



## **Scope of Work – Designated Substances Abatement/Procedures**

### **QIS Lab & CQIQC Suite Project# P078-24-109**

#### **McLennan Physical Laboratories (Building #078) – 255 Huron Street Toronto M5S1A7**

The intent of this scope is to remove asbestos-containing materials and other designated substances required for the above mentioned project. Please follow the project drawings for locations of materials to be removed. This document also includes procedures to be followed while working, disturbing or working around the designated substances. Designated substances are defined in O. Reg. 490/09 under Occupational Health and Safety Act, R.S.O. 1990).

In addition to this scope of work and the issued Designated Substances in Building Materials Survey Report [DSSR], the project shall be governed in its entirety by Ontario Occupational Health and Safety Act and any Regulations made under this Act.

All asbestos abatement work/procedures are scheduled to be carried out after hours from 6:00 pm to 6:00 am all days [NO CHANGE EXPECTED]. Enclosure set-up in vacant areas can be done during regular work hours.

In addition to the scope of work provided below, the architectural, electrical and mechanical drawings are to be followed for the specific locations of all items described therein and are to be referred to for any specialized notes.

**The University of Toronto asbestos waste bin located on the south of central steam plant (17 Ursula Franklin Street, Toronto, ON M5S2S2) can be used for disposing asbestos waste only.**

All adjacent spaces and offices shall remain operational during the project. It is important that noise level and worker movement remains at an absolute minimum within the work areas and in the adjacent corridors.

It is the contractor's responsibility to verify the duration of work, extent of work, number of mobilizations/de-mobilizations, quantities and other site conditions.

Any demolition, new construction or other work item that may disturb existing or discovered asbestos-containing materials shall be performed by qualified asbestos workers following appropriate asbestos procedures.

### **TRAINING**

Any worker who may inadvertently come into contact with any asbestos-containing materials in the course of their work for the current project must have at a minimum Asbestos Awareness Training as outlined in the University of Toronto, Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>.

Workers performing any asbestos work will require appropriate training, including respirator fit testing, as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of surfaces applied with lead based paint and lead-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Lead Management Program/Standard Operating Procedures for the Control



of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of silica-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of other hazardous materials shall require appropriate trainings as specified in the relevant regulations/guidelines.

**Work will only be allowed once the training certificates of workers working inside asbestos enclosures are verified by the consultants and/or the University of Toronto designated staff.**

### **SCOPE OF WORK DETAILS**

All items of work described herein are included in the base bid price unless mentioned otherwise.

The project scope includes all the current project locations for the Project QIS Lab & CQIQC Suite Project# P078-24-109 as detailed on project drawings.

All tools or other equipment shall be decontaminated by using a vacuum equipped with a HEPA filter and by damp wiping/washing when leaving the asbestos containment area.

Negative air machines, able to maintain a negative pressure of 0.02 inches relative to the areas outside the Type 3 enclosures. Prior to the start of work the contractor will arrange DOP tests of all negative air machines on site. Reinstating of any components disturbed or removed for the reason of exhaust (indoors or outdoors) is included in this scope. The negative air machines shall be installed appropriately in order to obtain uniform negative air pressure throughout the enclosure.

#### **1. SECTION 1: Type 3 Asbestos Abatement for Ductwork Removal [Multiple Locations]**

Type 3 ductwork removal includes individual type 3 asbestos abatement at multiple locations. The General Contractor shall follow the project drawings to identify each location, extent of isolation and extent of removal of ductwork. The following subsections apply to each type 3 location.

- 1.1 Set-up full Type 3 enclosure. All walls to be sealed from floor to existing ceilings. Rip-proof (orange) polyethylene sheet (6 mills thickness) shall be used for the enclosure.
- 1.2 Remove and dispose ductwork in order to achieve the requirements of this project following Type 3 asbestos procedures. If practicable the ductwork can be cleaned/decontaminated inside the Type 3 enclosure /s and disposed of as non-asbestos waste. If not appropriately cleaned, all items must be disposed of as asbestos waste.
- 1.3 Internally insulated ductwork cannot be appropriately cleaned and must be disposed of as asbestos waste.
- 1.4 Clean and decontaminate enclosure for air clearance sampling to be performed by others.
- 1.5 Remove and dispose enclosure set-up upon completion of work.



