1. Introduction

The Environmental Health & Safety Standard Operating Procedure (SOP) for asbestos was developed by the Department of Environmental Health & Safety in accordance with the University’s Policy Statement on Health and Safety and to ensure compliance with the Ontario Occupational Health & Safety Act and Regulations.

2. Applicable Legislation

- Occupational Health and Safety Act
- Ont. Reg. 490/09 – Designated Substances
- Ont. Reg. 278/05 – Asbestos on Construction Projects and in Buildings and Repair Operations
- Canadian Standards Association (CSA) Z94.4-11

3. Definitions

Asbestos
Asbestos is a generic term describing a number of naturally occurring fibrous, hydrated mineral silicates that differ in chemical composition and are suitable for use as non-combustible, non-conducting and chemically resistant materials. Different types of asbestos which may be found in buildings are chrysotile, crocidolite, amosite, tremolite, actinolite or anthrophyllite.

Asbestos Abatement/Remediation
Corrective action taken to minimize or eliminate the hazards associated with asbestos-containing materials, including repair, encapsulation, enclosure or removal.

Asbestos-Containing Material
Any material found to contain 0.5% or greater content of asbestos by dry weight.

Asbestos Inventory
The Asbestos Inventory is a record of the location of all asbestos-containing materials present within a building, or those suspected of containing asbestos. The Inventory is available to any employee or contractor whose work may result in the disturbance of such materials. The Inventory will be made available online.

Friable Material
Asbestos containing materials may be classified as friable or non-friable. A friable material is defined as material that, when dry, can be crumbled, pulverized or powdered by hand pressure. This category includes material that falls apart at the slightest touch, as well as products with a relatively hard surface.
Friable materials present a greater hazard of releasing asbestos fibres than non-friable materials. Common friable asbestos-containing building materials include sprayed fibrous fireproofing, thermal pipe insulation, and decorative or acoustic texture plasters. Common non-friable asbestos-containing building materials include asbestos cement boards, ceiling tiles and vinyl floor tiles.

**Non-Friable Material**

A non-friable asbestos product is one in which the asbestos fibres are bound or locked into the product matrix, so that the fibres are not readily released. Such a product would present a risk for fibre release only when it is subject to sanding or cutting with electric power tools. Examples of non-friable asbestos products include vinyl asbestos floor tiles, acoustic ceiling tiles, and asbestos cement products.

4. **Responsibilities**

This section outlines the responsibilities within the University for the implementation of this SOP.

**4.1 Directors and Department Heads:**

Ensure that pertinent construction project managers, supervisors and employees are notified of their responsibilities for working with asbestos.

Ensure that all employees who may come in contact with asbestos have received instruction in asbestos through courses offered by the Department of Environmental Health & Safety, and departmental instruction on the specific locations of asbestos.

Ensure that procedures, equipment and materials appropriate for the specific work locations under his/her authority are provided to protect the health and safety of all employees.

Ensure that all employees are given adequate supervision and instruction on the hazards of asbestos.

Ensure that the components of this SOP and the Occupational Health and Safety Act and Regulations are implemented in all facilities under his/her authority.

Ensure that all employees who are required to work in close proximity to asbestos that could be disturbed are informed about the online Asbestos Inventory and can access the database.
4.2 Physical Plant Services Project Managers, Managers and Supervisors:

Prior to calling for tenders for any construction-related activity, or repair work on equipment or machinery, determine whether any asbestos containing material will be disturbed. Building materials are identified as confirmed or presumed asbestos materials in the online Asbestos Inventory database. Materials that have been identified as “presumed” require sampling or need to be treated as asbestos containing material, in the case of friable spray on insulation, as though it contains a form of asbestos other than chrysotile. Appendix B, Asbestos Sampling Requisition, must be filled out and forwarded to the Department of Environmental Health & Safety to initiate sampling of materials which are presumed to contain asbestos or materials which have not previously been identified.

Prior to any building demolition, ensure that all asbestos has been removed from the structure.

Provide any contractor in advance of receiving tenders a designated substance report which includes a copy of all drawings, plans or specifications identifying the location of asbestos containing material.

Classify all asbestos work under his/her jurisdiction as Type 1, Type 2 or Type 3, in consultation with the Department of Environmental Health & Safety.

Ensure that employees of the University are only assigned to perform Type 1 asbestos work.

Ensure that any Type 2 or Type 3 Asbestos work is done by a qualified external contractor, who specializes in such work and has a well-established reputation for quality workmanship in the field of asbestos control and remediation. (Contractor Qualifications – Appendix D).

