replaced, or if the type of material can be permitted to dry. If the choice is to permit the material to dry, the Project Manager shall confer with the Risk Manager immediately.
3. If the damaged work is subcontracted or the subject of a purchase order, the Project Manager shall immediately provide written notice to the responsible subcontractor or vendor, together with the demand that their insurance carrier be notified of a potential claim. Similar notice must be immediately given by the Project Manager to any subcontractor responsible for the work which permitted the moisture to infiltrate the project and damage the material.
4. Under no circumstances may new or additional construction be placed over, or otherwise enclose, wet building materials.

C. VISIBLE MOLD/MILDEW

1. Any employee who observes any substance that appears to be mold or other fungal growth and/or an unidentified substance within a completed building or an ongoing construction site shall immediately suspend construction operations in the area and report the condition to the Project Manager.

2. The Project Manager shall immediately contact the Risk Manager to discuss the appropriate course of action. No person shall be allowed back into the affected area without the permission of the Risk Manager or Chief Operating Officer.

D. ENCLOSED SPACES

1. The Field and Project Managers shall review all plans and specifications in an effort to determine whether the building design creates any tightly enclosed spaces or other conditions that could create water or humidity problems on the Project. Particular attention must be paid to the movement of air within the enclosure, including the use/lack of ventilation.
2. If such a condition is discovered, it shall be brought to the attention of the Owner and Architect for resolution/direction.
3. If a lack of ventilation or moisture build-up is discovered during construction, then the Project Manager must take steps to ventilate the area and immediately bring this issue to the attention of the Risk Manager or Chief Operating Officer.
4. If the matter is not resolved to the Project Manager's satisfaction or water/humidity problems arise/persist in the area, then the Project Manager shall bring it to the attention of the Risk Manager or the Chief Operating Officer.

E. EDUCATION/AWARENESS PROGRAM

1. The Safety Director shall include Mold Awareness and Prevention as a part of our ongoing safety training initiative. Mold Awareness training will be conducted at least twice per calendar year.

APPENDIX D

SUBCONTRACT MOISTURE CONTROL RIDER

Contractor maintains a strict policy and protocol for the control of water infiltration and moisture build-up during the course of a Project. By signing a Subcontract with Contractor, Subcontractor expressly acknowledges and agrees that Contractor's guidelines and protocol for water and moisture control are incorporated by reference into the Subcontract. Subcontractor's contractual obligations include, but are not limited, to the following:

B. WATER INFILTRATION

1. Any employee who observes water infiltration (unintended) into a completed building or an ongoing construction site must immediately report the condition to the Contractor's Project Manager.
2. The Subcontractor shall immediately take steps to investigate the source of the water infiltration, identify the responsible party (person who performed work that resulted in water infiltration) and devise a procedure to promptly eliminate water infiltration into the building.

B. HANDLING OF WATER-DAMAGED BUILDING MATERIALS AND CONSTRUCTION

1. Closely inspect all building materials delivered to the site for pre-existing water damage as well as existing mold growth.
2. If in-place construction becomes wet, notify the Contractor's Project Manager immediately. The Project Manager will determine whether or not the work must be removed and replaced, or if the type of material can be permitted to dry.
3. If the damaged work is sub-subcontracted or the subject of a purchase order, the Subcontractor shall immediately provide written notice to the responsible sub-subcontractor or vendor, together with a demand that their insurance carrier be notified of a potential claim. Similar notice must be immediately given to any other subcontractor responsible for the work which permitted the moisture to infiltrate the project and damage the material.
4. Under no circumstances may new or additional construction be placed over, or otherwise enclose, wet building materials.

C. VISIBLE MOLD/MILDEW

1. Any employee who observes any substance that appears to be mold or other fungal growth and/or an unidentified substance within a completed building or an ongoing construction site shall immediately suspend construction operations in the area and report the condition to the Contractor's Project Manager.
2. No person shall be allowed back into the affected area without the permission of the Contractor's Project Manager.