## 2. **SECTION 2 –Type 2 Asbestos Abatement [Firestop Material]**

In order to achieve the architectural and mechanical requirements of this project, the asbestos abatement scope includes removal and disposal of asbestos-containing firestop materials/including inside the pipe sleeves, as required under the current project drawings/scope. The abatement work and procedures provided in the sections below shall be completed by the contractor.

- 3.1 Set-up complete type 2 asbestos enclosure/s (enclosure each side of the wall/ceiling penetration) with negative air machines at locations of firestops/sleeves.
- 3.2 Remove and dispose the firestop/sleeves materials. Follow Type 2 asbestos procedures.

## 3. **SECTION 3: Removal of Asbestos-Containing Thermal Mechanical Insulation**

Please follow the project architectural, electrical and mechanical drawings for specific locations and extent of all items described herein and should be referred to for any specialized notes or details. Remove and dispose asbestos-containing insulation on pipes and fittings located at any level of the building, including inside mechanical shafts, for the purpose of cutting, capping, tie-in or any other related work. Asbestos type 2 glovebag removal procedures shall be used. Type 2 procedures (with full enclosure) may be used at locations where glovebag removal is not possible provided the quantity of material to be removed is one square meter or less. **For the purpose of Base Bid consider under, 150mm diameter, a total of 75 fittings (a cluster of elbows can be abated in a single glove bag) and 25 linear meters of pipe straight section to be abated.**

## 4. **SECTION 4: Lead Abatement/Procedures**

All paint finishes on walls, structural components, windows, doors, bulkheads, baseboards, floors, ceilings, piping systems, ductwork, mechanical equipment and all other surfaces within the current project locations and other areas of the building shall be assumed to contain lead any concentration).

Work listed below involving lead paint (any concentration) is included in the General Contractor's scope of work.

- Work of removal and disposal of all loose, bubbling and peeling paint finishes, within the current project locations.
- Work involving sanding, grinding or any other disturbance or removal of lead-based materials or surfaces applied with lead paint (any-concentration).

Depending on the type of work to be conducted for the current project and the methodology selected by the contractor, the outlines provided for general measures, procedures and classification (or Type of operation) of lead containing materials disturbance shall be followed.

The General Contractor and their sub-contractors shall follow the requirements as identified in the Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply

All bulk lead waste materials shall be separated from other wastes, where practicable, and sent to a recycling facility. If not practicable, lead-containing waste shall be handled and disposed of according to Ontario Regulation 347 (O. Reg. 347), "General - Waste Management", made under the Environmental Protection Act. Under this regulation (and depending on the quantity of waste generated).



## **5. SECTION 5: Silica Abatement/Procedures**

Silica-containing materials are present within the current project locations and in other areas throughout the building. Crystalline silica is the primary component of concrete, concrete block, cement, mortar, drywall etc. where scheduled for disturbance or demolition for the current renovation project.

For any work involving disturbance or removal of silica containing materials, the Contractor shall follow work procedures and training requirements as identified in:

The Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

The classification, general measures and procedures (or Type of operations) required shall depend on the type of work to be conducted and the procedures adopted by the contractor. The following section outlines the classification of silica containing materials disturbance based on the guideline and procedures referred above.

### **Type 1 Operations**

- Drilling of holes in concrete or rock that is not part of a tunneling operation or road construction.
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.

### **Type 2 Operations**

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunneling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

### **Type 3 Operations**

- Abrasive blasting with an abrasive that contains  $\geq 1$  per cent silica.
- Abrasive blasting of a material that contains  $\geq 1$  per cent silica.

