

CAUT Health and Safety Fact Sheet



Mould

ISSUE 14

Moulds and fungi are naturally occurring and necessary for leaves, wood and other plant material to decompose. But when given the opportunity to multiply in close quarters with humans, either in the home or at the worksite, it can become a serious biological health hazard.

“For one year, the Ontario Provincial Courthouse in Newmarket ... was shut down. This came after months of reported ill health among staff, effects ranging from dizziness, nausea, stomach ailments, headaches, respiratory and throat problems, skin rashes, blurred vision and flu-like symptoms. Following a series of work-refusals, the Ministry of Labour ordered a health survey of all courthouse employees. The survey indicated that almost 40 per cent had developed new cases of occupational asthma.”¹

During renovations, a major hospital had many workers complaining of the “flu”, and nose, throat and ear infections. Investigations uncovered the source: mould had contaminated the drywall, insulation around pipes and ceiling tiles. Workers had been exposed to mould spores, disturbed during renovations.

These scenarios illustrate the seriousness of mould health hazards. Public buildings, particularly schools and hospitals, are prime breeding grounds for moulds and fungi. The Canadian Centre for Occupational Health and Safety notes that “Changes in construction since the 1970s have resulted in tightly sealed buildings with diminished ventilation.”² Moisture, inadequate and poorly cleaned HVAC systems, and large buildings with diminished capacity to ensure effective cleaning, contribute to the growth of mould and fungi.

Leaking pipes, heat/ventilation ducts, swimming pools and their safety mats, and carpets wet from rain and snow are known to contribute to mould growth in universities and colleges. Donations of old books and papers need to be checked for prior exposure dampness. These materials are highly susceptible hosts for mould and fungi. The Joint Health and Safety Committee (JHSC) should speak with faculty and other staff regarding any “mould sightings” they may have encountered. This additional information provided invaluable assistance to the committee members.

“A key characteristic of mould is its ability to grow without sunlight.

It needs only a viable mould spore, a nutrient source, some humidity and moisture to thrive, and is often found in damp, dark and hidden space.”³

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Types

The American Industrial Hygiene Association (AIHA) lists the following as the most common moulds found indoors:

Alternaria, Aspergillus, Cladosporium, Penicillium and Stachybotrys. Others are *Fusarium, Memnoniell* and *Tirchoderma.*

Stachybotrys is the most common of these and is toxigenic (produce mycotoxins toxic to humans and animals). It is the one usually found on building or paper materials.

Testing for mould is complicated, and should only be undertaken by reputable specialists.

Health Effects

Mould can manifest itself in a surprising array of symptoms and illnesses in the human body. If you think you may be exhibiting symptoms related to exposure to mould, contact your healthcare provider and inform your workplace JHSC immediately.

- Allergic and immune reactions: allergic rhinitis/sinusitis, allergic conjunctivitis, eczema, asthma, hypersensitivity pneumonitis, allergic contact dermatitis
- Infectious: mycosis (caused by fungal spores), aspergillosis (lung infection associated with *aspergillus fumigatus*)
- Mycotoxin: eye and throat irritation
- Neurotoxin: headache, fatigue, dizziness, memory and verbal problems, depression

Infants, children, pregnant women, and those with diminished immune systems or existing allergies are at greater risk for health effects from contact with mould.

Prevention

A successful prevention program will eliminate the mediums necessary for mould to gain a foothold in your workplace: wet, dark places. Eradication of current mould problems with an aggressive maintenance program will substantially reduce the potential for mould growth.

- Manage mould growth before it occurs through regular inspections

Mould remediation

Mould remediation should only be undertaken by trained, experienced personnel, using Personal Protective Equipment (PPE). This includes either the thorough cleaning or removal of mould contamination. Building owners must ensure that trade contractors follow proper remediation procedures. The Occupational Health Clinics for Ontario Workers (OHCOW) provides a list of approved publications on remediation which can be found in their document entitled "Moulds: Workplace Guidelines for Recognition, Assessment and Control" at www.ohcow.on.ca

- Control moisture by increasing surface temperature, insulation or increased air circulation, and ensure venting to outside
- Prevent leaks by regular inspections and maintenance
- Keep indoor relative humidity below 70 per cent (25-50 per cent is best)
- Timely remediation of any water leakage (within 48 hours)
- Adequate maintenance of heating, ventilation and air conditioning (HVAC systems through filter changes, scheduled cleaning and inspections)
- Ensure proper drainage around buildings, with the ground sloping away from foundations

The New York City Health Department has developed a protocol that is the standard followed in North America and listed as a resource by all major health and safety agencies. Their "Guidelines on Assessment and Remediation of Fungi in Indoor Environments" can be accessed at: www.nyc.gov/html/doh/html/epi/moldrpt1.shtml

Biocides

Biocides, like bleach, used to be recommended to kill moulds. They are not known to be any more effective than soap and water in killing moulds, and do not completely kill all of the spores, allowing for regrowth. Biocides of industrial strength should only be applied by remediation professionals. The only effective way to eliminate mould is to remove contaminated areas or objects.