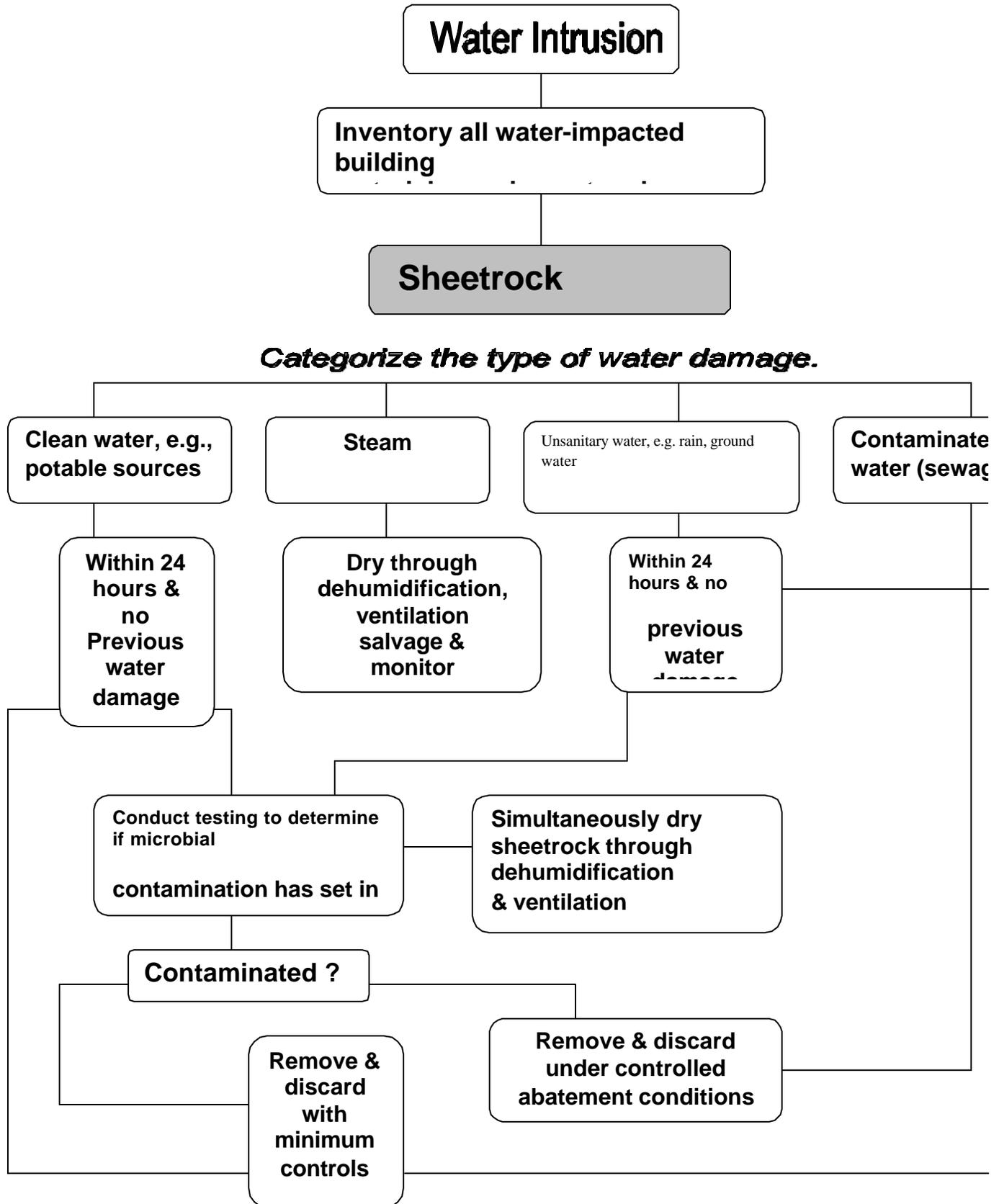
D. ENCLOSED SPACES

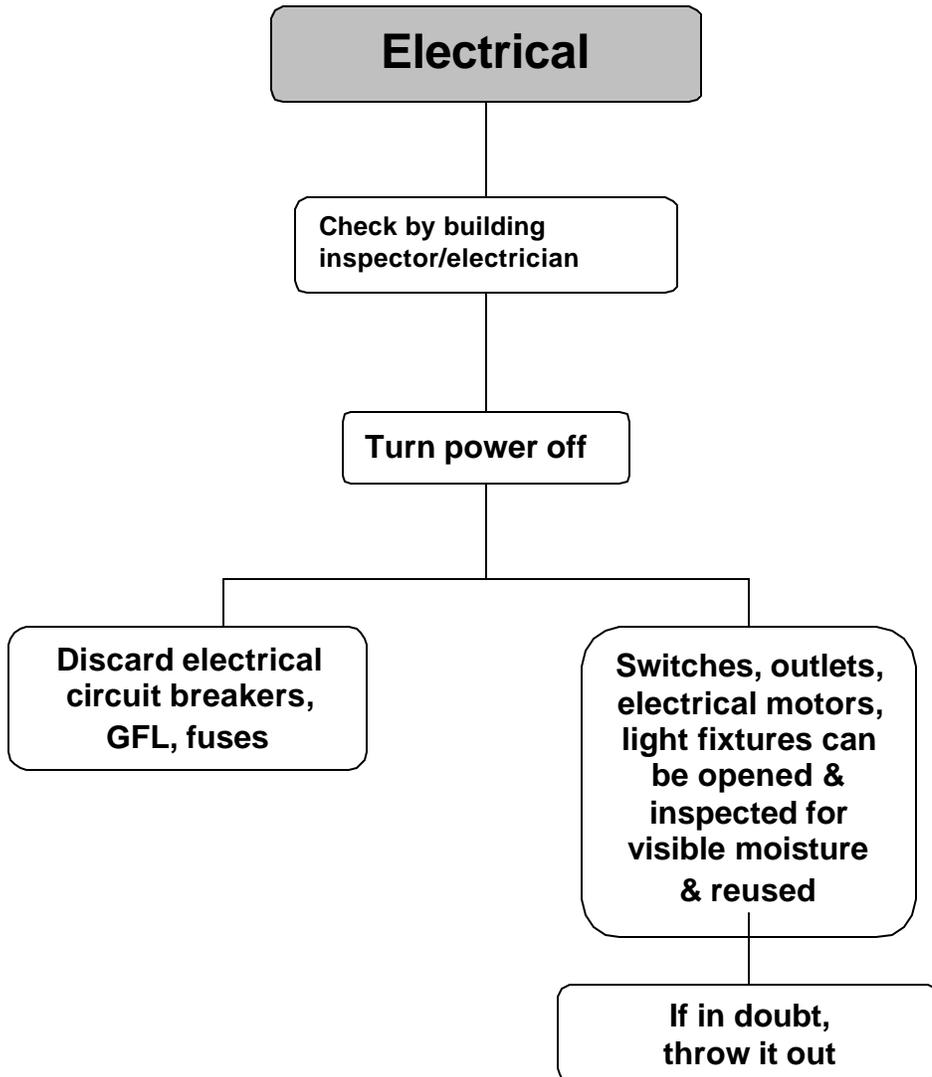
1. The Subcontractor shall review all plans and specifications in an effort to determine whether the building design creates any tightly enclosed spaces or other conditions that could create water or humidity problems on the Project. Particular attention must be paid to the movement of air within the enclosure, including the use/lack of ventilation.
2. If such a condition is discovered, it shall be brought to the attention of the Contractor's Project Manager.
3. If a lack of ventilation or moisture build up is discovered during construction, then the Subcontractor must take steps to ventilate the area and immediately bring this issue to the attention of the Contractor's Project Manager.
4. If the matter is not resolved to the Project Manager's satisfaction or water/humidity problems arise/persist in the area, then the Subcontractor shall promptly take such other steps as the Project Manager may direct.