## **6. SECTION 6: General**

6.1 In addition to this Scope of Work, the project shall be governed by the following. In the event of any conflict, most stringent shall apply.

6.1.1 Ontario Regulation 278/05, Occupational Health and Safety Act.

- 6.1.2 University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
- 6.1.3 Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/>
- 6.1.4 University of Toronto Lead Management Program for Building Maintenance and Construction Projects Standard/Standard Operating Procedures for the Control of Lead, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
- 6.1.5 Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/>
- 6.1.6 University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
- 6.2 All scaffold and/or other equipment assemblies in order to access work locations shall be in accordance with the standards required under applicable Acts and Regulations.
- 6.3 Rip-proof (orange) polyethylene sheet (6 mil minimum thickness) shall be used for all enclosures and drop sheets used for this project.
- 6.4 All asbestos waste shall be placed into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags shall be rip-proof Polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 6.5 Ventilation to and from the work area will remain isolated during the asbestos abatement work. However, the contractor will be required to temporarily seal (polyethylene sheet seals) all ventilation inlets and outlets.
- 6.6 Quality Control inspections and air monitoring will be performed by a consultant and University of Toronto staff throughout the project. Any contamination of surround areas indicated by visual inspection or air monitoring will require the complete enclosure and clean-up of the affected areas without any extra cost to the University of Toronto.
- 6.7 The contractor to protect against any damages to all electrical/mechanical systems, sprinklers, cables, conduits etc. during the execution of work.
- 6.8 Isolation/Installation Responsibilities (for abatement work):

	<u><b>Item</b></u>	<u><b>Responsibility</b></u>
6.8.1	Electrical shutdowns	Arranged by Project Manager
6.8.2	Electrical panel/cable supply	Contractor
6.8.3	Electrical isolation & temporary panel installation	Contractor
6.8.4	Provide plumbing connections mains for hot and cold water	Arranged by Project Manager
6.8.5	Hoses for water supply	Contractor



6.8.6	Ventilation shutdowns	Arranged by Project Manager
6.8.7	Ductwork cutting/capping	Contractor
6.8.8	Isolation of sprinklers, heat detectors	Arranged by Project Manager
6.8.9	Type 3 enclosure air clearance tests	Arranged by Project Manager

**END OF DOCUMENT**





August 13, 2025

Attention: Mr. Kent Au

**Re: Designated Substances in Building Materials Survey Report [DSSR]  
QIS Lab & CQIQC Suite Project# P078-24-109  
McLennan Physical Laboratories (Building #078)**

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Dear Mr. Au:

Further to your request F&S Hazardous Construction Materials Group (HCMG) is pleased to provide the University Planning, Design & Construction (UPDC) this final report summarizing observations made during a review of available reports, abatement records, bulk sampling records and current investigations/sampling for accessible designated substances in building materials for the above captioned project at the University of Toronto facility McLennan Physical Laboratories (Building #078) located at 255 Huron Street Toronto M5S 1A7.

Ontario Regulation 490/09 - Designated Substances (O. Reg. 490/09), made under the Occupational Health and Safety Act outlines required steps to control exposure of workers to designated substances. Under O. Reg. 490/09 there are eleven (11) designated substances, acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. This regulation applies to every employer and worker at a workplace where the designated substances are present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to the designated substance. This assessment, issued for the above-mentioned project satisfies the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended.

This report provides status of accessible designated substances for the current project locations as identified on the project drawings in specific and for remaining areas of the building in general.

For a detailed designated substances abatement scope of work please refer to the following document issued for this project:

Scope of Work – Designated Substances Abatement/Procedures

QIS Lab & CQIQC Suite Project# P078-24-109

McLennan Physical Laboratories (Building #078) – 255 Huron Street Toronto M5S1A7

This report covers building materials only and does not cover any laboratory equipment, chemicals, biological agents, radiological material or radiation sources, fume hoods, laboratory bench tops, cabinetry and/or associated ductwork. Fume hoods, laboratory bench tops, cabinetry and associated ductwork should be tested for the above agents and if present should be appropriately decontaminated before any disturbance, work, removal or disposal.