Supervisors must be knowledgeable about the locations of, hazards and standard operating procedures associated with working with asbestos, the education and training requirements for working with asbestos, the appropriate standard operating procedures for all such locations under his/her authority, as well as the other requirements of this program.

Ensure that employees are familiar with the hazards and that all employees receive training as required by this Standard Operating Procedure and only perform work in accordance with the level of training received.

Ensure that all employees under his/her authority are informed about the location of asbestos-containing materials that may be disturbed in the course of their duties and that employees and building occupants are notified of scheduled asbestos work within their workplace.

Ensure that all employees use appropriate equipment and materials for working with asbestos at all
Arrange for the clean-up, sealing, enclosure or removal of any fallen or deteriorated asbestos.

Provide notification (Asbestos Work Requisition – Appendix C) to the Department of Environmental Health & Safety prior to the commencement of asbestos removal and repair operations which specifies the extent of the work to be used in the development and updating of the Asbestos Inventory. Provide copies of Bill of Lading for Asbestos removal to the Department of Environmental Health & Safety.

In the event that previously unidentified asbestos-containing material is discovered in the course of work, ensure that employees immediately stop all work and notify the Department of Environmental Health & Safety.

Ensure that contractors who will be performing abatement work perform the work in accordance with our asbestos policy and Ontario Regulation 278/05 – “Designated Substance – Asbestos on Construction Projects and in Building and Repair Operations”.

4.3 The Department of Environmental Health & Safety

Ensure that each department is aware of responsibilities under this Standard Operating Procedure.

Review this Standard Operating Procedure (SOP) periodically to ensure that it meets all legislative requirements, and amend as necessary.

Develop and update an online database of Asbestos Inventory.

Provide technical advice and recommendations regarding asbestos identification, hazard evaluation, and control measures related to asbestos.

Maintain dated records of inspection results, hazard assessments and test results.

Decommission equipment containing asbestos, and provide means of disposal of such equipment.

Perform sampling and testing of suspected asbestos-containing material.

Review all Asbestos Work Requisitions / Permits (Appendix C) and provide final approval.

Ensure that competent and reputable external contractors provide clearance testing following any Type 3 asbestos removal operations.
Maintain dated records of all clearance testing performed.

Provide ongoing asbestos training and education programs.

Consult with the Joint Health and Safety Committees and receive recommendations regarding the measures and procedures contained in this SOP.

4.4 Employees

Be familiar with the hazards associated with working with asbestos and the pertinent standard operating procedures for asbestos.

Work in accordance with written standard operating procedures for asbestos.

Perform only Type 1 asbestos removal operations and follow the procedures as outlined in Appendix E.

Use the appropriate equipment and materials provided for working with asbestos.

Promptly report any known or suspected asbestos-containing material to his or her supervisor.

4.5 External Contractors

Provide written acknowledgement that they will comply with the requirements of the Ontario Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations and the University’s Asbestos Standard Operating Procedure.

Ensure that all employees under their control are trained in asbestos hazards and control procedures prior to conducting any work which may disturb asbestos, and provide documentation of training to the department which is contracting the work.

Provide documentation of training for all employees and supervisors under their control, who are involved in Type 3 asbestos removal. The training must meet the requirements of O.Regulation 278/05 under the Occupational Health and Safety Act and be approved by the Ministry of Training, Colleges and Universities (MTCU) effective November 1, 2007.

Ensure that all employees under their control are informed about the location of asbestos-containing materials that may be disturbed.

In the event that previously unidentified asbestos-containing material is discovered in the course of work, ensure that employees immediately stop all work and notify the department contracting the
5. Classification of Asbestos Work

Type 1 Asbestos Work

The following are Type 1 operations:
- Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area less than 7.5 square metres and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - The material is wetted to control the spread of dust or fibres, and
  - The work is done only by means of non-powered hand-held tools.
- Removing less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used.
- Type 1 Removal Procedures are outlined in Appendix E

Type 2 Asbestos Work

The following are Type 2 operations:
- Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.
- The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.
- Enclosing friable asbestos-containing material.
- Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.
- Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut drilled abraded, ground, sanded or vibrated.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-
containing material if,
- The material is not wetted to control the spread of dust or fibres, and
- The work is done only by means of non-powered hand-held tools.
- Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.
- Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.
- Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.
- An operation that,
  - Is not mentioned in any of the above paragraphs
  - May expose a worker to asbestos, and
  - Is not classified as a Type 1 or Type 3 operation.

