

MOLD ISSUES IN CANADA:
A PRACTICAL OVERVIEW
By Graham Dick, CMR, CMS, AMRT

This article is written with both the building owner/manager and the remediation contractor in mind. I'm going to start with a brief overview of why we have a mold issue and what is being done about it in Canada.

Awareness of mold growth in buildings has risen sharply in recent years. Several factors have contributed to this heightened awareness, including:

1. Energy conservation measures,
2. Changes in building materials,
3. The use of rapid construction techniques,
4. Failure of occupants to manage moisture intrusion and humidity properly
5. An increased consumer concern.

Much can be said about each of these points however put simply, abnormal mold growth is caused by water (in all its forms) being where it should not be in the built environment. Deal PROMPTLY with the cause of moisture intrusion and abnormal mold growth will cease to exist. This point cannot be emphasized enough.

Public and private organizations responded by publishing several documents and guidelines that address mold remediation. They are listed in order of the most recently published.

1. Health Canada *Fungal Contamination in Public Buildings: Health Effects and Investigative Methods*, 2004
2. Workman's Compensation Board BC, Occupational Health and Safety Regulation - G4.79 Moulds and Indoor Air Quality, 2004
3. CCA Canadian Construction Association 82 – Mould Guidelines For The Canadian Construction Industry, 2004
4. IICRC International Institute of Cleaning and Restoration Certification – S520 Standard and Reference Guide for Professional Mold Remediation, Dec 2003
5. ASCR Association of Specialists in Cleaning and Restoration – Recommended Professional Practice for Remediation of Mold Contamination in Building Interiors, 2003
6. PWGSC Public Works and Government Services Canada IAQ: Microbial Remediation Guidelines for Buildings, 2003
7. New York City Dept. of Health & Mental Hygiene *Guidelines on Assessment & Remediation of Fungi in Indoor Environments*, 2002
8. EPA *Mold Remediation in Schools and Commercial Buildings*, EPA 402-K-01-001, 2001
9. AIHA American Industrial Hygiene Association *Report of Microbial Task Force*, May 2001
10. ACGIH American Conference of Governmental Industrial Hygienists *Bioaerosols: Assessment and Control*, 1999

Many of these documents were written primarily for risk managers, building managers, occupational safety and health professionals, public health officials and those making remediation decisions.

Then in 1994, the Institute of Inspection, Cleaning and Restoration Certification (IICRC) published the ***STANDARD AND REFERENCE GUIDE FOR PROFESSIONAL WATER DAMAGE RESTORATION (S500)*** which describes procedures for correcting and preventing excessive moisture in buildings. This document has become the “Bible” of the Restoration industry by which actions taken are defended or attacked. It has stood the test of law in numerous suits in both the United States and Canada.

Although dealing with microbial contamination, the S500 did not address mold and thus the ***S520 STANDARD AND REFERENCE GUIDE FOR PROFESSIONAL MOLD REMEDIATION*** was born. Published in December of 2003, the Goal of this document is for use by those involved in the mold remediation industry, primarily for mold remediation companies and workers, and secondarily, for others who investigate mold complaints, write remediation specifications and manage remediation projects.

The S520 Standard is the most comprehensive document currently available and any Indoor Environmental Professional or Mold Remediation Professional that is not intimately familiar with this is operating on the edge of the accepted Industry Standard of Care.

Although aspects of the industry are not government regulated, there are many aspects that are. Worker safety and personal protective equipment (PPE) is well documented in WCB Occupational Health and Safety regulations.

The difficulty that has existed in regulation is the inability of professional organizations to agree upon threshold limit values (TLV's) or levels of mold growth that constitute occupant and worker safety. Because mold spores are ubiquitous on this planet, simply stating that the requirement indoors needs to be zero or some other extraneous number doesn't work. Temperature, humidity levels also combine with building science issues above to cause levels of variance that the medical field, scientists and other professionals are uncomfortable with.

To change the pace a bit, how many of you have had direct experience with mold remediation in one of your buildings? How many have been in litigation resulting from mold contamination?

For the sake of comparison, how many of you have been directly involved in Asbestos abatement in one of your buildings? Was the experience similar? Did you feel taken advantage of and wish you knew more?

The Graph below illustrates a comparison of Asbestos abatement with Mold remediation.

ASBESTOS

- A human installed it.
- Risk assessment and testing to known TLV's.
- File NOP and remove asbestos.
- Testing to prove clearance criteria. (Regulated and set)
- Once gone, it's never coming back! The result is guaranteed.

