

IMIA-WGP 27(03)

**MOLD
RISK FOR ENGINEERING
INSURERS?**

Authors:

Michael Pero	GeneralCologne Reinsurance
Richard Williams	HSB Group Inc
Joseph Dirubbo	Swiss Re America
James Drewry	American Re-Insurance Company

IMIA MEETING 2003, STOCKHOLM

Table of Contents

MOLD - RISK FOR ENGINEERING INSURERS?

EXHIBIT A - US Construction Forecast

EXHIBIT B - Course of Construction Claims

EXHIBIT C - Mold Action Plans

EXHIBIT D - Additional Mold Resources

MOLD

RISK FOR ENGINEERING INSURERS?

The concern over mold exposure and mold related claims against Builders' Risks (CAR/EAR) policies have been primarily limited to North America to date. Major reasons for this appear to be a function of the construction materials used (wood framing in most homes) and the airtight interior environment created by the design, materials and techniques currently in use. The litigious legal environment in North America is an aggravating factor. On the other hand, these same issues are beginning to be experienced in other parts of the world. Scandinavia and the UK have reportedly been afflicted with a number of mold related claims. It is important, therefore, that underwriters in different parts of the world become familiar with the experience in the United States and Canada to better understand underwriting and claims issues, which they may one day face.

So, what then is mold? Specifically what is "toxic mold"? And what does this mean to Engineering Insurers?

To begin with, mold has been around long before man inhabited the face of the earth and is a subset of fungi. According to *Webster's Collegiate Dictionary*, Tenth Edition, fungi are "saprophytic and ... parasitic spore-producing organisms usually classified as plants that lack chlorophyll and include molds, rusts, mildews, smuts, mushrooms and yeasts." Mold is "a superficial often woolly growth produced especially on damp or decaying ... organic matter or on living organisms." Molds and fungi are necessary to ecology; think, for example, of decaying fallen trees that are thus recycled into soil. Spores produced by these organisms can be air-, water-, insect-, or animal-borne. Spores may even be tracked into a building on the soles of shoes. In essence, mold is found everywhere and complete elimination is impossible. Mold can grow on any organic substance. Three conditions necessary for growth are:

1. A temperature range of 40 –100 degrees F (4 – 38 degrees C)
2. A nutrient base
3. Moisture

Virtually all commonly used construction materials as well as interior furnishings provide nutrients supporting mold growth. Dirt on surfaces provides additional nutrients. Humid climates may be particularly susceptible to mold growth since mold only needs a very small amount of moisture to grow. Short of being in polar or arid desert regions, mold can flourish in most populated areas of the world. The key to controlling mold growth is eliminating or at the very least, limiting moisture.

"Toxic mold" is a term that has evolved over the past few years to describe a limited grouping of molds that have potential to cause various health problems. The three most common molds which are generally thought to be "toxic" are as follows: stachybotrys, penicillium and aspergillus. Are these molds really toxic? Unfortunately there is no black or white answer to this question. There is little scientific or medical evidence that demonstrates a definitive conclusion. At the same time, however, there is consensus that some species can produce mycotoxins, which are considered to be toxic to humans and animals. Exposure to these mycotoxins elicits differing opinions as to whether there is a connection between exposure and

disease. In the US, the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH) or the American Conference of Governmental Industrial Hygienists (ACGIH) have not established any thresholds or standards for permissible exposure levels. In other words, there are no accepted standards for mold in North America. What should be clear is that even though there are no official standards by which to measure mold exposure, it is an ever-increasing societal issue. Likewise, there are no standards against which mold clean up (claim adjustment or loss prevention) can be measured. What is certain, however, is that mold is a pervasive health as well as material damage/loss of profits exposure with potentially severe consequences. The current lack of any defined parameters only aggravates remedies such as insurance. Since this problem is widespread across numerous insurance lines, what does this mean to Engineering Insurers?