## **OBSERVATIONS AND RECOMMENDATIONS**

Based on a review of the available reports, bulk sampling records, abatement records and current investigations/sampling for accessible designated substances in building materials the following are our observations and recommendations.

### **ASBESTOS**

For removal or disturbances of asbestos-containing materials, all procedures as defined in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/> shall be followed. In case of conflict the more stringent procedures shall apply.



Removal of asbestos-containing materials must be conducted by a qualified abatement contractor and all appropriate procedures as detailed in this report and applicable regulations shall be followed.

A total of three (3) bulk samples of suspect asbestos-containing building materials were collected during the current investigations. All bulk samples were submitted to EMC Scientific Inc. of Mississauga, Ontario, an independent analytical laboratory, for analysis of asbestos type and concentration by Polarized Light Microscopy (PLM) with dispersion staining. A summary of sample results collected during current investigations. A copy of laboratory analytical report is attached at Appendix B. A summary of sample results is presented in Table 1.

**Table 1**

Sample #	Location	Material	Sample Results
078-240725-1A	Room 331 East	Firestopping a) White caulking b) Off white caulking	None Detected None Detected
078-240725-1B	Room 337A Northeast	Firestopping, off-white caulking	None Detected
078-240725-1C	Room 337 East	Firestopping, off-white caulking	None Detected

***NOTE: All accessible asbestos containing materials were removed from Room 331, 331B, 331C, 331D, 331E, 331F, 336, 337 and 337A under a previous contract.***

**Sprayed Fireproofing and Sprayed Insulation**

No sprayed fireproofing is present within current project locations.

Friable asbestos-containing (Chrysotile) sprayed fireproofing is present on the structural members located inside the perimeter bulkhead and the exterior overhang on 1<sup>st</sup> floor of this building.

Asbestos-containing (Chrysotile) sprayed insulating material present in partial section of the 15<sup>th</sup> floor is abated. Currently the friable asbestos-containing (Chrysotile) sprayed insulating material is suspected to be present only on concrete deck of the inaccessible mechanical shaft located between 1505C and the women washroom.

Please refer to fireproofing spray and sprayed insulation layout floor plans for this building, attached at Appendix A. Areas with asbestos-containing fireproofing and sprayed insulation are shown in yellow; whereas no hatch represents areas with no spray fireproofing or sprayed insulation.

No removal or disturbance of asbestos-containing fireproofing or sprayed insulation shall proceed without following appropriate asbestos procedures as listed below.

- Removal of asbestos-containing fireproofing or sprayed insulation shall follow Type 2 or Type 3 asbestos abatement procedures based on quantity of materials to be removed [Type 2 procedures if one square meter or less fireproofing spray or sprayed insulation surface area is to be removed. Type 3 procedures if greater than one square meter of fireproofing spray is to be removed].
- No ceiling access is allowed in asbestos fireproofing areas and any ceiling access will require prior approval from University of Toronto. Any work by electrical, mechanical or other trades INCLUDING INSPECTIONS within these areas shall be carried out following Type 2 asbestos procedures (full enclosure with negative air pressure).
- Any disturbance or removal of the plaster like material encapsulating the asbestos insulation on the 15<sup>th</sup> floor will require prior approval from University of Toronto. Any work by electrical, mechanical or other trades INCLUDING INSPECTIONS within these areas shall be carried out following Type 2 asbestos procedures (full enclosure with negative air pressure).





- Any block wall removal or penetrations in areas adjacent to the overhang on the 1st floor shall require appropriate asbestos procedures.
- As a requirement of Ontario Regulation 278/05, "cleaning or removal of air handling equipment including rigid ducting in a building with asbestos-containing sprayed fireproofing is a Type 3 asbestos work". It is recommended that further investigation be performed prior to any duct removal work in the tower section of this building in order to design a potential equivalent measure or procedures.