MOLD

- It's caused by water intrusion.
- First diagnose and fix cause.
- Assessment and Protocol performed by IEP.
- Remediate
- Testing to prove Clearance criteria – DEPENDS on several criteria.
- Guarantee ends once containment is removed.
- Mold can begin growing again immediately if the conditions that caused it were not COMPLETELY FIXED!

Comparison of the risks of exposure:

ASBESTOS

- Airborne exposure over the threshold exposure limits (TLV).
- MAY produce Asbestosis in 20-30 years.
- MAY reduce lung function as the fibers 'hook' into the lungs and get trapped.

MOLD

- Mainly airborne exposure, secondarily direct contact with skin.
- There is no agreed upon TLV and so the medical community has significant difficulty with linking symptoms to a "Mold" diagnosis.
- Symptoms of airborne exposure include but are not limited to: colds – last longer than normal.
- Increased allergies – season started early, lasted longer, or started in relation to "something".
- Asthma – triggered.
- Immune system – shuts down.

Mold – Health Effects

The most important document to be released recently is the HEALTH CANADA Fungal Contamination in Public Buildings: Health Effects and Investigative Methods in 2004. This document is a revision of an earlier version published by Health Canada and the Federal-Provincial Advisory Committee on Environmental and Occupational Health (CEOH) in 1995. The 1995 review concluded that “. . . epidemiological studies have consistently detected an association with respiratory symptoms and home dampness and mold growth, but causality in these studies has not been established.” The purpose of this section is to update the CEOH document by reviewing the research published from 1995 to 2001 on health effects of exposure to molds in residences and non-industrial workplaces (mostly office buildings and schools), and to determine whether the current evidence warrants more definitive conclusions. Epidemiological studies of respiratory illness, effects of molds in sensitive groups and animal studies from several countries including the United Kingdom, Canada, United States, Australia, Finland and Taiwan are reviewed and a discussion of the findings which concludes that exposure to mold IS related to increased prevalence of asthma and upper respiratory allergy-related symptoms.

Short Term Exposure – Remove the person from the exposure source and the person will normally clear up.

Chronic Exposure at Low Levels – This increases the “Total Body Burden” and may cause permanent damage to the immune systems ability to ‘fight’. Total Body Burden is the cumulative effect of all biological and chemical allergens and irritants that enter the body through what we eat, breathe and come in skin contact with.

If an immuno-compromised individual has a significant enough dosage in a large single dose or a ‘trickle’ effect, the result can be a ‘doorway’ for a bacterial or viral attack on the body. There is significant anecdotal evidence that this is true.

Consider again the factors of heightened mold awareness that I mentioned at the beginning and look at the statistics below regarding asthma.

Asthma stats:

- Asthma cases and asthma deaths have been on the rise. From 1979 to 1996, asthma deaths have risen 120% from 2,598 to 5,667.
- Hospitalizations for asthma have increased 256% from 1979 to 1996, to 474,100 annually.
- Asthma is the sixth most common chronic condition in the United States.
- African-American children with asthma, most often from inner city populations, generally experience more severe disability from asthma and have more frequent hospitalizations than do Caucasian children.
- In 2001, 4269 Americans died representing 1.5/100,000.

Is this a curious coincidence or a direct relation? I have been reading and studying this topic for several years now and I am starting to see more and more peer reviewed studies suggest what I have been saying for a while – that most upper respiratory disease and asthma is directly related to chronic mold exposure in the built environment.

To recap our discussion so far: We have discussed,

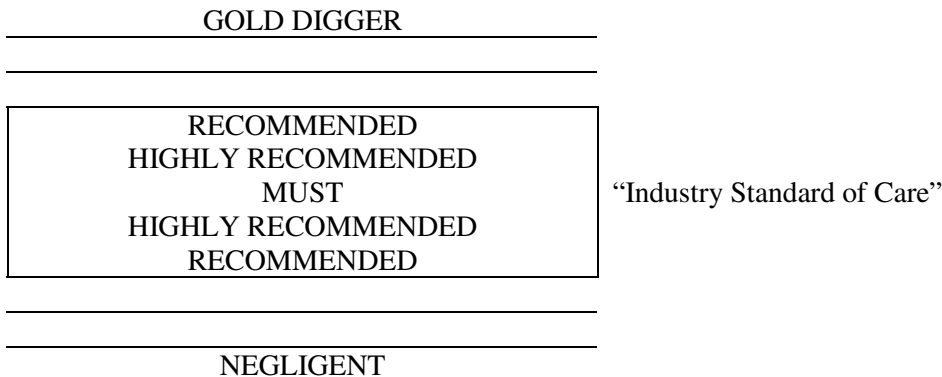
1. Why we have a mold issue.
2. That there has been a maturing “Standard of Care”.