E. EDUCATION/AWARENESS PROGRAM

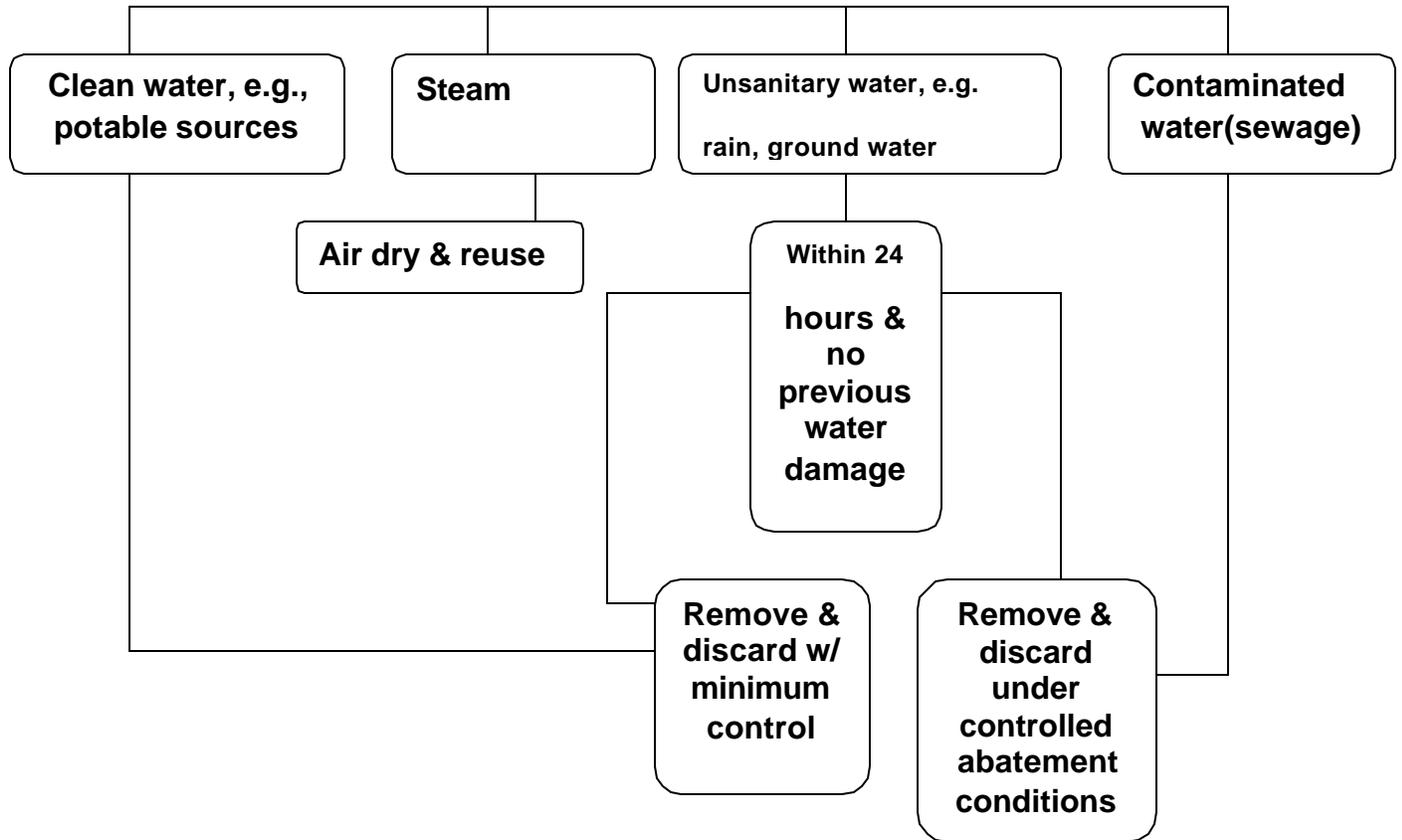
1. The Subcontractor shall include Mold Awareness and prevention as a part of its ongoing safety training initiative.