Type 3 Asbestos Work

The following are Type 3 operations:
- The removal or disturbance of more than one square metre of friable asbestos-containing material during the repair, alteration, maintenance, or demolition of all or part of a building, aircraft, ship, locomotive, railway car or vehicle or any machinery or equipment.
- The spray application of a sealant to friable asbestos-containing material.
- Cleaning or removing air handling equipment, including rigid ducting but not including filter, in a building that has sprayed fireproofing that is asbestos-containing material.
- Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos-containing materials.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.
- Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986.

6. Training

All University employees who will be responsible for managing, overseeing or coordinating work that may disturb asbestos-containing material shall receive appropriate training and education in keeping with the level of asbestos work they may be involved with.
All University employees who work around and who may disturb asbestos containing material shall receive training and education commensurate with their degree and risk of exposure.

Half-day asbestos awareness sessions, designed to make employees aware of the uses, locations and hazards of asbestos, work practices around asbestos and asbestos management policies in the workplace is mandatory for all Physical Plant Services, Residence, Community Housing and Information Technology Service employees who may come into contact with asbestos through the course of the work, and is required training in order to perform Type 1 procedures.

Full-day asbestos management, designed to provide information on the uses, locations and hazards of asbestos, discuss the different impacts of friable and non-friable asbestos materials, outline work practices around asbestos and asbestos management in the workplace, is mandatory for all management employees responsible for both day to day management of the facility and for ongoing modifications, renovations or ultimately demolition of facilities. This will include all Physical Plant Services Construction Managers, Department of Environmental Health and Safety, Maintenance Supervisors, Community Housing Managers and ITS Supervisors.

Training records for courses offered through the Department of Environmental Health & Safety will be held by the Department of Environmental Health & Safety. Certificates will be issued to all employees who successfully complete the training and copies will be provided to the departments.

7. Inspection and Assessment

The University must maintain an Asbestos Inventory of the locations of known or suspected asbestos-containing material.

Information for the Asbestos Inventory will be compiled from a room-by-room survey conducted by a specialized consultant, recognized for expertise in the field of asbestos.

The Inventory for each building will contain the following information:
- building address
- location within the building of the material
- indication of if it is known to be asbestos, or suspect

Inspections will be conducted annually and will be co-ordinated by The Department of Environmental Health & Safety.

A permanent record of all Inspections and Assessments will be maintained by the Department of Environmental Health & Safety.
8. Sampling

The Department of Environmental Health & Safety will perform sampling on material suspected of containing asbestos, and will maintain documentation of the results of all testing. Asbestos can be found in a wide variety of materials (Appendix A).

Sampling frequency shall be in accordance with Ontario Regulation 278/05, subsection 3(3), Table 1 - Bulk Material Samples.

The procedure for sampling shall be as follows:

- Personal Protective Equipment (as required) will be worn by the person obtaining the sample.
- Remove a piece of the suspect material with the fingers (gloves must be worn) and place into a small zip lock bag or plastic vial.
- Encapsulate or cover hole after sampling (encapsulant or duct tape).
- Label container.
- Document pertinent information including: building/tunnel location, date, room and area sampled (photographs may be used also).

Samples will be sent to a laboratory which is accredited by the National Institute for Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) or the AIHA Laboratory Accreditation Program (IHLAP).

The laboratory will provide the Department of Environmental Health & Safety with a Certificate of Analysis which will provide documentation of test procedures used, and results of testing.

Information from the Certificate of Analysis will be included in the Asbestos Inventory.

9. Repair and Maintenance

Hazard evaluations will be conducted to prioritize the criteria, and list areas which require asbestos abatement/remediation.

To assist in the hazard evaluation, the following factors related to a given asbestos-containing material are to be considered:

- the condition of the material
- the accessibility of the material to area occupants
- the level of activity and movement in the area of the material
- the degree of friability of the material
- asbestos content of the material
- the type of asbestos
- the location of the material (ex: in a supply or return air plenum)
- the degree of exposed surface area of the material
- the presence of water damage

A formal request for repair and maintenance will be forwarded from the Department of Environmental Health & Safety to the appropriate Department Head, Manager or Supervisor, based on the hazard evaluation. Photographs may be used to help identify specific areas which require abatement/remediation.

