

Occupational Health and Safety Bulletin



Protection of Workers during Remediation of Marijuana Grow Operations

This document provides guidance to Alberta employers and workers to help ensure the protection of workers during remediation activities for safe re-occupancy of former marijuana grow operations (MGO). It is important to distinguish between the hazards associated with an “active” MGO and those with a “shut-down” MGO. An active MGO is an illegal activity which may present additional safety hazards. Once shut down, these risks no longer apply, but other hazards may be present. This document only considers the hazards that remain once the MGO has been dismantled, criminal activity has stopped and related materials (plants and bulk chemicals) have been removed. This document is intended to assist employers and workers in identifying and understanding the hazards that may be involved in the remediation of these operations. It is not intended to provide step-by-step procedures for remediation professionals and homeowners.

The information provided in this document is solely for the user’s information and convenience and, while thought to be accurate and functional, it is provided without warranty of any kind. If in doubt, please refer to the current edition of the *OHS Act*, OHS Regulation and OHS Code. The Crown, its agents, employees or contractors will not be liable for any damages, direct or indirect, arising out of the use of the information contained in this guidance document.

This document is current to December 31, 2014. The law is constantly changing with new legislation, amendments to existing legislation, and decisions from the courts. It is important to keep up with these changes and be informed of the current law.

Alberta  Government

What health and safety hazards could be present in a MGO remediation?

Remediation work for former MGOs can present a number of health and safety hazards. Overall, these hazards fall into four broad categories:

1. Safety hazards resulting from the physical and structural changes to the building
2. Hazards due to alterations in ventilation, wiring and electrical power
3. Presence of biological hazards such as mould due to excess moisture
4. Presence of chemical hazards from chemical spills and residues, the use of pesticides and fertilizers as well as materials such as asbestos that may be present in the building structure.

These hazards are described in more detail in the attached table.

Other hazards include sharp edges from debris as well as slips and falls on wet surfaces, chemical hazards from cleaners or other chemicals used during the remediation and remediation activities may increase airborne levels of biological contaminants such as mould. If electrical power has been disconnected to the building, airborne chemical hazards may be created by exhaust from diesel powered equipment. Workers involved in clean-up or remediation activities may be exposed to other hazards such as asbestos in building materials, lead (mostly from lead paint), mercury (fluorescent lights), heat stress and sprains and strains due to the physical work involved. Long work hours and repetitive work may cause fatigue and compromise a worker's ability to work safely.

Is the building safe to enter?

First and foremost, the employer must ensure that the building is structurally safe before workers enter the structure. Physical and structural changes are often made to buildings that house MGOs resulting from activities in the building. These may include cuts in walls and wood framing members and changes to ventilation such as alterations to the furnace, vents and gas appliances. If workers will be conducting demolition or renovation activities during the remediation, the employer must also ensure that these activities will not compromise the building structural integrity. The employer may need to retain a structural engineer to assess the building if there is any uncertainty about its structural integrity.

What about electrical safety?

There may be damage to electrical equipment in the building due to alterations to these systems. The employer must ensure that electrical hazards are assessed and controlled before power is turned back on to the building. This may require retaining an electrician to check the system and ensure that it meets the requirements with the Canadian Electrical Code. If there are areas in the building where there is standing water that cannot be pumped out prior to beginning work due to plumbing system leaks and electrical equipment is required, ground fault circuit interrupters must be used.

Should I be concerned about mould?

Mould needs three items to grow; air, a food source and a source of moisture. Organic material and wet building materials are ideal substrates upon which mould will grow. Mould is naturally present in our environment and background levels will be present in most buildings, however high levels of moisture are often present in MGOs due to the cultivation of the plants which may promote higher levels of mould growth. Mould growth can start within 24 hours of materials becoming wet. Most healthy people have little or no reaction when exposed to mould. If symptoms do occur they are most likely irritation effects to the skin, eyes or respiratory tract. These symptoms are usually temporary and will go away when exposure to mould stops.

Air monitoring for mould is generally very difficult to do with any degree of accuracy and the results are hard to interpret. This is because mould is naturally present in our environment and there are no standards (such as occupational exposure limits) for mould exposure. If building materials have been wet for more than 48 hours or visible mould growth is observed, there is no need to conduct air monitoring. However, once remediation activities start, air monitoring may be valuable to assess control measures such as enclosure and ensure workers outside the remediation area are not exposed to elevated airborne mould levels.