Appendix E



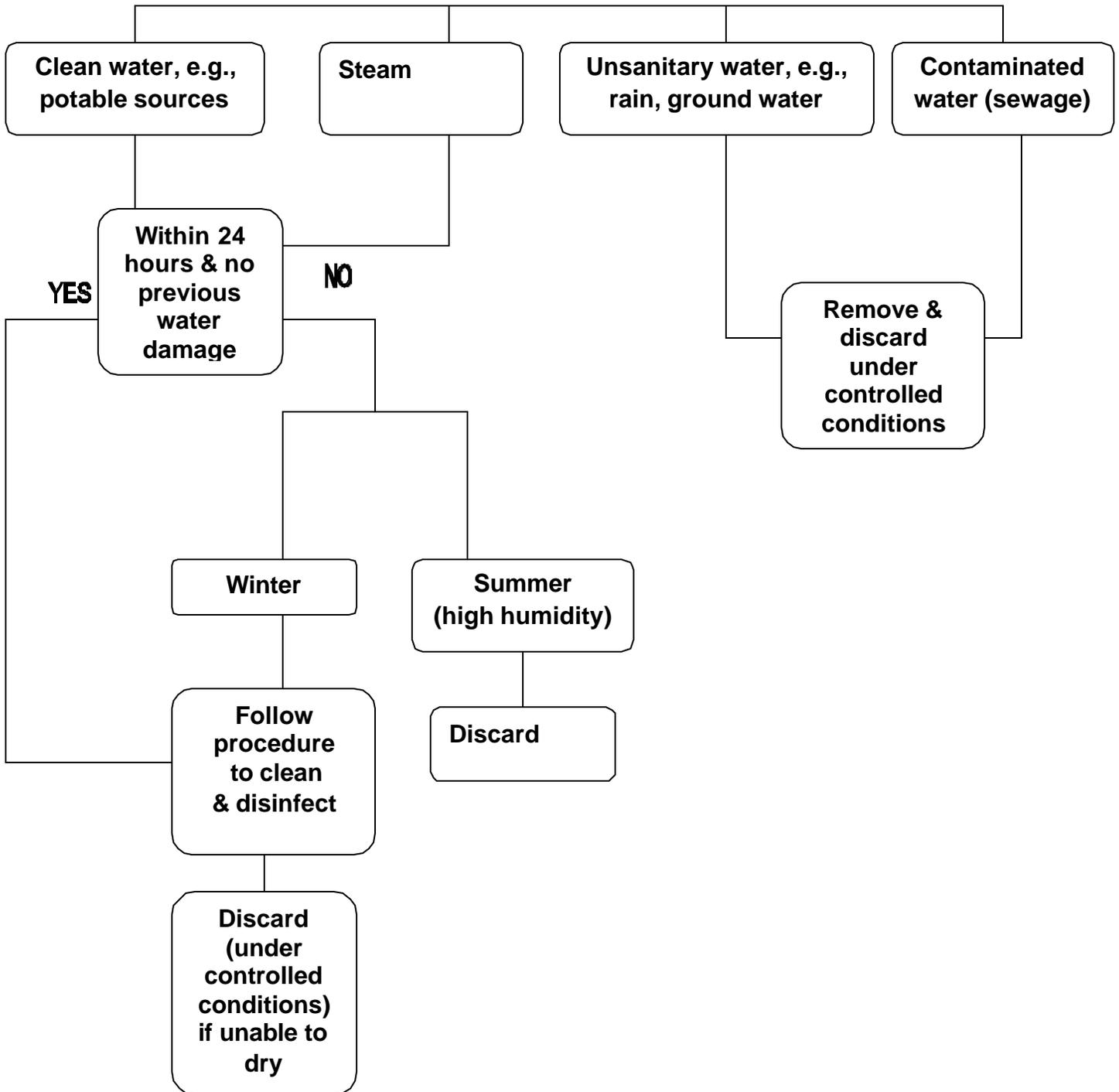


Ceiling Tile

