

ASBESTOS



Asbestos is a general term used to describe a number of naturally occurring, fibrous minerals. Because of its strength, flexibility and ability to withstand high temperatures and chemicals, asbestos was commonly used in building materials in the past. Many University buildings built before 1980 contain some form of asbestos materials, such as:

- Sprayed asbestos fireproofing on structural steelwork in buildings
- Thermal insulation on heaters, boilers, pipes and other mechanical equipment
- Acoustic or decorative finishes on ceilings and walls
- Ceiling tiles and vinyl floor tiles
- The word 'friable' means the material can be crumbled, pulverized or powdered by hand pressure.

Asbestos-containing materials present a potential health risk when asbestos fibres become airborne and are inhaled into the lungs. Long term exposures have been associated with a variety of illnesses, including asbestosis, mesothelioma, and lung cancer.

Friable asbestos-containing materials, such as sprayed-on fireproofing or thermal pipe insulation, have a greater risk potential as damage to them can more easily result in release of fibres into the air. Nonfriable asbestos-containing materials, such as ceiling tiles or vinyl floor tiles, present a risk when the fibres which are bound or locked into the product are released as a result of significant abrasion or damage to the product.

Any work involving asbestos-containing materials must be carried out in keeping with the University's Asbestos Management Program, as well as Ontario's occupational health and safety legislation.

- Workers may come into contact with asbestos-containing materials:
 - When moving boxes or shelving units. Asbestos-containing material debris may be present on boxes or shelves, or may be found in between shelves and the walls.
 - When moving laboratory equipment that may have asbestos-containing gaskets. Before you move the equipment, make sure the "Safe to Remove Tag" is completed (see section on "Safe to Remove Tag"), and ask your supervisor to check that any asbestos-containing gaskets have been removed.
- Staff who may come into contact with asbestos-containing materials in the course of their work must complete the online Asbestos

Awareness training course

<http://www.ehs.utoronto.ca/Training/Learning.htm/>

This course instructs participants on how to recognize materials that may potentially contain asbestos. Such training will be scheduled by your supervisor in conjunction.

- Report the presence of any suspected asbestos-containing materials to your supervisor. Stop any work in close proximity to such materials until a procedure is in place, or you have been otherwise advised by your supervisor.
- An inventory and building survey of each University building has been prepared. The inventory lists friable and non-friable asbestos containing materials and identifies those materials that are confirmed or suspected of containing asbestos. A copy of the inventory is kept on location in the building and is available to building occupants and JHSCs. A list of designated buildings is available on the EHS website:

<http://www.ehs.utoronto.ca/resources/asbestos/asbestosawareness12.htm>

- Buildings and rooms with sprayed asbestos fireproofing are labeled with warning signs to indicate its presence.
- If you accidentally damage materials you suspect may contain asbestos, stop working immediately and contact your supervisor.

References:

1. University of Toronto Asbestos Management Policy and Program
2. University of Toronto Building Asbestos Inventory
3. Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, made under the Occupational Health and Safety Act.

MOULD



Moulds are rapidly growing microscopic organisms found throughout the natural world. Mould spores will always be present in indoor environments, either brought in via ventilation, windows or on clothes and shoes. Moulds only need three conditions to grow: suitable temperature, moisture & substrate. In indoor environments mould will usually grow in areas of high humidity or in areas where the building materials became wet as a result of flooding or leaks. Common sites for mould growth inside buildings include drywall, carpets, wood and wood products, ceiling tiles, paper products and insulation.

Workers may be exposed to mould on water damaged building materials 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. Health effects associated with exposure to mould include allergic reactions and toxic effects. The most common symptoms reported from exposures to mould in indoor environments include runny nose, eye irritation, cough, congestion, aggravation of asthma, headache and fatigue. Certain types of mould can cause infections in immuno-compromised individuals.

It is important for supervisors and workers to recognize visible mould growth and the conditions contributing to mould growth in order to take appropriate precautions.

Any employee who may come across mould in the course of his/her work should receive appropriate hazard awareness training, which will be scheduled by your supervisor in conjunction with the Office of Environmental Health & Safety.

All work involving mould must be conducted following the University of Toronto Procedures for Remediation of Fungi in Indoor Environments.

Prevention:

- Report any suspected mould contamination to your supervisor.
- Report any water intrusion (pipe leaks, floods etc.) to your supervisor immediately.

References:

- 1) The University of Toronto Mould Control Program

- 2) University of Toronto Procedures for Remediation of Fungi in Indoor Environments
- 3) Guideline on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health & Mental Hygiene

BIOLOGICAL HAZARDS



Biological agents can take many forms, including: bacteria, viruses, fungi, parasite, and blood and/or body fluids or objects contaminated by body fluids (e.g. used needles – see section on Used Needles). The risk posed by a biological agent varies with the particular agent and the way in which it is used.