3. That there exist government guidelines that guide how remediation work is done.
4. That the IICRC S520 Standard is the most comprehensive remediation document available and is the only document written expressly to guide remediation companies and indoor environmental professionals.
5. Some differences between mold and asbestos.
6. Some health affects of exposure to mold.

ISSUES THAT BUILDING OWNERS AND MANAGERS HAVE IN ASSESSMENT AND REMEDIATION:

1. What is the INDUSTRY STANDARD OF CARE?

The diagram below shows a box with lines above and below. I want to define this important concept with a few words.



The box represents those professionals that are operating inside the **Industry Standard of Care**. I feel the ASCR document illustrates this best by showing the commonality of several of the most recognized guidelines in a format that takes 28 points of understanding and references the places in each document that speak to that point. I have taken the most important Canadian documents and updated the references to show the Canadian position on these important points.

As you will agree, there is room for some variance for professional judgment. Right in the center is the word **MUST**. **MUST** means that the practice or procedure is mandatory due to natural law or regulatory requirement. Still within the box is **HIGHLY RECOMMENDED**. This means the practice or procedure is a component of the accepted “standard of care” to be followed, while not mandatory by regulatory requirement. Finally and still within the box is **RECOMMENDED**. This means a practice or procedure that is advised or suggested. This language is used specifically within the S520 Standard.

There will be variance in each job depending on the specific guideline chosen as the standard for that job by the Professional Consultant. For example, following the New York City Guideline would place one toward the bottom of the box (but it would still be in the box because the NYCG is an accepted standard of care). Conversely, following the IICRC S520 is a stricter, more difficult standard and would place you at the top of the box.

As you leave the box on the bottom side, you are moving into **Negligent** behavior that at best will highly increase the risk of legal action and liability exposure. At worse, you will be creating an even more hazardous environment that presents an even greater health and safety problem. Just because a consultant writes the specification for a job does not release the contractor from staying

within the accepted industry standard of care. If the consultant specifies work that is substandard (which we as a contractor see happen regularly), we must be agents of change and education. If we cannot bring the standard for that job up to an acceptable level, prudent risk management means you as the contractor must walk away from the potential contract.

As you leave the box on the high side, you have the **Gold Diggers**. You may have the results you want and need but was it really necessary to do “THAT MUCH”? Have you ever felt that the procedures went way overboard for the level of risk exposure? Can the remediation achieve a “reasonably set” clearance criteria while properly protecting the workers, the occupants and the building without breaking the bank? Often this discussion becomes an argument of what is real or simply one’s perception of real.

It is my goal that this presentation will provide you with the knowledge and tools to help you know when you’re inside the box.

2. STAYING ‘IN THE BOX’

A. The first thing is to properly pick an Assessor.

Let’s look at the S520’s definition for assessment first. “**ASSESSMENT**: a process performed by an Indoor Environmental Professional (IEP) that includes the evaluation of data obtained from a building history and inspection to formulate an initial hypothesis about the origin, identity, location and extent of amplification of mold contamination. If necessary, a sampling plan is developed, and samples are collected and sent to a qualified laboratory for analysis. The subsequent data is interpreted by the IEP. The IEP or other qualified individual may then develop a remediation plan.”

Now, lets look at the S520’s definition for an **Indoor Environmental Professional**. “An IEP is an individual that is qualified by knowledge, skill, education, training and/ or experience to perform an assessment of the fungal ecology of property, sampling strategy, sample the indoor environment, interpret laboratory data and determine Condition 1, 2 and 3 status for the purpose of establishing a scope of work and verifying the return of the fungal ecology to a Condition 1 status.”

As you can see, this is not something your building service worker or building contractor is qualified to perform. Even as a highly qualified remediation contractor, this is not something I am completely qualified to perform. Usually, I work together with a certified industrial hygienist to perform an assessment and develop a scope of remediation.

Qualities of an Assessor:

1. **Independent.** You don’t want conflict of interest.
2. **Qualified** in Mycology (study of fungi) and building science.
3. **References** current Standards and Guidelines including applicable government regulations.
4. Is properly **insured** with E&O and Pollution coverage. This is very expensive and many consultants do not have this.