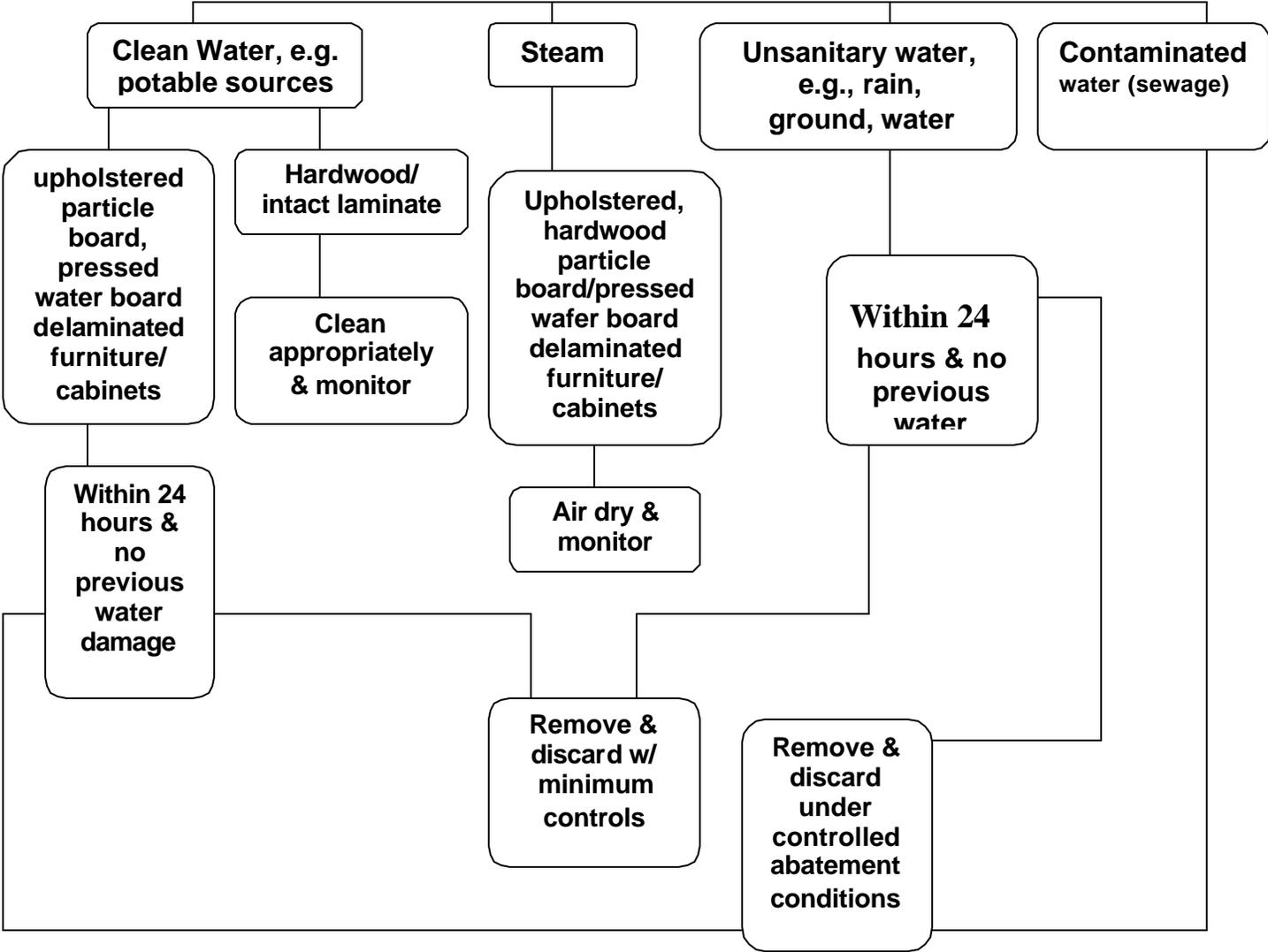


Carpet

Categorize the type of water damage.