First and foremost, Engineering underwriters should have a thorough knowledge of the conditions under which mold growth occurs in buildings and structures. Having an understanding of how, when, and where mold growth occurs will help the underwriter establish risk appropriate, mold specific policy terms, conditions and loss prevention measures. Especially vulnerable to mold formation and loss are Course of Construction risks, Contractors' All Risk (CAR) policies covering commercial and residential structures, all buildings intended for human occupancy, and buildings with exterior walls and systems designed to regulate building interior environment.

In addition to CAR general building risks, Engineering underwriters can be exposed to mold loss exposures when providing Erection All Risks (EAR) covers (example: HVAC system installations), CAR/EAR offsite storage or for that matter any Engineering risk where water damage losses cannot be cleaned up and repaired thoroughly and quickly. Not particularly vulnerable to mold formation are Electronic Equipment (EEI), Civil Engineering Completed Risks (CECR) and Machinery Breakdown (MB) lines. Insurers are able to disassemble into parts, transport offsite, dry out and repair or replace machinery and equipment quickly thereby minimizing mold growth risk.

In order to fully appreciate the potential exposure mold growth presents to CAR underwriters consider the following:

- Mold can grow from water accumulations inside the building, outside the building, and additionally buildings can start out wet. The time required for mold to grow is as short as 24 hours; therefore response time to water damage of any magnitude is 24-72 hours!
- Mold can result from faulty design, construction, inspection, commissioning, operation and maintenance (to the extent covered by a maintenance endorsement)
- Mold can result from externally occurring natural hazards such as windstorm, flood or rain or from a wide range of internal structure occurrences (ex: accidental leaks)

According to US Construction market statistics (see Exhibit A attached), approximately 70% of all US construction contract award dollars forecast for 2003 involve occupancies where mold is a potential exposure for the Engineering underwriter. The two key occupancy groupings for underwriter consideration are residential construction, 48% of the total 2003 contract awards forecast, and office, hotel, stores/shopping, education or healthcare construction, 21% of the total.

As previously discussed, mold does not grow without the continued presence of water over time. Therefore all mold exposure analyses begin with the consideration of a given risk's susceptibility to the peril of water. In addition to considering mold exposure resulting directly from flood, wind, rain, leaks, commissioning, vandalism, and other water damage events, CAR/EAR underwriters should evaluate mold exposures resulting indirectly from faulty workmanship, material and or design or from fire.

For example, a carpet laid on top of a less than fully cured or wet concrete floor can result in mold growth, which is not noticed until weeks later. Improperly installed window flashing can result in rainwater leakage not evident to CAR/EAR insureds for weeks. Improperly specified glue used to bond a finished floor to a sub floor can result in mold growth over time if water becomes trapped between surfaces. Finally, water used to fight fires if not properly and quickly removed can set the stage for mold growth.

All parties insured under the CAR/EAR policy have a role to play in minimizing mold losses.

- Owners, architects, contractors and insurers working together can successfully repair or replace water-damaged property in an environment where mold growth is not expected or, at minimum, controlled.
- Architects can design buildings and systems for expected local climate and rainfall conditions.
- Prime contractors and their subcontractors should have water damage remediation action plans.
- Owners should have their own water damage remediation plans ready for when the building is turned over and put in to use.
- Insurers should have knowledgeable underwriters, loss prevention engineers and claims staff set up to work as a team when needed.

Recalling that mold needs only 24-72 hours to grow, immediate notification of a potential claim should be made to insurers. Indeed, a standard CAR policy places the responsibility on the insured to report claims "as soon as practicable". Likewise, insurers once notification has been received must respond with equal swiftness. As a practical matter, it is incumbent on both parties to an insurance contract to respond promptly otherwise mold infestation will be a certainty.

In addition to accessing water damage exposures, an underwriting evaluation of the construction schedule, understanding local climate and seasonal peak exposure periods (hurricane, snowmelt, rain), and identifying fast track work will help insurers to manage the mold risk. Mold remediation work in the US can cost from \$150/ft sq up to \$1,500/ft sq or more if containment measures are required. Clearly US insurers are financially motivated to minimize or eliminate the risk of mold. At the extreme, remediation costs can exceed the new replacement building cost. The reasons for this are manifold. First of all, clean up of areas where mold has blossomed is much more than simple drying and wiping up. Once the extent of “damage” is determined, removal and replacement of the damaged property is required. Proper disposal of removed material often requires special handling to meet local regulations. All of which adds to and exceeds original construction costs.