Biological agents are used in some laboratories at the University of Toronto. Health Canada has classified biological agents according to Risk Groups (1 to 4) and described corresponding Containment Levels (1 to 4) required for work with these agents. Most University laboratories using biological agents operate as Containment Level 1 or 2 laboratories. We have Containment Level 3 laboratories at the University and these locations are secured against unauthorized entry and have special access and entry procedures.

Campus Services workers may occasionally be required to enter areas that were, or are, used as Containment Level 1 or 2 laboratories in order to move or remove furnishings and equipment. Campus Services workers may be required to pick up and transfer properly packaged waste or recyclable materials to a central collection location.

Hazardous waste materials must be labeled and packaged in a container that will allow them to be stored or transported without the danger of spillage, explosion or hazardous vapours escaping. The waste generator bears the primary responsibility for proper packaging and labeling. Labs using yellow bio-hazard pails must have a valid bio-hazard permit issued to them from the Environmental Health & Safety Office.

If you have any concerns regarding biological agents, contact Senior Biosafety Officer, Office of Environmental Health and Safety at 416-978-3981.

The Principal Investigator and the laboratory staff are responsible for performing any disinfection or sterilization procedure that may be required to render items safe for handling and removal from the laboratory. Employees should not touch any biological equipment until the appropriate and completed paper work (e.g. Safe to Remove Tag) is attached to the unit. Most laboratory wastes are not recyclable.

The University of Toronto manages the disposal of hazardous wastes through Environmental Protection Services (EPS) (Office of Environmental

Health and Safety). The hazardous waste disposal procedures, as outlined in the University's Laboratory Hazardous Waste Management Manual, are mandatory. It is a serious offence to pour hazardous substances into the drainage system.

- Laboratory Supervisors/Principal Investigators must provide for and enforce the proper disposal of hazardous wastes.
- Laboratory workers must follow procedures related to the proper disposal of hazardous wastes.
- Biological waste generators are responsible for:
 - collection of biological waste (sharps, liquids, solids) in appropriate containers;
 - proper labeling (CL 2 & 3) and storage until collected by EPS;
 - For CL 1 using Not Marked autoclave bags, if applicable
 - Storage of Needle and Blade containers until collected by EPS.
- Appropriate **training** for employees conducting work involving potential exposure to biohazardous materials will be scheduled by their supervisor, in conjunction with the Biosafety Officer.

USED NEEDLES AND GLASS STEMS

In the course of your work, Grounds staff may come across used needles and glass stems. Used needles should be treated as a biological hazard because they may contain infectious agents that can cause illness.

Picking up Used Needles and Glass Stems

1. Contact your supervisor and obtain appropriate equipment (gloves, yellow biohazard container, tool to pick up the needle (see #3)).
2. Wear gloves (latex, vinyl or nitrile).
3. Use pliers or tongs to pick up the needle or glass stem. Avoid making any direct contact with any part of the syringe.
4. Hold the needle or stem tip away from you. Be careful not to prick yourself with the sharp tip.
5. Place the needle or glass tip carefully into the yellow biohazard container.
6. Throw away the gloves.
7. Wash the pliers or tongs used to pick up the used needle or glass stem.
8. Wash hands thoroughly.



If you are injured by a used needle or glass stem

1. Allow the wound to bleed freely on your way to a sink.
2. Wash the wound with soap and water.
3. Apply disinfectant.
4. Report the incident to your supervisor as soon as possible.
5. Employee should be taken to the nearest emergency department.
6. Supervisor completes the Accident/Incident/Occupational Disease Form for Employees.

CHEMICAL HAZARDS



Chemicals and other hazardous materials used in your workplace may be harmful to your health and safety. Before you work with a chemical, you must first know how it can harm you and how you can protect yourself. Canada's Workplace Hazardous Materials Information System (WHMIS) legislation provides employees with information about the chemicals in their workplace through Labels, Material Safety Data Sheets (MSDS), and Worker Training.

- Training on chemical safety and WHMIS will be scheduled by your supervisor if you will be working in or around chemicals or other hazardous materials.
- A generic WHMIS training is available online on the website of Office of Environmental Health and Safety. Workplace specific WHMIS training will be provided by your supervisor.
- In order to work safely with a chemical product, you must first know what the product is, how it may harm you, and the right precautions to take in order to handle the chemicals safely.
- Always read the chemical container label (supplier or workplace label) and MSDS before you use the product so that you know the hazards and proper handling procedures.
- Recognize the WHMIS symbols and hazard classes (see end of this section).
- Designated substances are regulated under the Occupational Health & Safety Act, and include asbestos, acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride.
- Use the proper personal protective clothing for the chemicals you handle.
- Be prepared for emergencies by knowing where emergency equipment (eyewash fountain, first aid kit, fire extinguisher, etc) is located and how to use them.