Furniture/Casework



APPENDIX F

WORK SAFETY PLAN (Redacted)

PROJECT LOCATION

SCOPE OF WORK

Removal and disposal of exterior wallboard in thirty-four (34) suites located at both east and west ends of the _____. Also included in the base bid is application of a commercial mold/fungus killing agent.¹

WORK/SAFETY PLAN

Work/Safety Plan for mold/fungus contaminated wallboard removal and mold/fungus killing agent application. This plan is directly related to the “August 14, 1998-Indoor Air Quality Survey” prepared by _____.

Work to be done in a manner very similar to asbestos abatement. The rooms to be isolated using seals at the doorways, and negative air pressure differential with HEPA filtration. Carpet will be rolled back and covered while this work is done.² The removed wallboard will be bagged and sealed before being transported to the dumpster located at the dock. All remaining material to be cleaned up using HEPA vacuums and sprayed with mold/fungus killing agent (“Microban”).

As the restoration will involve several steps, timing will be critical with the first two phases. Repair and/or waterproofing of the exterior to prevent any further water intrusion needs to be at least started prior to mold removal.

HVAC units would need to be removed from the wall to allow access to exterior venting of HEPA air filtration units. The HVAC units should also be cleaned and filters replaced prior to returning the units to service.³

¹ See enclosed Microban-Disinfectant Spray Plus, “Unsmoke Systems, Inc.” “Microban” manufacturer has assured me that all species of mold listed for this project would be killed with “Microban” application.

² We have been instructed and are proceeding with the understanding that carpet is free of mold and fungus. If not left as is, there are three general options concerning the carpet: (1) It could be sprayed with mold/fungus killing agent (“Microban”); (2) It could be cleaned and sprayed with mold/fungus killing agent; or (3) it could be removed. There is NO allowance in the current pricing structure for the additional costs involved with the treatment, disposal, or cleaning of the carpet. Enclosed please find a bid for option #2.

³ There is NO allowance in the current pricing structure for the additional costs involved with HVAC unit decontamination, filter disposal, and replacement. At the request of _____, find a separate bid for HVAC _____ and replacement.

Each work floor would be closed to all but _____ employees during the removal process. The elevator and stair door would be locked out during this short time frame. The work areas at each end of the floor would be isolated with “critical barriers” made of polyethylene sheeting with chambers for decontamination of waste bags being removed from the area. These chambers will be designed similar to the ones that used by asbestos abatement jobs that allow for a smooth flow of air through the work area and out through the HEPA filtered air machines. This method has been used successfully for years in the asbestos abatement industry. Using these techniques, along with the “floor by floor” approach, will greatly reduce any cross contamination from these rooms.

Our insurance representative very strongly suggests that you have an independent consultant “clear” each area with representative “wipe” samples for mold. Before “wipe” samples as baseline could then be compared to after “wipe” samples. Using this objective documented measurement will give official completion to this project.

Workers to be schooled in the hazards of mold and to be fitted with full-face, HEPA/organic filtered respirators. Medical screening for mold allergies (especially penicillin) to be conducted. Full-body disposable coveralls and gloves to be donned within the work area. Before leaving work area, all personnel would be required to remove coveralls and shower. All waste bags to be wet cleaned before being removed from work area. Work areas to be inspected continually during the removal and spraying process.

CLOSING NOTES

We cannot guarantee any specific air concentration in terms of colony forming units (CFU) because the outside air concentrations will vary greatly from one day to the next. Therefore, the above-mentioned “wipe” sampling should serve good documentation for mold spore reduction within the work area. Please have your chosen consulting firm contact me with their recommended wipe sampling criteria. I would also like to have the results of July 28, 1998 air sampling for mold/fungus, which was not included in the August 14, 1998 report.