The development of CAR/EAR policy language written to cover or exclude loss or damage caused by or resulting from mold is at an early stage. From experience, CAR underwriters have learned that establishing a date(s) of loss (es) and number of mold occurrences can be difficult. Specific to the development of mold coverage or exclusion wordings, the US approach is best described, at this time, as being similar to the development of pollution wordings in the 1980’s. Many policy wordings of that time didn’t clearly or completely address the exposure or the coverage provided leading to many unexpected claims. Water damage and mold are inseparable and therefore policy language has to directly address concurrent causation in all cases other than when full policy coverage is desired.

US construction underwriters are cautiously optimistic that mold loss severity has peaked in the marketplace. Very simply insurers have concluded that loss severity is problematic

- when insureds fail to notify their insurer of water damage
..... and/or
- when insurers fail to decisively respond to an insured’s water damage notice

Insured and insurer education and awareness may be all that underwriters will need to manage the mold risk.

Many underwriters who are aware of the mold/fungus issue still believe that this is an issue, which primarily affects residential occupancies, especially relating to Property coverages. For example, a Texas case where a court decision resulted in a homeowner’s policy paying a US\$ 32 million mold claim has received much US media attention. Commercial Builders’ Risk at first was considered a class of business, which had a low likelihood of being strongly affected. In fact, as late as January 2002, one company, which specializes as product development resource for property/casualty insurers in the US, indicated, “the chances of a mold claim under a builders’ risk policy is very remote”.

It did, however, become readily apparent that builders' risks of commercial/office and similar occupancies are at significant risk to mold claims. In fact, based on some industry research, there have been at least eight such claims in the United States, which have exceeded US\$1,000,000. All of these claims began as water damage or flood claims, but eventually had a significant mold removal or mold remediation component of the final/total claim amount (mold/fungus loss portion has been as little as 15% or as much as nearly 100% of the total loss amount). These eight claims are listed in some detail in Appendix B. Their average total sum insured (TSI) is US\$ 112,500,000 with the average claim being US\$ 5,734,000. These results indicate a "burning cost" of 5.1%!

It is becoming apparent that the Builders' Risk market for what is thought to be "vanilla" type Builders' Risks can no longer support the level of losses, which have been occurring in the market due to mold claims. One major Reinsurer indicated that their loss ratio for their Construction All Risk portfolio had increased by 32% in 2001/2002 strictly due to these types of claims.

It is important to note the occupancy and location of some of these larger claims. Included in these losses are construction projects of school & university buildings, office buildings, and residential housing. While most losses have occurred in southern and coastal areas known to have conditions conducive to mold growth (temperature and humidity), several losses have occurred in northeastern US as well.

Most are claims for Property Damage, but at least half of these claims involve some potential for additional recovery under Time Element coverages (Advanced Loss of Profit, Delay in Start-up, or Loss of Rents).

What can an Engineering insurer do to manage mold exposure?

As with any exposure, underwriters have a number of approaches and tools to deal with mold. First, policy wording can be configured to exclude, limit or define mold coverage. The risks written under CAR policies where exposure to mold is a potential has also been touched. Secondly, loss prevention and claims handling are also important components of successful underwriting. What then, are the issues associated with loss prevention and claims minimization? As previously mentioned, certain projects have may have increased exposure given their design, construction and location. Once a loss event occurs, rapid response and reporting by insureds (as required by policy terms) is an absolute necessity. Keep in mind the 24-72 hour window of opportunity to contain mold growth. Based upon US experience, Exhibit C presents a variety of points to consider in discovering, identifying and dealing with mold. As an insurance issue (for Engineering as well as Property), these loss prevention and loss reduction points play a significant role in successfully dealing with mold. These are practical matters, which can be easily adopted by both insureds and insurers with measurable positive results.

