POLICY & PROCEDURE NUMBER: ***H&S 3.14***
DEPARTMENT: *Administration* **SUBJECT:** *Mould*

APPROVAL DATE: April 2005 **REVISION DATE:** January 2015
REVISION DATE: March 2016; Oct. 2019 **REVIEW DATE:** March 2017

PURPOSE:

To ensure that immediate and appropriate action is taken whenever mould or mould-like substances are exposed during construction or renovations to any of the County's Homes to ensure resident and staff safety.

Hazard Summary:

Workers and the public may be exposed to mould on water-damaged building materials inside buildings, and during building maintenance and repair operations. The most common types of mould are generally not hazardous to healthy individuals–but some moulds may be hazardous to certain individuals.

People who have asthma, bronchitis, hay fever, other allergies, or have weakened immune systems are more likely to react to mould. The most common symptoms are runny nose, eye irritation, skin rash, cough, congestion and aggravation of asthma. Symptoms usually disappear after mould exposure stops. Most often, there are no known long-term consequences to workplace exposures.

Hazard Locations:

Moulds (fungi) are present everywhere–indoors and outdoors.

Any building may have mould. However, buildings with a history of water leaks, floods, fires and problems with indoor air quality (e.g. poor humidity control, lack of fresh air) should be considered at greater risk of mould growth. Water-damaged drywall, wood materials, jute, wallpaper, and cardboard are prone to fungal growth.

All moulds need water to grow. Mould can grow anywhere there is water damage, high humidity or dampness. Most often moulds are confined to areas near the source of water. When mouldy materials become damaged or disturbed, mould spores can be released into the air. Exposure occurs if people inhale the spores.

Precautions:

The sustained and/or extensive growth of any visible mould on the interior surfaces of a building is unacceptable. Mould growth on the interior surfaces of buildings is a risk factor for health problems.

Moisture problems (flooding, leaks, water intrusion, condensation, etc.) in buildings are the primary reason for mould growth. These moisture problems should be the focus of assessment and control efforts, followed by clean-up, remediation of contaminated materials, periodic inspections, and preventive and remedial maintenance. Health and Safety inspections should include observations and/or recommendations:

Mold prevention tips include:

- Repairing plumbing leaks and leaks in the building structure as soon as possible.
- Looking for condensation and wet spots. Fix source(s) of moisture incursion problem(s) as soon as possible.
- Preventing moisture from condensing by increasing surface temperature or reducing the moisture level in the air (humidity). To increase surface temperature, insulate or increase air circulation. To reduce the moisture level in the air, repair leaks, increase ventilation (if outside air is cold and dry), or dehumidify (if outdoor air is warm and humid).
- Keeping HVAC drip pans clean, flowing properly, and unobstructed.
- Performing regularly scheduled building/ HVAC inspections and maintenance, including filter changes.
- Maintaining indoor relative humidity below 70% (25 - 60%, if possible).
- Cleaning and drying wet or damp spots as soon as possible.
- Providing adequate drainage around buildings and sloping the ground away from building foundations. Follow all local building codes.
- Pinpointing areas where leaks have occurred, identifying the causes, and taking preventive action to ensure that they do not reoccur.

Occupants of buildings contaminated with mould should be advised of the presence of the mould and given information on the health effects of mould.

Legal Requirements:

Employers are required by section 25(2)(h) of the Occupational Health and Safety Act to take every precaution reasonable in the circumstances for the protection of workers.

The Occupational Health and Safety Act places a responsibility on constructors (section 23), employers (section 25), and supervisors (section 27) to ensure the health and safety of workers. This includes protecting workers from mould in workplace buildings. Various sections of the Industrial, Construction, Mining or Health Care regulations may also apply to maintenance and remediation activities.

PROCEDURE:

1. Whenever mould or mould-like substances are exposed during any construction or renovation project, all work will cease immediately and the room in which the substance has been exposed will be closed and no further use will be made of the space until authorization is ordered by the Director of Homes and Seniors Services/Administrator or designate, Manager of Support Services and the Corporate Facilities Manager.

2. The Corporate Facilities Manager shall attend to the Home immediately and shall be responsible to supervise and authorize any work that is required to correct the problem.

3. The Corporate Facilities Manager, in collaboration with the Director of Homes and Seniors Services/Administrator or designate and Public Health will identify the Level of Remedial Clean-up that is required.