In general when dealing with mould, there are three steps to follow:

1. Find the source of moisture intrusion and ensure that it is stopped or repaired.
2. Dry out and clean wet materials if it is possible to do so (refer to the attached table for guidance).
3. Remove and replace wet/mould contaminated materials that cannot be dried or cleaned.

Guidance on procedures to follow during the remediation of mould contaminated structures and materials have been developed by a number of organizations.

For more information:

Do I Have a Workplace Mould Problem?

<http://work.alberta.ca/documents/WHS-PUB-BH018.pdf>

Best Practices: Mould at the Work Site

<http://work.alberta.ca/documents/WHS-PUB-BH019.pdf>

What chemical hazards may be present?

Chemical use is not specific to MGOs since cleaning products, paints, pesticides are often used in homes and workplaces. When the initial hazard assessment of the building is done, signs of chemical spills or residues such as staining, odours or mineral deposits should be checked for. These may be present near drains, on floor areas where water travels to drains or in bathrooms or kitchens that may have served as chemical mixing rooms for THC (tetrahydrocannabinol) extraction, pesticides, fertilizers and acids and bases.

Most commonly, chemicals that may be used in MGOs include:

Pesticides: Used to control insects, powdery mildew and other pests. In former MGOs, the areas of most concern may include bathrooms, tubs and kitchens where chemicals were mixed. Most of the time, residues are found to be minimal.

Fertilizers: Used to promote plant growth or flower productions and are typical of those used in vegetable gardens or hydroponic cultures

Other chemicals: May include solvents used for THC extraction such as isopropyl alcohol, methyl hydrate, naphtha or ethanol. These products can be flammable and toxic. Acids and bases may be used to change the pH of hydroponic solutions or soil and these products can be corrosive and toxic. Grow areas and chemical mixing rooms are important areas to investigate for signs of chemical contamination.

Chemicals found in an MGO should be removed and disposed of in accordance with Alberta environmental legislation. Where known, the locations, volumes and identity of chemicals found should be recorded. This information can assist personnel performing the cleanup as it may provide guidance on locations in the building where cleanup efforts should be focused. If no information is available on chemicals found on site, interior surfaces should be cleaned with detergent and water and dried thoroughly. Stained or discoloured surfaces or articles may need to be replaced.

Should I be concerned about asbestos?

There are a wide variety of building materials in which asbestos was historically used and these materials remain in many structures in Alberta. Some examples include stucco, plaster, drywall mud, flooring materials, ceiling tiles and insulation. If a structure was built prior to 1990, there is a potential for asbestos containing materials to be present. It is not possible to confirm if a structure contains asbestos by visual examination; a proper survey must be done and samples of the building materials collected and analyzed for asbestos content. This should be done before renovation or demolition activities begin. If renovations are done in a structure containing asbestos, the asbestos containing materials in the area of the renovation must be enclosed, encapsulated or removed prior to the renovation. If a structure is to be demolished, the asbestos containing materials must be removed prior to demolition. Alberta has developed a best practice document that contains guidance on how to assess and abate asbestos. Many of the work practices used for asbestos abatement are similar to those used for mould abatement.

For more information:

Alberta Asbestos Abatement Manual

<http://work.alberta.ca/documents/Asbestos-Abatement-Manual.pdf>

Asbestos Containing Materials in Buildings to be Demolished

http://work.alberta.ca/documents/WHS-PUB_ASB003.pdf

Could carbon monoxide be a hazard?

Carbon monoxide is a colourless, odourless gas that is usually formed from the incomplete combustion of fuels such as gasoline or diesel. Carbon monoxide enters the body through the lungs. Since it has no colour or odour and is not irritating, workers may be unaware that they have been exposed. Carbon monoxide affects a person by reducing the amount of oxygen available to the body. Health effects can include impaired judgment, headaches, nausea, dizziness and fainting. Carbon monoxide may become a hazard due to modifications made to ventilation systems and since power may have been disconnected from the building it may be necessary to use diesel, gasoline or propane powered equipment during remediation activities. These may include heaters (for drying equipment), fans and electrical generators. Carbon monoxide is generated when fuels are burned and levels can quickly build up in the work area if the exhaust from the equipment is not ventilated outside of the building. When using this type of equipment indoors, it is important to open the windows and doors and ventilate the exhaust outside to prevent carbon monoxide build-up inside the building.