### **Thermal Mechanical Insulation**

No asbestos-containing thermal mechanical insulation was observed within the accessible areas of rooms 331, 331B, 331C, 331D, 331E, 331F, 336, 337 and 337A of the current project locations.

Friable asbestos-containing (Chrysotile and Amosite) thermal mechanical insulation is confirmed to be present on plumbing pipe, and heating lines straights, valves, tees, elbows and fittings one floor below the 3<sup>rd</sup> floor current project locations.

Non asbestos black foam insulation is present on pipes inside the radiators on the 3<sup>rd</sup> floor. However, below the floor, same pipes have friable asbestos-containing thermal mechanical insulation

Friable asbestos-containing thermal mechanical insulation is present on piping system inside the radiator covers, pipe shafts and mechanical rooms in various other areas of this building.

Friable asbestos-containing (Chrysotile and Amosite) thermal mechanical insulation is confirmed to be present on mechanical systems, including, but not limited to, heating and plumbing pipe, straights, valves, tees, elbows and fittings in remaining current project locations and throughout other areas of the building. Thermal mechanical insulation on air handling units, ductwork, pumps, tanks, boilers etc. is suspected to contain asbestos throughout this building.

Friable asbestos-containing thermal insulation may exist in presently inaccessible and hidden wall/ceiling penetrations and cavities. Any insulating material identified or discovered in such locations shall be assumed to contain asbestos unless proven otherwise through confirmatory sampling.

No removal or disturbance of asbestos-containing thermal mechanical insulation shall proceed without following appropriate asbestos procedures as listed below.

- Removal of asbestos-containing piping system insulation shall follow Type 2, Type 2 glove bag or Type 3 asbestos abatement procedures based on quantity and location of materials to be removed [Type 2 procedures for one square meter or less area of asbestos insulation to be removed (inside an enclosure). Type 3 procedures for greater than one square meter of asbestos insulation to be removed (inside an enclosure)].

### **Firestopping**

Bulk asbestos samples of accessible firestopping materials from Room 331, 331B, 331C, 331D, 331E, 331F, 336, 337 and 337A) identify the material as non-asbestos. However, firestopping materials within the pipe sleeves going to third floor radiators from the floor below shall be considered to contain asbestos.

Firestop materials where present in remaining current project locations and other areas of this building shall be considered to contain asbestos.

No removal or disturbance of asbestos-containing firestopping shall proceed without following appropriate asbestos procedures as listed below.



- Removal of asbestos-containing fire stop material shall follow Type 2, or Type 3 asbestos abatement procedures (enclosure each side of the penetration) based on quantity and location of materials to be removed.

### **Drywall Joint Compound**

No gypsum board and drywall finishes are present in Rooms 331, 331B, 331C, 331D, 331E, 331F, 336, 337 and 337A of the current project locations.

It will be prudent to consider all drywall joint compounds within remaining current project locations and other areas of the building to contain non-friable asbestos unless proven otherwise through confirmatory sampling.

No removal or disturbance of asbestos-containing drywall joint compounds shall proceed without following appropriate asbestos procedures as listed below.

- Type 1 or Type 2 (full enclosure) asbestos abatement procedures shall be followed for removal of gypsum board and drywall finishes applied with asbestos-containing drywall joint compounds based on quantity of materials to be removed [Type 1 procedures if one square meter or less area of drywall applied with drywall joint compound is to be removed. Type 2 procedures if greater than one square meter of drywall area applied with drywall joint compound is to be removed]. Removed drywall shall be disposed as asbestos waste.
- The University of Toronto Standard Operating Procedure ID R2.05, attached at Appendix C, shall be followed for drilling holes in drywall finishes applied with asbestos-containing drywall joint compounds.

### **Vinyl Flooring**

No vinyl flooring is present in Room 331, 331B, 331C, 331D, 331E, 331F, 336, 337 and 337A of the current project locations.