The Department of Environmental Health & Safety will maintain documentation of Requests for Repair, Documentation of repairs completed, Bill of Ladings for asbestos removal and re-evaluations.
APPENDIX A

USES OF ASBESTOS IN BUILDINGS

Asbestos has been widely used in buildings and some uses continue today. The following list does not include every product/material that may contain asbestos. It is intended as a general guide to show which types of materials may contain asbestos.

- Cement pipes
- Cement wallboard
- Cement Siding
- Asphalt Floor Tile
- Vinyl Floor Tile
- Vinyl Sheet Flooring
- Floor Backing
- Ceiling Tiles and Lay-in panels
- Acoustical Plaster
- Decorative Plaster
- Textured Paints/Coatings
- Spray-Applied Insulation
- Blown-in Insulation
- Fireproofing Materials
- Taping compounds
- Chalkboards
- High temperature Gaskets
- Laboratory Hoods/Table Tops
- Laboratory Gloves
- Fire Blankets
- Fire Curtains
- Elevator Equipment Panels
- Mechanical System Insulation
- Elevator Brake Shoes
- HVAC Duct Insulation
- Boiler Insulation
- Breaching Insulation
- Ductwork Flexible Fabric Connections
- Cooling Towers
- Pipe Insulation
- Heating and Electrical Ducts
- Electrical Panel Partitions
- Electrical Cloth
- Electric Wiring Insulation
- Roof Shingles
- Roofing felt
- Base Flashing
- Thermal paper products
- Fire Doors
- Caulking/Putties
- Adhesives
- Wallboard
- Joint Compounds
- Vinyl Wall Coverings
- Spackling Compounds
## APPENDIX B

### ASBESTOS SAMPLING REQUISITION

This form must be completed by Physical Plant Services Construction Project Manager, Manager, Supervisor or representative, and forwarded to the Department of Environmental Health & Safety along with floor plan. Sampling will only be conducted on areas **not** formally identified, or listed as suspect material on the Asbestos Inventory database.

<table>
<thead>
<tr>
<th>Project Co-ordinator or Manager:</th>
<th>Telephone No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title/Description:</td>
<td></td>
</tr>
<tr>
<td>Building Name/Description:</td>
<td></td>
</tr>
<tr>
<td>Building Name:</td>
<td>Turnaround Time: Regular □ Rush □</td>
</tr>
<tr>
<td>Room No:</td>
<td>Room Name/Description:</td>
</tr>
<tr>
<td>Date of Request:</td>
<td>Anticipated Start Date:</td>
</tr>
<tr>
<td>Material To Be Sampled:</td>
<td></td>
</tr>
</tbody>
</table>
AUTHORIZATION

The following section is to be completed by the Department requesting sampling of suspected asbestos-containing material:

Name: ____________________  Date: ____________________
APPENDIX C

ASBESTOS WORK REQUISITION/PERMIT

This form must be completed by Physical Plant Services Construction Project Manager, Manager, Supervisor or representative, and forwarded to the Department of Environmental Health & Safety along with floor plan, prior to the commencement of any asbestos work. Ensure the work DOES NOT commence until a signed and authorized permit is obtained. In the event of an Emergency or cutting an access hole (less than 1 metre squared) paperwork should be submitted immediately following completion of Emergency Removal or cutting of the access hole.

<table>
<thead>
<tr>
<th>Project Co-ordinator or Manager:</th>
<th>Telephone No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title/Description:</td>
<td></td>
</tr>
<tr>
<td>Building Name/Description:</td>
<td></td>
</tr>
<tr>
<td>Room No:</td>
<td>Room Name/Description:</td>
</tr>
<tr>
<td>Date of Request:</td>
<td>Anticipated Start Date:</td>
</tr>
<tr>
<td>Anticipated Completion Date:</td>
<td></td>
</tr>
<tr>
<td>Description of Work Being Undertaken:</td>
<td></td>
</tr>
</tbody>
</table>

Contractor Information (Completing the Work)

<table>
<thead>
<tr>
<th>Contact:</th>
<th>Phone No:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ASBESTOS PROCEDURES
(Check applicable Removal Type)

- ( ) Type 1 Removal or Repairs
- ( ) Type 2 Removal or Repairs
- ( ) Type 3 Removal or Repairs