For more information:

Carbon Monoxide at the Work Site

http://work.alberta.ca/documents/WHS-PUB_ch031.pdf

What about heat stress?

Since workers will be doing manual tasks in warm and humid environments while wearing protective equipment, the employer should have procedures in place to address heat stress. Early signs of heat stress may include headache, dizziness, fatigue and dehydration. This can progress to other health conditions such as heat edema (swelling of the extremities), rashes, cramps, fainting and heat stroke. Heat stroke is a life-threatening condition and requires immediate medical attention.

For more information:

Best Practice: Working Safely in the Heat or Cold

http://work.alberta.ca/documents/WHS-PUB_GS006.pdf

How do I assess the hazards that may be present at the work site?

Before work starts, the employer must conduct a hazard assessment. The employer must assess both the hazards that may be present at the work site in addition to the health and safety hazards that may be introduced by remediation activities. Once the hazards have been identified, suitable controls must be selected to ensure protection of workers while they are on the work site.

What are the obligations under the Alberta Occupational Health and Safety (OHS) legislation?

The Alberta *OHS Act* applies to most employers and workers in Alberta. The employer has an overall obligation to protect the health and safety of all workers on their work site. In turn, workers must ensure their health and safety and the health and safety of others around them.

Along with the other requirements in the OHS legislation, the employer must:

- conduct a hazard assessment and ensure that the appropriate controls are available and in place to protect workers who may be working in MGOs or involved in remediation activities;
- develop safe work procedures and provide training to workers on these procedures. Workers must participate in this training;
- ensure that all equipment used at the work site is in proper working condition and used in accordance with the manufacturer specifications or specifications certified by a professional engineer;
- assess the potential exposure of workers who may be exposed to harmful substances. If there is an occupational exposure limit listed in the OHS legislation for a substance present at the work site, the employer must ensure that exposure does not exceed the occupational exposure limit;
- ensure that the personal protective equipment selected is appropriate for the hazards at the work site and meets the listed standards;
- if respiratory protective equipment is required, the employer must develop and implement a code of practice for respirator use, ensure that respirators are NIOSH approved, workers are fit tested for the equipment and workers are clean shaven where the equipment seals to the skin of the face if the effectiveness of the equipment depends on a facial seal; and
- ensure that workers have a way to properly decontaminate themselves and their protective clothing, tools and equipment before they leave the work site.

Depending on the nature of the work site and the activities to be done, the OHS legislation may have additional specific requirements that must be followed.

For more information:

OHS Contact Centre: 1-866-415-8690

OHS Act, Regulation and Code

<http://work.alberta.ca/occupational-health-safety/307.html>

OHS Code Explanation Guide

<http://work.alberta.ca/occupational-health-safety/3969.html>

Employer's Guide: Occupational Health and Safety

http://work.alberta.ca/documents/WHS-PUB_li009.pdf

Tips on Selecting an Occupational Health and Safety Consultant

<http://work.alberta.ca/documents/g009-Tips-On-Selecting-OHS-Consultant.pdf>

Workplace First Aiders and Legal Requirements

http://work.alberta.ca/documents/WHS-PUB_FA011.pdf

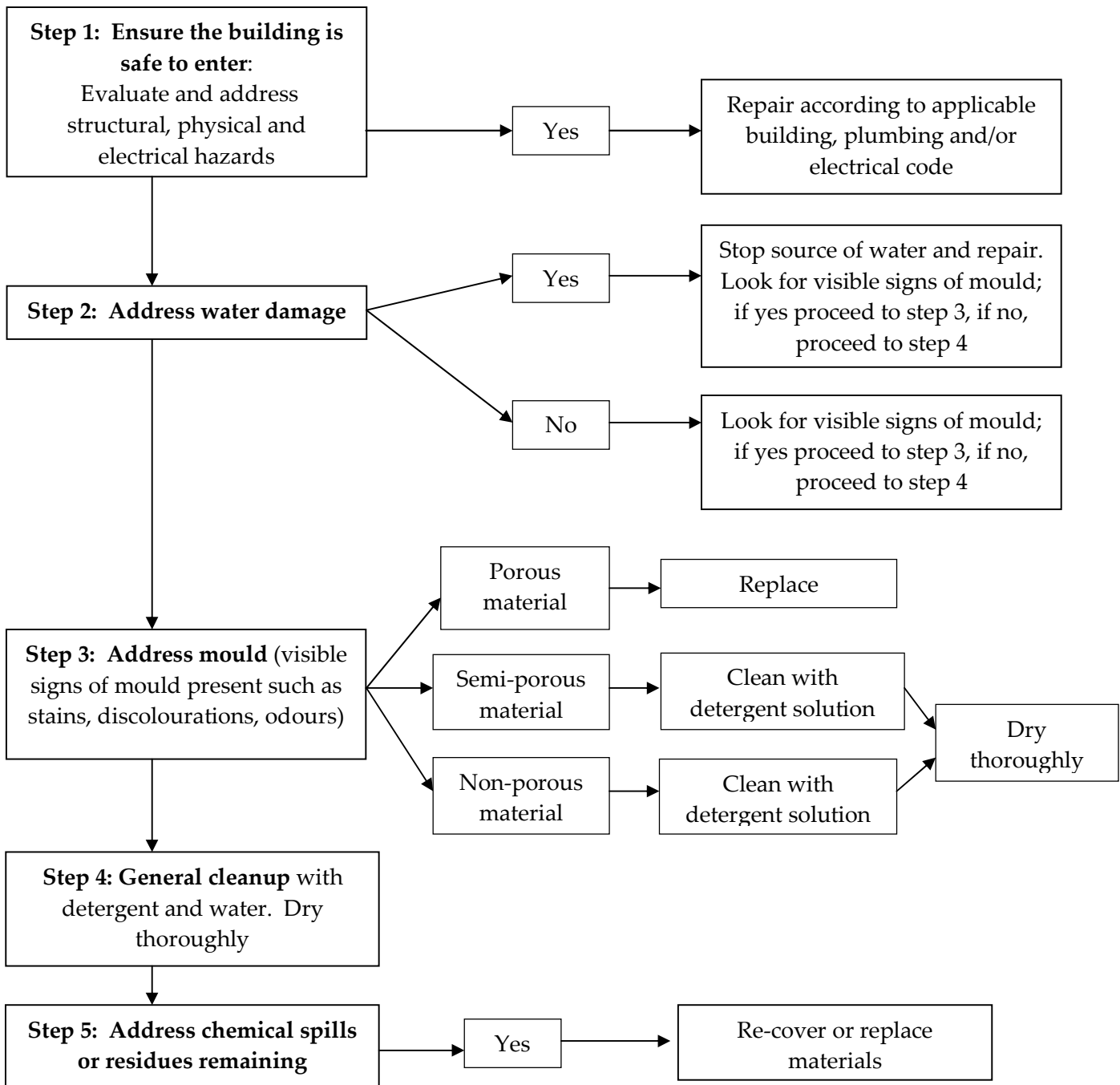
Hidden Danger: Hazardous Materials in Your Building

http://work.alberta.ca/documents/WHS-PUB_ch066.pdf

Respiratory Protective Equipment: An Employer's Guide

http://work.alberta.ca/documents/WHS-PUB_ppe001.pdf

Assessment of Actions to be Taken



Adapted from Recommendations for Safe Re-occupancy of Marijuana Grow Operations, National Collaborating Centre for Environmental Health, March 2009

Hazard Assessment Guidance for Former MGOs

Type of Hazard	Signs	Hazards	Controls
Alterations to building structure	<ul style="list-style-type: none"> Holes and cuts in walls or roof Cuts in structural members Structural damage on wood caused by moisture/mould Alterations to the foundation 	<ul style="list-style-type: none"> Building structure collapse Fall hazards 	Repair according to applicable code
Alterations to ventilation system	<ul style="list-style-type: none"> Disconnection of furnace exhaust duct Alteration of gas fireplaces Collection of carbon dioxide from furnace and hot water flues to plant growth area 	<ul style="list-style-type: none"> Carbon monoxide poisoning 	Repair and clean
Alterations to plumbing system	<ul style="list-style-type: none"> Plugging of drains Leaks in plumbing system 	<ul style="list-style-type: none"> Possibility of chemicals caught in solids in drains Potential cross-contamination of water supply Increased humidity and water damage (mould) 	<ul style="list-style-type: none"> Clean Stop leakage immediately and repair according to applicable code
Natural gas line	<ul style="list-style-type: none"> Makeshift/improvised connection 	<ul style="list-style-type: none"> Fire and explosion Displacement of oxygen 	Repair according to applicable code
Electrical alterations	<ul style="list-style-type: none"> Makeshift/improvised connection Bypasses and additional wiring 	<ul style="list-style-type: none"> Fire Electrocution 	Repair according to Canadian Electrical Code
Chemicals	<ul style="list-style-type: none"> Presence of chemical containers Visible staining on floors, drains, sinks, bathtub Chemical odours 	Chemical hazards ranging from toxicity, corrosivity to flammability (chemical may be unknown)	<ul style="list-style-type: none"> Clean surfaces and articles with visible residue using appropriate personal protective equipment using detergent and water solution Properly dispose of chemical containers Remove and replace articles or surfaces that