Inspection

The hallmark of large mould deposits is that they can be seen or smelled. It is important not to damage or disturb mould growths until they are safely removed, as this causes their spores to become airborne and then staff is exposed by inhalation or skin contact.

Health Canada⁴ provides guidelines for investigation and a four-point inspection protocol:

- Establish the cause, nature and extent of fungal contamination
- Assess the risk of adverse effects on the health of building occupants
- Manage the microbial problem(s)
- Return the building to satisfactory level of performance

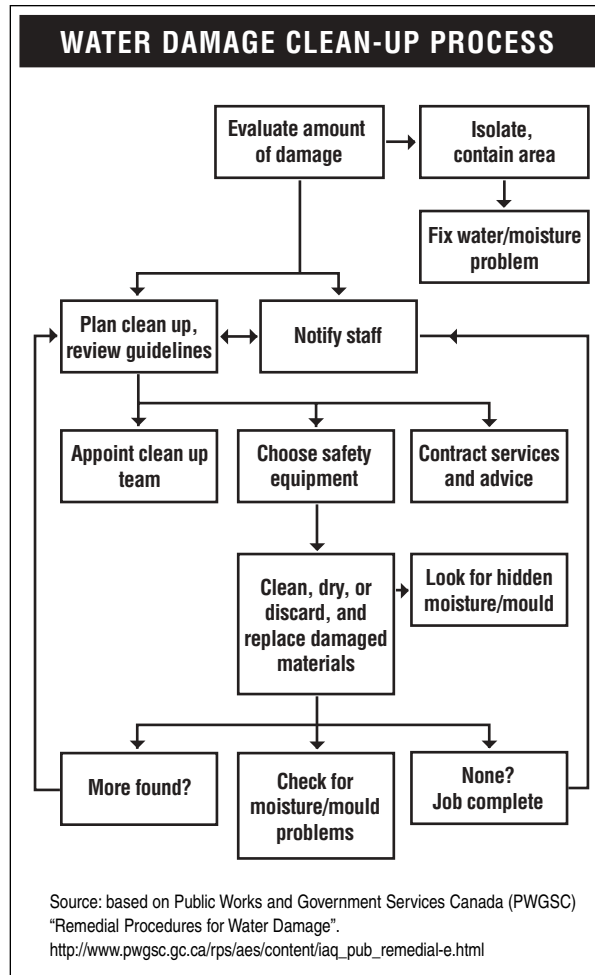
Testing for mould is complicated, and should only be undertaken by reputable specialists. Sampling can be done by scraping or swiping, and air monitoring and

Areas to inspect closely:

basements, crawl-spaces, window and door frames, carpets, ceiling tiles, wallpaper, books/papers, insulation, furniture and the HVAC system.

Look for:

wet, slimy, discoloured surfaces that may vary in colour (black, red, green) due to the type of mould involved. A musty smell is a sure sign that mould may be present.



other moisture monitoring can be done to assist with identifying mould or its causes. Boroscopes can be used to look behind enclosed spaces, with minimal disturbance of the area.

Resources

American Industrial Hygiene Association
www.iaha.org

CAW, Health & Safety Manual for Health Care Workers (Biological Hazards – Moulds and Fungus)
www.caw.ca

CCOHS, Mould in the Workplace, A Basic Guide
www.ccohs.ca

OHCOW
www.ohcow.on.ca

CMHC, Fighting Mold – The Homeowners' Guide
www.cmhc-schl.gc.ca/en/co/maho/yohoyohe/momo/momo_005.cfm

OSSTF Protective Services Department, Hazard Alert – The Fungus Among Us
www.osstf.on.ca/www/cbcommittee/hs/cungus.html

U.S. Environmental Protection Agency, "Mold Remediation in Schools and Commercial Buildings"
www.epa.gov/iaq/molds/mold_remediation.html

WHSC

www.whsc.on.ca

Health Canada

www.hc-sc.gc.ca/ewh-semt/pubs/air/fungal-fongique/index_e.html

Notes

1 Workers Health and Safety Centre, Resource Lines, Mould: No amount mildew, Fall 2001

2 CCOHS, The Health and Safety Report Volume 2, Issue 2, Mould has no place – in the workplace, February 2004

3 CCOHS

4 Health Canada, Fungal Contamination in Public Buildings: Health Effects and Investigation Methods, 2004

Diagram source: *Mould in the Workplace, A Basic Guide*, (Health and Safety Pocket Guides), page 60, Canadian Centre for Occupational Health and Safety (CCOHS), 2004. Reproduced with the permission of CCOHS, [2007].