To conclude, mold is a natural phenomenon that has been around for a long time. As an insurance issue, specifically as a concern for Engineering underwriters, it has recently taken on a higher profile as seen in the US claims experience. The problem is aggravated by the lack of widely accepted standards, but underwriters are not without tools to deal with the issue. Once the exposure is clearly understood (and one could simply use the term “water”), clear policy wording can be drafted to indicate the underwriter’s intent. Coupled with active loss prevention and claims management, an underwriter should be able to successfully manage the mold exposure.

May 30, 2003

Exhibit A

US Construction Forecast

Source -FW Dodge: Contract Awards

Forecast 2003 (in US\$ mil)

Description	Contract Awards	% of Total Awards
<i>Total Construction</i>	\$495,000	
<i>Total Residential</i>	\$239,000	
Single Family	\$203,000	41%
Multi-Family	\$ 36,000	7%
<i>Total Non-Residential</i>	\$159,500	
Offices	\$ 20,000	
Hotels	\$ 4,500	
Stores/Shopping Center	\$ 17,400	21%
Educational Buildings	\$ 45,600	
Healthcare Facilities	\$ 17,000	

EXHIBIT B

Course of Construction Claims

SUMMARY:

Eight Builder's Risk Claims exceeding \$1,000,000 USD in chronological order

CLAIM # 1	Location:	West Coast US
	Project Value:	\$ 150,000,000 USD
	Occupancy:	25-Story, Steel Frame Office Building
	Description of Loss:	Heavy Rain
	Loss Date:	Early 2000
	Claim Amount:	\$ 1,500,000 USD

CLAIM # 2	Location:	West Coast US
	Project Value:	\$ 40,000,000 USD
	Occupancy:	23-Story, Steel Frame Office Building
	Description of Loss:	Heavy Rain
	Loss Date:	Early 2000
	Claim Amount:	\$ 1,500,000 ⁺ USD

CLAIM # 3	Location:	West Coast US
	Project Value:	\$ 15,000,000 USD
	Occupancy:	8-Story, Concrete and Steel Residential Building
	Description of Loss:	Heavy Rain, Water damage from faulty installation and/or manufacturing of sliding window/door
	Loss Date:	Early 2000
	Claim Amount:	\$ 2,000,000 - \$ 2,500,000 USD

EXHIBIT B (cont'd)

Course of Construction Claims

CLAIM # 4	Location:	West Coast US
	Project Value:	\$ 50,000,000 USD
	Occupancy:	Multiple Structure, Low-Rise Wood Frame and Concrete Residential Housing Complex
	Description of Loss:	Workmanship, Material or Design, Wet Concrete floor poured. 30-days later fugus throughout 2 nd , 3 rd and 4 th floors. Removed all carpet, cabinets and 2-ft sheetrock.
	Loss Date:	Summer 2000
	Claim Amount:	\$ 1,250,000 - \$ 1,500,000 USD

CLAIM # 5	Location:	Northeast US
	Project Value:	\$ 40,000,000 USD
	Occupancy:	Senior Citizen facility addition, building heights and construction type unknown
	Description of Loss:	Rain leaked through temporary roof membrane. Over months, sheetrock mold growth.
	Loss Date:	Late 2000
	Claim Amount:	\$ 2,500,000 - \$ 3,000,000 USD

CLAIM # 6	Location:	Northeast US
	Project Value:	\$ 400,000,000 USD
	Occupancy:	45-Story, Steel Frame Office Tower
	Description of Loss:	Water Damage / Mold
	Loss Date:	Summer 2001
	Claim Amount:	\$ 15,000,000 - \$ 20,000,000 USD

EXHIBIT B (cont'd)

Course of Construction Claims

CLAIM # 7	Location:	Gulf Coast US
	Project Value:	\$ 25,000,000 USD
	Occupancy:	2-Story, Masonry and Steel School Building
	Description of Loss:	Heavy wind driven rain swept through the complex while under construction
	Loss Date:	Summer 2001
	Claim Amount:	\$ 4,000,000 USD