Know the product!

- Know about each product you work with and its potential hazards. Read the label, and consult the MSDS before you use the product. Know the specific hazard - is it flammable? Is it corrosive? How can it affect your health? Can you detect it by odour?
- Never handle chemicals unless you have been properly trained in how to use, handle, store and dispose them. Your supervisor will ensure that you receive such training.
- Understand the information about WHMIS. If you have any questions about WHMIS or the products you work with, ask your supervisor.

Label all containers!

- All chemical products used should be in properly labeled containers. If you transfer chemicals to a second container, make sure that you attach a workplace label to it. This will let all workers know what is in the container. This will also reduce the chance that incompatible chemicals will be accidentally mixed together.
- Replace any damaged and illegible supplier labels with a proper workplace label.

Use proper procedures for handling chemicals!

- When pouring or spraying liquid chemicals, use eye goggles to prevent any liquid from getting into your eyes. If some does splash into your eyes, flood the eyes with plenty of tap water for 15 minutes to wash out the chemicals. For further details, consult the University of Toronto Emergency Eyewash and Shower Standard.
- Practice good personal hygiene in order to avoid exposure by ingestion. Do not eat, drink, smoke or keep food in areas where chemicals are used or stored. Wash your hands before you eat, drink or smoke, and at the end of your shift.
- Good housekeeping leads to a safer workplace. Keep your work area clean and uncluttered. Store chemicals and equipment properly.
- Store chemicals properly. Secure the lids of containers when not in use. If they are accidentally knocked over, a secure lid will help prevent a spill. All stored chemicals must have labels identifying the product and the appropriate hazard warnings. To prevent dangerous mixing of incompatible products, cleaning agents like chlorine bleach should be stored as far away from other products like bowl cleaner.
- Obey all safety rules. Do not take shortcuts when using hazardous materials. Use chemicals only for the purpose they were intended.

Use proper personal protective equipment!

- Use personal protective clothing and equipment as required for the job.
- Use safety glasses or goggles if there is any chance of getting chemicals in your eyes. For further details, consult the University's Protective Eye and Facewear Standard.
- Wear suitable gloves - use the proper type which will protect you from the specific chemicals you work with. Inspect the gloves before putting them on. A common complaint with cleaners is dermatitis which often results from chemicals being in contact with the skin. For further details, consult the University of Toronto Protective Glove Standard.
- Use an approved respirator that fits and protects you properly, as directed by your supervisor. Your supervisor will ensure that you are provided with a proper fitting respirator and that you receive proper training in using it. For further details, consult the University of Toronto Respiratory Protection Program.

Be prepared for any emergency involving chemicals!

- Know who to call in case of an emergency.
- Know where emergency equipment (eyewash fountain, first aid kit, fire extinguisher, etc.) are located. Know what to do or who to call in case of a chemical spill:

St. George: (416) 978-7000 during business hours or (416) 978-2222 outside of regular business hours
UTSC: (416) 287-7333
UTM: (905) 569-4333

- Report any accidents, emergencies or any other unusual conditions at work to your supervisor.

Examples of Hazardous Chemicals used in Grounds

The following table lists examples of some of the chemicals that are used by Grounds. Do not regard this as a complete list of harmful chemicals used in your workplace. Note that suppliers can change the ingredients in their products over time, and the hazardous properties of these products will also change.

Product	Examples of Hazardous Ingredients
Gasoline	Benzene
Windshield Fluid	Methanol
Degreasers and Detergents	Methyl Chloride Perchloroethylene
Liquid Nitrogen (transported across	Nitrogen

Product	Examples of Hazardous Ingredients
campus)	
WD 40 products	Stoddard solvent Petroleum base oil
Oil and other Lubricants	See MSDS
Ethylene glycol	Ethylene glycol (100% or solution)

Working with Cryogenic Materials

Cryogenic liquids are liquefied gases that are kept in their liquid state at very low temperatures. Examples of cryogenic liquids on University of Toronto campuses include liquid nitrogen and liquid helium.

What should I know about transporting cryogenic liquids?