4. At Level 3 and 4, the Director of Homes and Seniors Services/Administrator or designate shall the contact Human Resources department Health and Safety Coordinator for the County to ensure reporting occurs to the Ministry of Labour. The Director of Homes and Seniors Services/Administrator or designate shall ensure that a Critical Incident Report is initiated for the Ministry of Health and Long-Term Care at either Level 3 or 4 depending on the requirements of the Critical Incident Reporting system.

Mold Remediation/Cleanup Methods

The purpose of mold remediation is to correct the moisture problem and to remove moldy and contaminated materials to prevent human exposure and further damage to building materials and furnishings. Porous materials that are wet and have mold growing on them may have to be discarded because molds can infiltrate porous substances and grow on or fill in empty spaces or crevices. This mold can be difficult or impossible to remove completely.

As a general rule, simply killing the mold, for example, with biocide is not enough. The mold must be removed, since the chemicals and proteins, which can cause a reaction in humans, are present even in dead mold.

A variety of cleanup methods are available for remediating damage to building materials and furnishings caused by moisture control problems and mold growth. The specific method or group of methods used will depend on the type of material affected. Some methods that may be used include the following:

Wet Vacuum

Wet vacuums are vacuum cleaners designed to collect water. They can be used to remove water from floors, carpets, and hard surfaces where water has accumulated. They should not be used to vacuum porous materials, such as gypsum board. Wet vacuums should be used only on wet materials, as spores may be exhausted into the indoor environment if insufficient liquid is present. The tanks, hoses, and attachments of these vacuums should be thoroughly cleaned and dried after use since mold and mold spores may adhere to equipment surfaces.

Damp Wipe

Mold can generally be removed from nonporous surfaces by wiping or scrubbing with water and detergent. The recommended product for cleaning is “Mould Control”. It is important to dry these surfaces quickly and thoroughly to discourage further mold growth. Instructions for cleaning surfaces, as listed on product labels, should always be read and followed.

HEPA Vacuum

HEPA (High-Efficiency Particulate Air) vacuums are recommended for final cleanup of remediation areas after materials have been thoroughly dried and contaminated materials removed. HEPA vacuums also are recommended for cleanup of dust that may have settled on surfaces outside the remediation area. Care must be taken to assure that the filter is properly

seated in the vacuum so that all the air passes through the filter. When changing the vacuum filter, the remediator should wear a respirator, appropriate personal protective clothing, gloves, and eye protection to prevent exposure to any captured mold and other contaminants. The filter and contents of the HEPA vacuum must be disposed of in impermeable bags or containers in such a way as to prevent release of the debris.

Disposal of Damaged Materials

Building materials and furnishings contaminated with mold growth that are not salvageable should be placed in sealed impermeable bags or closed containers while in the remediation area. These materials can usually be discarded as ordinary construction waste. It is important to package mold-contaminated materials in this fashion to minimize the dispersion of mold spores. Large items with heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before being removed from the remediation area. Some jobs may require the use of dust-tight chutes to move large quantities of debris to a dumpster strategically placed outside a window in the remediation area.

Use of Biocides

The use of a biocide, such as chlorine bleach, is not recommended as a routine practice during mold remediation, although there may be instances where professional judgment may indicate its use (for example, when immuno-compromised individuals are present). In most cases, it is not possible or desirable to sterilize an area, as a background level of mold spores comparable to the level in outside air will persist. However, the spores in the ambient air will not cause further problems if the moisture level in the building has been corrected.

Biocides are toxic to animals and humans, as well as to mold. If you choose to use disinfectants or biocides, always ventilate the area, using outside air if possible, and exhaust the air to the outdoors. When using fans, take care not to extend the zone of contamination by distributing mold spores to a previously unaffected area. **Never mix chlorine bleach solution with other cleaning solutions or detergents that contain ammonia because this may produce highly toxic vapors and create a hazard to workers**.

Some biocides are considered pesticides, and some provinces require that only registered pesticide applicators apply these products in schools, commercial buildings, and homes. Make sure anyone applying a biocide is properly licensed where required.

Fungicides are commonly applied to outdoor plants, soil, and grains as a powder or spray. Examples of fungicides include hexachlorobenzene, organomercurials, pentachlorophenol, phthalimides, and dithiocarbamates.

Do not use fungicides developed for outdoor use in any indoor application, as they can be extremely toxic to animals and humans in an enclosed environment.

When you use biocides as a disinfectant or a pesticide, or as a fungicide, you should use appropriate PPE, including respirators. Always, read and follow product label precautions. It is a violation of Federal (EPA) law to use a biocide in any manner inconsistent with its label direction.