CLAIM # 8	Location:	Southeast US
	Project Value:	\$ 80,000,000 USD
	Occupancy:	25-Story, Steel Frame Hotel
	Description of Loss:	Heavy wind driven rain entered interior through plumbing shafts, open vents and window openings. Majority of building affected. Building partially complete. Lower floors had drywall, fixtures and plumbing installed. Many areas affected by mold. High humidity and temperatures accelerated the mold growth process.
	Loss Date:	Summer 2002
	Claim Amount:	\$ 15,000,000+ USD

EXHIBIT C

Mold Action Plans

Inspection and Risk Assessment are not the same

The emergence of mold as an environmental issue has resulted in a number of existing (Environmental) and new companies entering the inspection business. The barrier to entry is low; there are no training requirements, inspection standards, or licensing processes in place. Furthermore, very little capital investment is required to get into the business. In contrast, very few companies are performing an “insurance style” risk assessment because most insurance companies are excluding mold rather than covering it! As a generalization, an inspection is focused on finding mold as a result of a client complaint or concern; whereas, a risk assessment seeks to not only find existing conditions but assess the probability that the facility may develop mold in the future.

Inspection – Looking for Evidence of Mold

A typical mold inspection is focused on detecting visible growth, finding evidence of past or present water damage, and interviewing occupants relative to odors or other complaints.



Growing fungi will release volatile organic chemicals (VOCs) producing a characteristic musty odor. However, fungi are not the only source of musty odors and the production of VOCs changes as the growth rate changes and will eventually stop. Hence, odor alone is not an indication of the presence of mold. The most common approach is to look for evidence of past or present water intrusion; then a physical examination of the building looking for visible mold. This may require removal of ceiling tiles, cutting view ports in walls, and removal of floor or wall coverings.

Many inspection companies will also take air samples, vacuum debris from rugs, and/or do swab samples. These samples will then go to a lab where these samples will be put in a medium to try to grow mold where the number of “colony forming units” and specie will be determined. These tests are expensive and generally are not required because there are no standards for an acceptable number of colony forming units nor is there scientific agreement on what is “good” or “bad” mold. In the US, many state and federal agencies have taken the position that testing is not required; the recommendation is “**if you find mold, remove it**”.

Assessing the Risk of a Mold Incident Occurring

Insurance companies frequently perform risk assessments prior to binding an insurance policy if the risk is site specific and cannot be characterized using actuarial data. Mold falls into this category; the risk is entirely a function of the condition of the facility, its basic design, and how it is maintained. The risk assessment will perform some amount of the physical inspections, will not include lab testing, and will focus more on the facility and processes.

Remediation

Standards and Regulations

Currently there are no (state or federal) standards or regulations regarding mold remediation. Furthermore, there is no licensing process for contractors and vendors of remediation services. Since improper remediation can frequently turn a small problem into a larger one, this is an area of concern. Most reputable vendors will have liability insurance and follow one of the protocols listed below. Liability coverage for mold remediators is not easy to get and insurance carriers require the companies is to meet rigid criterion for acceptance (which, in a way, is de facto certification).

Generally Accepted Protocols

Reputable remediators usually follow one or more of the following guidelines:

1. New York City Department of Health, “Guidelines on Assessment and Remediation of Fungi in Indoor Environments.” <http://www.nyc.gov/html/doh/html/epi/moldrpt1.html>
2. US Environmental Protection Agency (USEPA) “Mold Remediation in Schools and Commercial Buildings.” EPA 402-K-01-001. <http://www.epa.gov/iaq/molds/index.html> These guidelines specify how the remediation is done and what safety procedure must be followed.

Mold remediation usually requires both removal and abatement. The first step is to determine the extent of infestation and then develop a remediation plan (using appropriate guidelines) The level of infestation determines the removal process and extent of personnel protection. Porous materials, textiles, and paper products are not easily cleaned of microbial contamination; therefore; it is often less expensive and more effective to remove and discard the contaminated item or material (e.g., drywall, carpet, etc.) Non-porous materials may be treated with a biocide and cleaned. Caution must be used with biocides. They must be removed after use because they are toxic to humans and animals and can damage materials. Furthermore, all dead mold must be removed since it has the same potential for health impact as live mold. The last step is clearance testing which is to determine if job is complete and to check for spread of spores to other areas within the facility.