You may be required to transport cryogenic containers across campus. There are a few basic safety precautions that you should be aware of when you are dealing with cryogenic liquid containers:

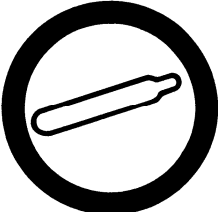

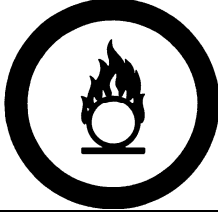

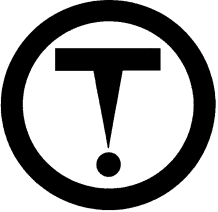



1. Be very careful! Do not move a container by rolling it on its lower rim.
2. Always use a hand truck, cart, or other proper handling device. Use a strap to secure the container to the handcart.
3. Keep the cryogenic liquid containers upright at all times except for the minor tilting on the cart during transport.
4. If you are using an elevator to transport the cryogenic liquid, make sure there are no passengers and ensure that no passengers get on the elevator while the cryogen is being transported.
5. Do NOT get in the elevator yourself. Use service elevators that you can lock and send to the proper floor. Buildings with no service elevators may have specific procedures in place such as signage to warn the public.

For further details, consult the University of Toronto Control Program for Liquid Cryogen Transfer Facilities and Standard for Inert Cryogenic Liquid Usage in Laboratory.

Transporting Ethylene Glycol

Ethylene glycol is commonly used for heating and cooling systems. You may be asked to transport drums of ethylene glycol occasionally. Here some tips on moving these drums:

1. Review the MSDS which contains health and safety information. If you do not know where it is, ask the Building Engineer.
2. Visually inspect the drum before moving it. Make sure the container is properly sealed, that there are no leaks and the drum is in good condition.
3. As with cryogenic liquids, do not move the container by rolling it on its rims. Use a hand truck, cart or other proper materials handling device.

<p>Class A Compressed Gas</p> 	<p>Class B Flammable and Combustible Material</p> 
<p>Class C Oxidizing Material</p> 	<p>Class D Poisonous and Infectious Material: <i>Division 1: Material Causing Immediate and Serious Toxic Effects</i></p> 
<p>Class D Poisonous and Infectious Material: <i>Division 2: Material Causing Other Toxic Effects</i></p> 	<p>Class D Poisonous and Infectious Material: <i>Division 3: Biohazardous Infectious Material</i></p> 
<p>Class E Corrosive Material</p> 	<p>Class F Dangerously Reactive Material</p> 

RADIATION HAZARDS



Radioactive materials are used in many laboratories and on all campuses of the University. Radioisotopes present a potential hazard via ingestion and/or inhalation, even if you are not in direct contact with them. For these reasons, the use of radioactive materials is strictly controlled. Radioactive materials are limited to authorized individuals in permitted areas, and strict requirements are in place to control exposure due to radioactive materials. Examples of controls include purchasing approvals and inventory documentation, worker training, inspections, and radiation monitoring for both dose rates and contamination.

- Appropriate radiation protection training will be scheduled by your supervisor, in conjunction with the Radiation Protection Service.
- Grounds Services staff are trained to recognize the radiation warning sign (above).
- Grounds Services staff are trained to not touch or remove any materials labeled with the radiation warning sign.
- Report any spill or potential contamination discovered in any lab or work area to your supervisor immediately.
- All equipment, materials in work areas, and labs in which radioactive materials are or have been used must be decontaminated prior to maintenance, transfer or disposal being conducted.
- The Radiation Protection Service has prepared notices listing the steps taken to assure the radiation safety of such materials and labs.
- If there is any concern with such materials or labs, please contact: (416)-978-2028.

Prevention

- Do not touch anything that has the radiation warning symbol.
- Do not eat, drink or smoke in labs.
- Be sure to wash your hands with soap and water after leaving areas with the radiation warning symbol, and before eating and drinking.

ULTRAVIOLET (UV) RADIATION



Working outdoors can expose employees to ultraviolet (UV) radiation. Because sunlight is the main source of UV radiation, a worker can receive a high amount of UV exposure if they work outdoors for a prolonged period of time. Some UV exposure is beneficial to our health.

Short-term UV overexposure can cause:

- Darkening of the skin, burns, erythema (reddening of the skin).
- Watery eyes, blurred vision, and pain in the eyes.

Long-term UV overexposure can cause:

- Increased risk of skin cancer.
- Increased risk of cataracts.

Prevention

When you work outside, make sure to take the following precautions:

- Avoid midday sun. If possible schedule outdoor work before 11:00 a.m. or after 2:00 p.m.
- Wear clothing that is tightly woven in order to block sunlight (e.g. mesh tank tops are not appropriate).
- Wear a hat that will shade your face, ears, and neck.
- Wear sunglasses.
- Apply a waterproof sunscreen on your exposed skin with a sun protection factor of 15 or greater. Use sunscreen that has both UVA and UVB protection.
- Take breaks indoors or in shady areas.