B. The next thing is to pick a Remediation Contractor.

Qualities of a Remediator:

1. **Certified.** Industry certifications such as ASCR and IICRC courses or equivalents. Ask for documentation to support the training.
2. **Experienced.** Check references of past jobs with both the building owner/manager and the IEP that supervised and cleared the job.
3. **Insured.** You must ask for a copy of the contractor's general liability policy and more importantly a copy of their pollution liability policy with a mold inclusion. Otherwise you are carrying the liability for which you most likely do not have coverage.
4. **Associated.** True professionals associate with other true professionals. ASCR is a prime example of a quality association that provides a fabulous service to their members in education, research and development and communication with each other and related interest groups. To find a member in your area for quality work, click on www.ascr.org and click on 'member search'.

C. Develop a Remediation Plan:

Qualities of a Remediation Plan:

1. This is a **KEY** point. In Asbestos Abatement, the contractor submits a written work procedure and also files a Notice of Project to Workman's Compensation Board. WCB is the 'control' that ensures compliance to the Standard. **THERE IS NO SUCH REQUIREMENT WITH MOLD.** Therefore if you attempt to get quotes from contractors based solely on the assessment, your prices and methods will come in all over the place. The risk of inadequate results or costly overruns is not only possible but likely.
2. Integral components of a Plan are:
 - a. Clearance Criteria – If you don't clearly define this, how do you measure if you've reached it? This will also greatly affect the price of the job.
 - b. Methodology – What Standard/Guidelines is being followed? This is where written work procedures must be provided. All parties involved must participate and be in agreement of these procedures. Try to close loopholes that could result in expensive Change Orders. Define carefully how 'surprises' will be dealt with.
 - c. Documentation – Require extensive photo documentation as well as a thorough paper trail of every aspect of the job. **IF YOU CAN'T SIGN IT DON'T SAY IT.** This protects all parties and is worth every penny.

Conclusion

Mold indoors will continue to be a problem. Increasing awareness of the health effects will add to the political pressures to legislate and regulate. As more studies are done, I believe the cause and effect; dose and response relationship will become even stronger and will lead to the hard data that regulators are looking for. Because of the international support for professional assessment and remediation, the industry will continue to evolve and stabilization will occur during this decade. Legislation and regulation will recognize the leadership and cooperation shown by leading associations and government health authorities. Most importantly, the public educational focus will solidify around prevention. Prompt attention to rectifying moisture intrusion issues will prevent mold growth before it starts. As Poor Richard stated some 200 years ago, "An ounce of prevention is worth a pound of cure." Of course, when one considers human nature, the existence of a mold remediation industry is here to stay.

References for Mold Issues In Canada

1. Health Canada. Fungal Contamination in Public Buildings: Health Effects and Investigative Methods, 2004. ISBN# 0-662-37432-0
2. Canadian Construction Association CCA 82 – Mould Guidelines for the Canadian Construction Industry, 2004
<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>
3. Public Works and Government Services Canada. IAQ: Microbial Remediation Guidelines for Buildings, 2003 http://www.pwgsc.gc.ca/rps/aes/content/iaq_pub_microbial-e.html
4. Workman’s Compensation Board BC, Occupational Health and Safety Regulation - **G4.79 Moulds and indoor air quality.**
5. Fungal Contamination: A Comprehensive Guide for Remediation by Michael A. Pinto, Ph.D. and David Janke <http://www.wondermakers.com>
6. IICRC S520 Standard and Reference Guide for Professional Mold Remediation, First Edition December 2003 – pgs. 5,6,10,13 <http://www.iicrc.org/s520info.html>
7. ASCR Recommended Professional Practice for Remediation of Mold Contamination in Building Interiors. Copyright 2003. <http://www.ascr.org/about/pr020503.shtml>
8. Center for Disease Control and Prevention (CDC) National Center for Environmental Health - <http://www.cdc.gov/nceh/airpollution/mold/moldfaq.pdf>
9. CM Cleaning and Maintenance Management - <http://www.cmmonline.com/ENewsArticle.asp?ArticleID=300>
10. Environmental Protection Agency - <http://www.epa.gov/iaq/molds/toc.html>
11. National Jewish Medical and Research Center - <http://asthma.nationaljewish.org/about/relationships/mold.php>
12. CMHC, Building Renovating and Maintaining, Fighting Mold- The Homeowner’s Guide http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_ce08.cfm
13. University of Maryland Medicine, Allergies Health Guide - <http://www.umm.edu/allergies/stats.htm>
14. National Center for Health Statistics – Asthma - <http://www.cdc.gov/nchs/fastats/asthma.htm>
15. The Lung Association, Asthma Facts and Statistics - <http://www.lung.ca/asthma/facts.html>