Project Specifics – Include Safety Measures being used

<table>
<thead>
<tr>
<th>RESTRICTIONS:</th>
<th>(Check all applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ) Restricted Hours of Work</td>
<td>Specify Hours:</td>
</tr>
<tr>
<td>( ) Weekend Work</td>
<td>Specify Hours:</td>
</tr>
<tr>
<td>( ) Occupant Access Required</td>
<td>Specify Areas/Equipment:</td>
</tr>
<tr>
<td>( ) HVAC Shut Down</td>
<td>Specify Hours and Zones:</td>
</tr>
<tr>
<td>( ) Other Systems Shut Down</td>
<td>Specify:</td>
</tr>
<tr>
<td>( ) Other:</td>
<td></td>
</tr>
</tbody>
</table>

AUTHORIZATION

The following section is to be completed by the Department of Environmental Health and Safety:

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
<th>Signature:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Restrictions:
APPENDIX D

CONTRACTOR QUALIFICATIONS

Only those contractors with established reputations for quality workmanship in the field of asbestos control and remediation will be considered for work at any Queen’s University owned or occupied facility.

Before a contractor may be considered for work at any Queen’s University owned or occupied facility, the contractor must first be able to demonstrate compliance with all of the following requirements.

(   ) The firm and all supervisory staff must have a minimum of three (3) years prior experience in the field of asbestos control and remediation.

(   ) All supervisory staff must have a recognized certificate proving attendance at an asbestos removal training course (2 day minimum duration).

(   ) The firm must carry and/or be able to provide Commercial General Liability Insurance endorsed specifically to provide coverage in respect of any claim arising from the exposure, clean-up, removal, containment, testing or monitoring of asbestos. Said policy must provide coverage in an amount not less than two (2) million dollars ($2,000,000.00) per occurrence and must also be issued on an Occurrence-based form.

(   ) The firm must provide a valid WSIB Clearance Certificate for the period of time that the work is occurring.

(   ) The firm must provide information outlining the company’s Health and Safety Program including an indicator of their accident frequency in comparison to their WSIB Rate Group.

(   ) Be licensed to transport asbestos waste and/or demonstrate that sufficient arrangements have been secured with a licensed waste hauler to ensure proper handling and final disposal of all waste at a licensed landfill site.

(   ) Provide proof that all employees have had instruction on the hazards of asbestos exposure, the use of respirators and training on all other aspects of asbestos controls and procedures.

(   ) Provide proof that all employees (workers and supervisors) who will be involved in Type 3 Asbestos work have received training in accordance with O. Regulation 278/05 under the Occupational Health and Safety Act.

(   ) Provide written acknowledgement that they have read and will comply with the requirements of the Ontario Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations and the University Asbestos Standard Operating Procedure.
APPENDIX E

TYPE 1 REMOVAL PROCEDURES

The Measures and Procedure to be taken in Type 1 tasks can be summarized as follows:

1. Before beginning work, visible dust shall be removed with a damp cloth or a vacuum equipped with a HEPA filter from any surface in the work area, including the thing to be worked on, if the dust on that surface is likely to be disturbed.

2. The spread of dust from the work area shall be controlled by measures appropriate to the work to be done including the use of drop sheets of polyethylene or other suitable material that is impervious to asbestos.

3. In the case of removal of drywall with asbestos-containing joint compound (or assumed) the material shall be wetted before and kept wet during the work to control the spread of dust or fibres, unless wetting would create a hazard or cause damage.

4. A wetting agent shall be added to water that is to be used to control the spread of dust and fibres.

5. Frequently and at regular intervals during the doing of the work and immediately on completion of the work,
   i. dust and waste shall be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in an asbestos waste container and
   ii. drop sheets shall be wetted and placed in an asbestos waste container, as soon as practicable after subparagraph I has been complied with.

6. Drop sheets shall not be reused.

7. After the work is completed, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused, but shall be wetted and place in an asbestos waste container.

8. After the work is completed, barriers and portable enclosures that will be reused shall be cleaned, by using a vacuum equipped with a HEPA filter or by damp wiping.

9. Barriers and portable enclosures shall not be reused unless they are rigid and can be cleaned thoroughly.

10. Compressed air shall not be used to clean up and remove dust from any surface.

11. Eating, drinking, chewing or smoking shall not be permitted in the work area.

12. If a worker requests that the employer provide a respirator to be used by the worker, the employer shall provide the worker with a NIOSH approved air purifying half mask respirator with high efficiency (100 rating) filters, and the worker shall wear and use the respirator.

13. If a worker requests that the employer provide protective clothing to be used by the worker, the employer shall provide the worker with head, full body and footwear protective clothing.
14. A worker who is provided with protective clothing shall, before leaving the work area,
   i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,
   ii. if the protective clothing will not be reused, place it in an asbestos waste container.

Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area.