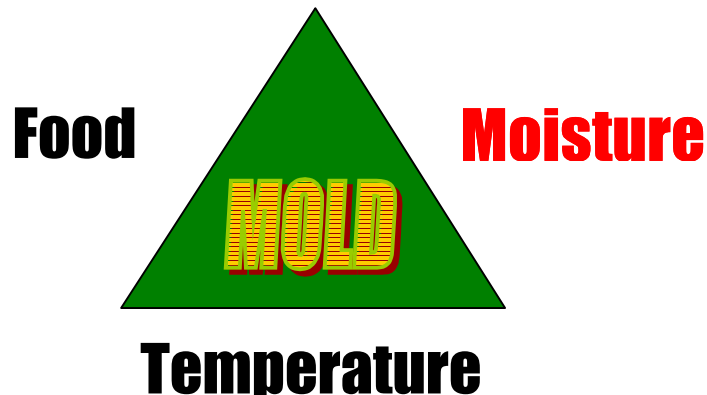


Respirators are required for all but minor jobs. Work site containment is usually required in a manner similar to asbestos removal. However, mold contaminated materials can be bagged and disposal usually permitted at a regular landfill.

Loss Prevention

The Mold Triad

Mold spores are everywhere. This is why measurement of mold spores in the air or on surfaces is expensive and unnecessary. Since mold spores cannot be eliminated, then they must not be allowed to grow into an active mold colony. Colony formation requires a nutrient, the correct temperature, and moisture. Nutrients are anything organic, including most of the materials contained within a facility. The correct temperature for mold growth is the same required for human habitation. Hence, the nutrients and thermal environment cannot be eliminated. Therefore, you must control moisture to control mold.



Mold Loss Prevention Plan (MLPP)

As mold has become an acknowledged issue, astute risk managers have developed Mold Loss Prevention Plans (MLPP). These plans are often submitted to insurers as evidence of a risk management strategy. The MLPP is built around controlling moisture. Moisture can be the result of building or system design defect or deterioration; improper operation or installation of the HVAC systems; water incursion through the building envelope; water releases from leaks or major failures of plumbing or sprinkler systems; or improper custodial practices. Procedures need to be in place to deal with each of these possibilities. Furthermore, these procedures should be documented, and a system used to manage, track, and record all activities. The basic elements of a MLPP are:

- ✓ An emergency water release response plan
- ✓ A periodic and continuous inspection program
- ✓ A proactive preventative maintenance (PM) plan
- ✓ HVAC design and operation for moisture control
- ✓ Water and moisture sensitive custodial procedures
- ✓ Awareness training for the building occupants and facility maintenance staff

It is usually advisable to have an open contract with a professional water remediation vendor. Although in-house maintenance staff can usually handle small spills, major water releases require specialized equipment. Many large mold losses have been the result of the client trying to remove water without adequate resources. Periodically, maintenance supervision should “walk” the facility looking for evidence of past or current water incursions. On an on-going

basis, the custodial staff should be trained to look for problems as they go about their regular tasks. A good Preventative Maintenance plan is essential for success; facilities that use a “fix it when it breaks” approach to maintenance are usually high risk for having mold problems. The HVAC system needs to be designed to control moisture in addition to temperature. This means the incorporation of dryers in moist climates and running systems round the clock even when buildings are not occupied. Custodial procedures should be designed to remove all of the moisture used in cleaning. For example, use high extraction vacuums to remove water after cleaning carpet. Training and communication with all of the building occupants is important. They should be encouraged to report any conditions that could cause mold.

The general philosophy of a MLPP is to find a water problem and remediate it before it becomes mold, and to find a small mold problem and remediate it before it becomes a big mold problem. Mold is not a fortuitous event that is out of the control of the insured. With proper engineering and management it is a potential loss that can be prevented, or at the least, greatly mitigated by the insured.