Mold Remediation Guidelines

This section presents remediation guidelines for building materials that have or are likely to have mold growth. The guidelines are designed to protect the health of cleanup personnel and other workers during remediation. These guidelines are based on the size of the area impacted by mold contamination. Please note that these are guidelines; some professionals may prefer other remediation methods, and certain circumstances may require different approaches or variations on the approaches described below. If possible, remediation activities should be scheduled during off-hours when building occupants are less likely to be affected.

Although the level of personal protection suggested in these guidelines is based on the total surface area contaminated and the potential for remediator or occupant exposure, professional judgment always should play a part in remediation decisions. These remediation guidelines are based on the size of the affected area to make it easier for remediators to select appropriate techniques, not on the basis of research showing there is a specific method appropriate at a certain number of square feet. The guidelines have been designed to help construct a remediation plan. The remediation manager should rely on professional judgment and experience to adapt the guidelines to particular situations. When in doubt, caution is advised. Consult an experienced mold remediator for more information.

Level I: Small Isolated Areas (10 sq. ft. or less) - e.g., ceiling tiles, small areas on walls.

- Remediation can be conducted by the regular building maintenance/housekeeping staff as long as they are trained on proper clean-up methods, personal protection, and potential health hazards. Respiratory protection (e.g., N-95 disposable respirator) is recommended. Gloves and eye protection should be worn.

- The work area should be unoccupied. Removing people from spaces adjacent to the work area is not necessary, but is recommended for infants (less than 12 months old), persons recovering from recent surgery, immune-suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).

- Containment of the work area is not necessary. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.

- Contaminated materials that cannot be cleaned should be removed from the building in a sealed impermeable plastic bag. These materials may be disposed of as ordinary waste.

- The work area and areas used by remediation workers for egress should be cleaned with a damp cloth or mop and a detergent solution.

- All areas should be left dry and visibly free from contamination and debris.

Level II: Mid-Sized Isolated Areas (10 - 30 sq. ft.) - e.g., individual wallboard panels.

- Remediation can be conducted by the regular building maintenance staff. Such persons should receive training on proper clean-up methods, personal protection, and potential health hazards. Respiratory protection (e.g., N-95 disposable respirator) is recommended. Gloves and eye protection should be worn.

- The work area should be unoccupied. Removing people from spaces adjacent to the work area is not necessary, but is recommended for infants (less than 12 months old), persons recovering from recent surgery, immune-suppressed people, or people with chronic inflammatory lung diseases (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).

- Surfaces in the work area that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/debris and prevent further contamination.

- Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.

- Contaminated materials that cannot be cleaned should be removed from the building in a sealed impermeable plastic bag. These materials may be disposed of as ordinary waste.

- The work area and areas used by remediation workers for egress should be HEPA vacuumed and cleaned with a damp cloth or mop and a detergent solution.

- All areas should be left dry and visibly free from contamination and debris.

Level III: Large Isolated Areas (30 - 100 square feet) - e.g., several wallboard panels.

Industrial hygienists or other environmental health and safety professionals with experience performing microbial investigations and/or mold remediation should be consulted prior to remediation activities to provide oversight for the project.

The following procedures may be implemented depending upon the severity of the contamination:

- It is recommended that personnel be trained in the handling of hazardous materials and equipped with respiratory protection (e.g., N-95 disposable respirator). Gloves and eye protection should be worn.

- Surfaces in the work area and areas directly adjacent that could become contaminated should be covered with a secured plastic sheet(s) before remediation to contain dust/ debris and prevent further contamination.

- Seal ventilation ducts/grills in the work area and areas directly adjacent with plastic sheeting.

- The work area and areas directly adjacent should be unoccupied. Removing people from spaces near the work area is recommended for infants, persons having undergone recent surgery, immunosuppressed people, or people with chronic inflammatory lung diseases. (e.g., asthma, hypersensitivity pneumonitis, and severe allergies).

- Dust suppression methods, such as misting (**not soaking**) surfaces prior to mediation, are recommended.

- Contaminated materials that cannot be cleaned should be removed from the building in sealed impermeable plastic bags. These materials may be disposed of as ordinary waste.

- The work area and surrounding areas should be HEPA vacuumed and cleaned with a damp cloth or mop and a detergent solution.
- All areas should be left dry and visibly free from contamination and debris.
- Note: If abatement procedures are expected to generate a lot of dust (e.g., abrasive cleaning of contaminated surfaces, demolition of plaster walls) or the visible concentration of the mold is heavy (blanket coverage as opposed to patchy), it is recommended that the remediation procedures for Level IV be followed.

Level IV: Extensive Contamination (greater than 100 contiguous square feet in an area).