Vinyl flooring (non-friable), adhesive mastic (non-friable) and vinyl backing paper (friable) where present in remaining current project locations and throughout other areas of this building, shall be considered to contain asbestos unless proven otherwise through available sampling records or confirmatory sampling.

Asbestos containing flooring, adhesive mastic and backing paper are suspected to be present under non-asbestos flooring (carpet, vinyl sheet flooring, wood and non-asbestos floor tiles, etc.).

No removal or disturbance of asbestos-containing vinyl floor tiles and adhesive mastic shall proceed without following appropriate asbestos procedures as listed below.

- No asbestos-containing floor tiles and mastic are to be cut, drilled, ground or removed without following appropriate asbestos procedures.
- Type 2 (full enclosure) asbestos abatement procedures shall be followed for removal of asbestos-containing vinyl floor tiles and mastic. Grinding of asbestos-containing mastic shall follow Type 2 (full enclosure) asbestos procedures if the grinder is equipped with a HEPA vacuum attachment. The procedures shall be elevated to Type 3 if the grinding equipment is not equipped with a HEPA vacuum attachment.
- Type 2 or Type 3 asbestos abatement procedures shall be followed for removal of asbestos-containing vinyl floor sheet and backing paper based on quantity of materials to be removed [Type 2 procedures if one square meter or less area of vinyl flooring and backing paper is to be removed. Type 3 procedures if greater than one square meter of vinyl flooring and backing paper is to be removed].



- Under the University of Toronto Asbestos Management Program the design or work should not include installing rigid flooring over existing asbestos-containing vinyl floor tiles or sheeting.

### **Block Masonry Sealant**

Non-friable asbestos-containing (Chrysotile) block masonry sealant is present underneath the paint on the walls only in locations 009K, 050, 104S, 1604, 1313 and 110K (north of 0107) of this building, that are not part of the current project.

Based on laboratory analytical results of representative samples of block masonry sealant present underneath the paint on the walls collected from various areas of this building, all block masonry sealant present underneath the paint on masonry walls of this building other than listed above can be considered not to contain asbestos.

No removal or disturbance of masonry sealant in locations listed above shall proceed without following one of the following asbestos procedures as appropriate.

- The University of Toronto Standard Operating Procedure ID R1.70, attached at Appendix C shall be used for disturbance or removal of block masonry wall applied with asbestos-containing sealant underneath the paint, using non-powered hand tools. If working in a public corridor or outside a hoarded construction areas, the work must take place inside an asbestos Type 2 enclosure [with negative air pressure] to prevent the spread of construction dust. Bag and dispose all removed cinder blocks as asbestos waste.
- The University of Toronto Standard Operating Procedure ID R2.14, attached at Appendix C shall be used for disturbance or removal of block masonry wall applied with asbestos-containing sealant underneath the paint, using HEPA filtered power tools. If working in a public corridor or outside a hoarded construction areas, the work must take place inside an asbestos Type 2 enclosure [with negative air pressure] to prevent the spread of construction dust. Follow Type 2 asbestos procedures with full enclosure and negative air pressure relative to the areas outside the enclosure if using powered tools with no HEPA filter. Bag and dispose all removed cinder blocks as asbestos waste.
- The University of Toronto Standard Operating Procedure ID R2.13, attached at Appendix C, shall be followed for drilling of holes in masonry wall applied with asbestos-containing sealant underneath the paint.

### **Plaster**

No plaster finishes are present within the current project locations.

Due to limited available sampling data, and significant locations with plaster finish present in the building, it will be prudent to consider all plaster finishes in other areas of the building to contain asbestos unless proven otherwise through confirmatory sampling. Plaster is non-friable while in place, however, becomes friable upon removal.

No removal or disturbance of asbestos-containing plaster finishes in the building shall proceed without following appropriate asbestos procedures as listed below.