The other item mentioned by our insurance representative was the bathroom vent fans associated ductwork. This fan and associated duct work has historically been a harbor for fungus/mold growth. If your chosen consulting firm could sample a few of these areas, it could serve as a baseline for future sampling schemes.⁴

⁴ There is NO allowance in the current pricing structure for the additional costs that would be involved with cleaning and disinfection of bathroom fans and venting systems. Should your consulting firm find a fungus/mold growth in the venting system, a separate bid for the additional work necessary would be submitted upon request.

APPENDIX G

RIDER/FORM LETTER TO SUBCONTRACTS

TO: (INSURANCE AGENT/REPRESENTATIVE)

RE: (PROJECT NAME)

Dear Sir/Madam:

We have been hired by Contractor XYZ to act as a subcontractor on this Project. The purpose of this letter is to authorize and direct you to, upon demand by Contractor, XYZ, to obtain a full copy of all insurance policies in force for us, whether Project-specific or in general. This directive by us is a material term under our subcontract with Contractor XYZ and the failure by you to provide these copies, upon demand, will result in a breach of our obligations and our potential default. Accordingly, we ask that you promptly comply with any such demand. A photocopy of this letter will have full force and effect as though it were an original.

Thank you for your time and prompt cooperation.

Very truly yours,

(Subcontractor ABC)

APPENDIX H

MOLD INFORMATION RESOURCES

California Department of Health Services

Indoor Air Quality Info Sheet: *Mold in My Home, What Do I Do?* (July 2001),
<http://www.cal-iaq.org/mold0107.htm>

Environmental Health Investigations Branch: *Fungi and Indoor Air Quality* July (2001),
http://www.dhs.cahwnet.gov/org/ps/deodc/ehib/EHIB2/topcis/fungi_indoor.html

California Research Bureau

Molds, Toxic Molds and Indoor Air Quality (March 2001),
<http://www.library.ca.gov/crb/01/notes/v8n1.pdf>

Foundation of the Wall and Ceiling Industry

Mold: Cause, Effect and Response (2002), <http://www.awci.org/mold-series-1.pdf>

Maryland State Task Force on Indoor Air Quality

Final Report (July 1, 2002),
<http://www.dllr.state.md.us/labor/indoorairfinal/iaqfinalreport.pdf>

Minnesota Department of Health

Indoor Mold—Health Hazard Identification and Control (March 2001),
<http://www.health.state.mn.us/divs/eh/aialr/iair/moldslide/moldtext.html>

New York City Department of Health

Guidelines on Assessment of Remediation of Fungi in Indoor Environments (November 2000), <http://www.ci.nyc.us/html/doh/html/epi/moldrpt1.html#remed>

Texas Medical Association

Black Mold and Human Illness (September 2002),
<http://www.texmed.org/has/CSA%20Black%20Mold.doc>

U.S. Centers for Disease Control and Prevention

National Center for Environmental Health: *Questions and Answers on Stachybotrys Chartarum and Other Molds* (March 2001),
<http://www.cdc.gov/nceh/asthma/factsheets/molds/default/htm>

National Center for Environmental Health: *Molds in the Environment* (September 1999),
<http://www.cdc.gov/nceh/airpollution/mold/stachy.htm>

U.S. Environmental Protection Agency

A Brief Guide to Mold, Moisture, and Your Home (2002),
<http://www.epa.gov/iaq/molds/moldguide.html>

Mold Resources (April 2001), <http://www.epa.gov/iaq/pubs/moldresources.html>

Mold Remediation in Schools and Commercial Buildings (March 2001),
<http://www.epa.gov/iaq/molds/index.html>

Should You Have the Air Ducts in Your Home Cleaned?
<http://www.epa.gov/iaq/pubs/airduct/html>