EXHIBIT D

Additional Mold Resources

The following list of resources was taken from the various government and private sources in the US and Canada.

1. U.S. Environmental Protection Agency (EPA), Indoor Environments Division (IED)
An Office Building Occupant's Guide to IAQ
<http://www.epa.gov/iaq/pubs/occupgd.html>

Biological Contaminants

http://www.epa.gov/iaq/pubs/bio_1.html

Building Air Quality Action Plan (for Commercial Buildings)

<http://www.epa.gov/iaq/largebldgs/actionpl.html>

Floods / Flooding

<http://www.epa.gov/iaq/pubs/flood.html>

Indoor Air Quality (IAQ) Home Page

<http://www.epa.gov/iaq>

IAQ in Large Buildings / Commercial Buildings

<http://www.epa.gov/iaq/largebldgs/>

IAQ in Schools

<http://www.epa.gov/iaq/schools/>

Mold Remediation in Schools and Commercial Buildings

http://www.epa.gov/iaq/molds/mold_remediation.html

Mold Resources

<http://www.epa.gov/iaq/molds/moldresources.html>

For more subject-specific links, go to: www.epa.gov/iaq/schools/links.html, or <http://www.epa.gov/iaq/asthma/links.html>, or www.epa.gov/iaq/moreinfo.html.

2. U.S. EPA IAQ Information Clearinghouse (IAQINFO)
Phone: (800) 438-4318 or (703) 356-4020
Fax: (703) 356-5386
Email: iaqinfo@aol.com
Indoor air-related documents, answers to Indoor Air Quality (IAQ) questions, maintains listing of state IAQ contacts, and regional EPA contacts
3. American Industrial Hygiene Association (AIHA)
(703) 849-8888 <http://www.aiha.org>
Information on industrial hygiene and indoor air quality issues including mold hazards and legal issues
4. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)
(800) 527-4723 <http://www.ashrae.org>
Information on engineering issues and indoor air quality
5. Association of Specialists in Cleaning and Restoration (ASCR)
(800) 272-7012 <http://www.ascr.org>
Disaster recovery, water and fire damage, emergency tips, referrals to professionals
6. Centers for Disease Control and Prevention (CDC)
(800) 311-3435
<http://www.cdc.gov>
Information on health-related topics including asthma, molds in the environment, and occupational health
7. Health Canada, Health Protection Branch, Laboratory Centre for Disease Control, Office of Biosafety
(613) 957-1779
<http://www.hc-sc.gc.ca/main/lcdc/web/biosafety/msds/index.html>
Material Safety Data Sheets with health and safety information on infectious microorganisms, including Aspergillus and other molds and airborne biologicals
8. International Society of Cleaning Technicians (ISCT)
(800) WHY-ISCT (800-949-4728)
<http://www.isct.com>
Information on cleaning, such as a stain removal guide for carpets
9. National Institute of Building Sciences (NIBS)
(202) 289-7800
<http://www.nibs.org>
Information on building regulations, science, and technology
10. National Institute for Occupational Safety and Health (NIOSH)
(800) 35-NIOSH (800-356-4674)
<http://www.cdc.gov/niosh>
Health and safety information with a workplace orientation

11. New York Department of Health,
Bureau of Environmental and Occupational Disease Epidemiology
(212) 788-4290
<http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html>
Guidelines on Assessment and Remediation of Fungi in Indoor Environment
12. Occupational Safety & Health Administration (OSHA)
(800) 321-OSHA (800-321-6742)
<http://www.osha.gov>
Information on worker safety, including topics such as respirator use and safety in the workplace
13. Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)
(703) 803-2980
<http://www.smacna.org>
Technical information on topics such as air conditioning and air ducts
14. Smithsonian Center for Materials Research and Education (SCMRE)
(301) 238-3700
<http://www.si.edu/scmre>
Guidelines for caring for and preserving furniture and wooden objects, paper-based materials; preservation studies
15. Water Loss Institute, Association of Specialists in Cleaning and Restoration
(800) 272-7012 or (410) 729-9900
<http://www.ascr.org/wli/>
Information on water and sewage damage restoration