Type of Hazard	Signs	Hazards	Controls
			cannot be cleaned
Mould	<ul style="list-style-type: none"> • Visible water staining or damage • Visible mould growth • Elevated moisture readings in wall cavities 	Mould exposure (spores and volatile organic compounds)	<ul style="list-style-type: none"> • Stop and dry water intrusion immediately • Dry out or clean wet materials if possible • Discard wet or mouldy materials if they cannot be cleaned
Asbestos in building materials	May be present if building constructed prior to 1990	Asbestos exposure	<ul style="list-style-type: none"> • Assess structure to identify asbestos containing materials • Properly abate asbestos containing materials prior to demolition or renovation activities • Develop work procedures to ensure that asbestos containing materials are not disturbed if it is not necessary to do so
Lead paint	May be present in buildings in exterior/interior finishes	Lead exposure	<ul style="list-style-type: none"> • Assess structure to determine if lead paint is present • If lead is present, ensure that hazard is addressed during renovation or demolition activities that may disturb the material
Mercury in light fixtures, switches, gauges	May be present in fixtures or fluorescent light bulbs	Mercury exposure	Clean up broken light fixtures or bulbs using appropriate procedures and personal protective equipment

This table is adapted from Recommendations for Safe Re-occupancy of Marijuana Grow Operations, National Collaborating Centre for Environmental Health, March 2009

Guidelines for Response to Clean Water Damage within 24-48 Hours to Prevent Mould Growth

These guidelines are for damage caused by clean water. If the water source is contaminated with sewage or chemical or biological pollutants, then additional personal protective equipment and procedures will be required and the services of an experienced professional should be consulted.

Water-Damaged Material	Actions to be Taken
Books and papers	Discard non-valuable items. Photocopy valuable/important items and discard originals. Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet, backing, and subfloor – dry within 24 to 48 hours	Remove water with water extraction vacuum. Reduce ambient humidity levels with dehumidifier. Accelerate drying process with fans.
Ceiling tiles	Discard and replace.
Cellulose insulation	Discard and replace.
Concrete or cinder block	Remove water with water extraction vacuum.
Wallboard (gypsum board)	Best approach is to remove and discard. May be dried in place if there is no obvious swelling and the seams are intact. Ventilate the wall cavity, if possible.
Upholstered furniture	Remove water with water extraction vacuum. Accelerate drying process with dehumidifiers, fans, and/or heaters. It may be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture
Fibreglass insulation	Discard and replace.
Hard surface, porous flooring (Linoleum, Ceramic tile, Vinyl)	Vacuum or damp wipe with water and mild detergent and allow drying; scrub if necessary. Check to make sure under flooring is dry; dry under flooring if necessary
Non-porous, hard surfaces (Plastics, Metals)	Vacuum or damp wipe with water and mild detergent and allow to dry, scrub if necessary.
Window drapes	Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. Use caution when applying heat to hardwood floors. Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. Wet paneling should be pried away from wall for drying.
All Surfaces	Accelerate the drying process with dehumidifiers, fans, and/or heaters.

This table is adapted from information in the Alberta Infrastructure and Transportation document Mould in Indoor Environment Risk Assessment and Management Program Handbook (June 2006) and the USEPA document Mould Remediation in Schools and Commercial Buildings (2001).


Contact us:

Province-Wide Contact Centre

-  Edmonton
780-415-8690
-  Other locations
1-866-415-8690
(Toll Free)

Web Site

 www.work.alberta.ca


-  Deaf or hearing impaired
 - Edmonton 780-427-9999
 - Other locations 1-800-232-7215
(Toll Free)


Getting copies of *OHS Act*, Regulation & Code:

Queen's Printer

 www.qp.alberta.ca

Occupational Health and Safety

 <http://work.alberta.ca/occupational-health-safety/295.html>

 Edmonton 780-427-4952

Call any Government of Alberta office toll-free
Dial 310-0000, then the area code and telephone number you want to reach

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