Industrial hygienists or other environmental health and safety professionals with experience performing microbial investigations and/or mold remediation should be consulted prior to remediation activities to provide oversight for the project.

The Corporate Facilities Manager in collaboration with the Director of Homes and Seniors Services/Administrator will contact a mold remediation specialist:

Ontario Mould Specialists Ltd.
11656 Plank Rd.
Eden, ON
N0J 1H0
Toll-free: 1-855-OMS-4YOU
(1-855-667-4968)
Phone: 519-866-3137

The following procedures may be implemented depending upon the severity of the contamination:

Personnel trained in the handling of hazardous materials and equipped with:

- Full face piece respirators with HEPA cartridges;
- Disposable protective clothing covering entire body including both head and shoes; and gloves.

Containment of the affected area:

- Complete isolation of work area from occupied spaces using plastic sheeting sealed with duct tape (including ventilation ducts/grills, fixtures, and other openings);
- The use of an exhaust fan with a HEPA filter to generate negative pressurization; and
- Airlocks and decontamination room.

If contaminant practices effectively prevent mold from migrating from affected areas, it may not be necessary to remove people from surrounding work areas. However, removal is still recommended for infants, persons having undergone recent surgery, immune-suppressed people, or people with chronic inflammatory lung diseases. (e.g.,asthma, hypersensitivity pneumonitis, and severe allergies).

Contaminated materials that cannot be cleaned should be removed from the building in sealed impermeable plastic bags. The outside of the bags should be cleaned with a damp cloth and a detergent solution or HEPA vacuumed in the decontamination chamber prior to their transport to uncontaminated areas of the building. These materials may be disposed of as ordinary waste.

The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth or mopped with a detergent solution and be visibly clean prior to the removal of isolation barriers.

Personal Protective Equipment (PPE)

Any remediation work that disturbs mold and causes mold spores to become airborne increases the degree of respiratory exposure. Actions that tend to disperse mold include: breaking apart moldy porous materials such as wallboard; destructive invasive procedures to examine or remediate mold growth in a wall cavity; removal of contaminated wallpaper by stripping or peeling; using fans to dry items or ventilate areas.

The primary function of personal protective equipment is to prevent the inhalation and ingestion of mold and mold spores and to avoid mold contact with the skin or eyes. The following sections discuss the various types of PPE that may be used during remediation activities.

Skin and Eye Protection

Gloves protect the skin from contact with mold, as well as from potentially irritating cleaning solutions. Long gloves that extend to the middle of the forearm are recommended. The glove material should be selected based on the type of substance/ chemical being handled. If you are using a biocide such as chlorine bleach, or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane, or PVC. If you are using a mild detergent or plain water, ordinary household rubber gloves may be used.

To protect your eyes, use properly fitted goggles or a full-face piece respirator. Goggles must be designed to prevent the entry of dust and small particles. Safety glasses or goggles with open vent holes are not appropriate in mold remediation.

Protective Clothing

While conducting building inspections and remediation work, individuals may encounter hazardous biological agents as well as chemical and physical hazards. Consequently, appropriate personal protective clothing (i.e., reusable or disposable) is recommended to minimize cross-contamination between work areas and clean areas, to prevent the transfer and spread of mold and other contaminants to street clothing, and to eliminate skin contact with mold and potential chemical exposures.

Disposable PPE should be discarded after it is used. They should be placed into impermeable bags, and usually can be discarded as ordinary construction waste. Appropriate precautions and protective equipment for biocide applicators should be selected based on the product manufacturer's warnings and recommendations (e.g., goggles or face shield, aprons or other protective clothing, gloves, and respiratory protection).

Resources: Alert: Mould in Workplace Buildings; Ministry of Labour website, ISSN: 1195-5228 Issued: December 2000

ELGIN ST. THOMAS PUBLIC HEALTH

Indoor Air Quality
Mould Fact Sheet

What is mould?
Mould is a fungus that is found in both indoor and outdoor environments. There are many different types of mould, some of which may have a negative impact on indoor air quality.

What makes mould grow?
In order for mould to grow indoors, a source of moisture must be present.

What are the health risks of mould?
People who suffer from asthma may find an increase in their symptoms due to mould exposure. However, health effects depend on exposure and individual sensitivities. Symptoms of mould exposure in people who have already been diagnosed with asthma may include:

- Allergic reactions, such as runny nose, skin rash and sneezing
- Eye, nose and throat irritation
- Wheezing and shortness of breath
- Coughing and phlegm build-up

Who is at increased risk?
Individuals with weak immune systems and those with pre-existing health conditions, such as asthma, are most at risk of developing health effects from exposure to mould.