- Type 2 or Type 3 asbestos procedures shall be followed for removal of asbestos-containing plaster finishes based on quantity of materials to be removed [Type 2 procedures for one square metre or less quantity to be removed. Type 3 procedures for greater than one square metre quantity to be removed]
- The University of Toronto Standard Operating Procedure ID R2.04, attached at Appendix C, shall be followed for drilling holes (each less than ½ inch in diameter) in asbestos-containing plaster finishes.



### **Ceiling Tiles**

No asbestos-containing lay-in ceiling tiles are present within this building.

Non-friable asbestos cement transite ceiling tiles are present at various other areas of the building.

No removal or disturbance of asbestos-containing transite ceiling tiles shall proceed without following appropriate asbestos procedures as listed below.

- No disturbance, cutting, drilling, grinding, sanding, etc. of asbestos transite tiles is allowed without following appropriate asbestos procedures.
- Type 1 procedures are required for the intact removal and re-installation of transite ceiling tiles. If the transite material is broken, cut, drilled, ground, sanded, etc. the more stringent Type 2 or Type 3 asbestos procedures must be followed.

### **Texture Coat Finishes**

Based on laboratory analytical results of sample of this material obtained in past and limited areas with texture coat finishes, all texture coat finishes within the building can be considered not to contain asbestos.

### **Manufactured Asbestos Cement Products (Transite)**

No manufactured asbestos cement products (transite) are present within the current project locations.

Asbestos cement products (Transite) are present in other areas of the building and are used as wall panels, ceiling tiles, countertops and fumehood liners.

No removal or disturbance of these materials shall proceed without following appropriate asbestos procedures as listed below.

- No disturbance, cutting, drilling, grinding, sanding, etc. of asbestos cement products is allowed without following appropriate asbestos procedures.
- Type 1 procedures are required for the intact removal and re-installation of asbestos cement products. If the transite material is broken, cut, drilled, ground, sanded, etc. the more stringent Type 2 or Type 3 asbestos procedures must be followed.

### **Other**

No other accessible building materials suspected to contain asbestos were observed within the current project location.

Other materials within this building that are identified to contain asbestos include:

- Caulking material in exterior concrete panels.
- Caulking material along masonry wall corners and at joint of ceiling grid and masonry walls.
- Gaskets and other internal liners within mechanical equipment.
- Door caulking.
- Brown caulking on ducts inside induction units.

Asbestos-containing materials for which either the sampling records are not available or that are currently hidden or are inaccessible may be present within the building. These materials include:

• Transite drainpipes	• Window glazing putty/caulking	• Window caulking	• Gaskets in cast iron pipe bell fittings
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• Gaskets and liners within mechanical equipment	• Electrical wiring jacket	• Electrical panel backing	• Transite in HV cable trench
• Fire rated door liners	• Roofing materials		

Investigation including sampling and analysis is recommended in the event of discovery of such materials for determination of presence/absence of asbestos. Appropriate asbestos removal procedures shall be implemented if the material is identified as asbestos-containing.

No removal or disturbance of asbestos-containing materials shall proceed without following appropriate asbestos procedures.

### **LEAD**

All paint finishes on walls, structural components, windows, doors, bulkheads, baseboards, floors, ceilings, piping systems, ductwork, mechanical equipment and all other surfaces within the current project locations and other areas of the building shall be assumed to contain lead any lead concentration).

There is no regulatory limit currently in Ontario that determines what amount of lead in paint constitutes the paint to be considered “lead based paint”. The Environmental Abatement Council of Canada (EACC) – Lead Guideline For Construction, Renovation, Maintenance or Repair (2014) recommends that a content of 0.1% (i.e. 1000 µg/g or 1000 mg/kg or 1000 ppm lead) is considered a "de minimis" or "virtually safe" level of lead in paint or surface coatings, provided that aggressive disturbance or heating does not occur.

The above lead-based paint standards are the generally accepted threshold for defining a “lead-based paint”. These levels are used as action levels where special precautions are typically implemented to contain debris created during construction or renovation activities and to protect workers from exposure during these activities.