Do I need to test for mould?
Testing is generally not recommended. Although it will identify the types of mould that are present, it will not identify the source of moisture. Also, results from testing cannot be used to assess health risk, as there are currently no set exposure limits for mould. If mould is visible, elimination of the moisture source and clean-up using proper procedures should be followed to remove the mould.

How do I prevent mould growth?
Mould requires moisture to grow. Therefore, removing the source of moisture will prevent mould from growing. Steps to prevent mould include:

- Repairing water leaks promptly

- Removing moisture produced from cooking, dishwashing and bathing by running exhaust fans and/or opening windows
- Discarding clutter, as mould has the ability to grow on anything that collects dust and holds moisture

How do I clean up mould in my home?
The size of the area affected by mould can be small, moderate or extensive. The three general sizes of mould and clean- up methods are described as follows:

1. **Small Area**: No more than three patches, each patch smaller than a square meter in size.
   - Mould areas of this size can be cleaned effectively by the homeowner
   - Protective gear including safety goggles, a disposable dust mark (N95 or equivalent) and household gloves are recommended
   - Clean by scrubbing washable surfaces with an unscented detergent solution
   - Sponge with a clean, wet rag
   - Quickly dry the cleaned surface
2. **Moderate Area**: More than three patches of mould, each smaller than one square meter, OR one or more patches larger than a square meter but smaller than three square meters.
   - Professional assessment is strongly recommended; however, it is possible to clean moderate sized areas as long as proper procedures are followed and protective equipment is worn
   - A disposable dust mast (N95 or equivalent), safety goggles and household rubber gloves are required
   - Before cleaning, isolate the area to be cleaned by taping plastic sheeting to the walls and ceiling. Next, vacuum surfaces with a High Efficiency Particulate Air (HEPA) filter, or a vacuum that is exhausted to the outside
   - Scrub the mouldy area using unscented detergent
   - Rinse by sponging the area with a clean, wet rag
   - Dry the cleaned surface quickly
3. **Extensive Area**: Single patch, larger in area than a sheet of plywood.
   - DO NOT attempt to clean the problem yourself. Seek assistance from a professional who will determine how to eliminate and clean the mould properly

Please note, bleach is not recommended for mould clean-up.

For more information contact:
Health Canada online at www.hc-sc.gc.ca
Canadian Mortgage and Housing Corporation online at www.cmhc-schl.gc.ca

Health Protection Department
(519) 631-9900, ext 225

ELGIN ST. THOMAS
PUBLIC HEALTH

MOULD ASSESSMENT AND REMOVAL COMPANIES

Elgin St. Thomas Public Health does not endorse the use of any product or service. The following is a non-inclusive list of companies that assess mould and remove it.

Winmar Property Damage Specialists
175 Stronach Crescent
London, ON N5V 3G5
(519) 451-0000
Website: www.winmar.ca
Email: London@winmar.ca

Servicemaster
20529 Purple Hill Road, RR#2
Thorndale, ON N0M 2P0
(519) 461-9156
Website: www.servicemaster.ca
Email: servicemasteroflondon@bellnet.ca
FAX: (519) 461-9158

Steam Canada
22-70 Pacific Court
London, ON N5W 3R5
(519) 659-4444
Website: www.steamcanada.com
Email: services@steamcanada.com

IHEAS INC.
Industrial Hygiene & Environmental
Advisory Services Inc.
987 Byronmanor Road
London ON N6K 5B1
(519) 657-5105
Email: iheas@hotmail.com

Tony Steddy
Medi-Air Inc
1200 Fewster Drive
Mississauga, ON L4W 1A1
(905) 625-8884
Email: info@medi-air.com

ALS Laboratory Group
29-309 Exeter Road
London, ON N6L 1C1
519-652-6044
Website: www.alsglobal.com

Web Addresses

A brief guide to mould, moisture and your home, US Environmental Agency
http://www.epa.gov/mold/moldguide.html

Air Quality – Environmental and Workplace Health, Health Canada
http://www.hc-sc.gc.ca/ewh-semt/air/index-eng.php

Mould, Dampness and Humidity – Indoor Air Pollutants, Health Canada
http://www.hc-sc.gc.ca/ewh-semt/air/in/poll/mould-moisissure/index-eng.php

Fighting Mold – The Homeowners' Guide, Canada Mortgage and Housing Corporation
http://www.cmhc-schl.gc.ca/en/co/maho/yohoyohe/momo/momo_005.cfm

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