The classification, general measures and procedures (or Type of operations) required for removal or disturbance of lead paint, lead painted materials and lead based materials shall depend on the type of work to be conducted, the procedures adopted and the limit of lead in paint accepted by the General Contractor and their sub-contractors.

The General Contractor and their sub-contractors shall follow the requirements as identified in the Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/> . In case of conflict the more stringent procedures shall apply.

Lead-containing wastes should be recycled if practicable or handled and disposed of according to Ontario Regulation 347.

Lead shall also prudently presumed to be present in the following materials:

- As a component of the solder on joints between copper pipe and fittings.
- As a component of the solder on the wire connections of electric components.
- As a component of wool present as caulking in bell fittings at cast iron drains.
- As a component of glazing on spectra glaze blocks and ceramic tiles.
- As a component of lead-acid batteries in emergency lights.
- As lead sheeting.
- As pigmented mortar.
- As lead piping.



## **MERCURY**

Elemental mercury may be present in the electro-thermal switching devices and may be present in trace amount as vapours in metal halide bulbs, fluorescent light tubes and incandescent mercury bulbs. It is recommended that at the time of their disposal, all mercury vapour bulbs may be recycled and possibly reused by qualified personnel or may be disposed of according to applicable regulations.

## **SILICA**

Silica-containing materials are present within the current project locations and in other areas throughout the building. Crystalline silica is the primary component of many building materials such as concrete, concrete block, cement, mortar, drywall etc. Silica has also been found as a filler material in insulation. Exposure to airborne crystalline silica can occur when these building materials are disturbed or turned into powder (particularly grinding, drilling or cutting operations and during major demolition).

The General Contractor shall follow work procedures as identified in The Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

The classification, general measures and procedures (or Type of operations) required shall depend on the type of work to be conducted and the procedures adopted by the contractor. The following section outlines the classification of silica containing materials disturbance based on the guideline and procedures referred above.

### **Type 1 Operations**

- Drilling of holes in concrete or rock that is not part of a tunneling operation or road construction.
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.

### **Type 2 Operations**

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunneling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

### **Type 3 Operations**

- Abrasive blasting with an abrasive that contains  $\geq 1$  per cent silica.
- Abrasive blasting of a material that contains  $\geq 1$  per cent silica.





## **BENZENE**

Above ground fuel storage tank is present in the emergency generator location in this building.

Benzene is a natural part of crude oil, and gasoline. Benzene, or Benzol, is a colorless liquid with a sweet or aromatic hydrocarbon odour. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Exposure to pure benzene within buildings other than where it is produced or used as part of a manufacturing process is unlikely. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia.

- Prior to removal, repair or decommissioning of the tank, the above ground storage tank and its contents (suspected to contain benzene as a fuel component) should be removed and disposed following all applicable Regulations and/or industry standards.

## **OTHER DESIGNATED SUBSTANCES - Acrylonitrile, Arsenic, Coke Oven Emissions, Ethylene Oxide, Isocyanates and Vinyl Chloride**

The building is not and was not used for any process or manufacturing, therefore none of the other Designated Substances listed above are suspected to be present.

## **TRAINING**

Any worker who may inadvertently come into contact with any asbestos-containing materials in the course of their work for the current project must have at a minimum Asbestos Awareness Training as outlined in the University of Toronto, Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>.

Workers performing any asbestos work will require appropriate training, including respirator fit testing, as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of surfaces applied with lead based paint and lead-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Lead Management Program/Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of silica-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

Workers performing removal or disturbance of other hazardous materials shall require appropriate trainings as specified in the relevant regulations/guidelines.

**Work will only be allowed once the training certificates of workers working inside asbestos enclosures are verified by the consultants and/or the University of Toronto designated staff.**



## **CONCLUSION**

Based on a review of available reports, abatement records, bulk sampling records and current investigations/sampling, Designated Substances [Asbestos, Lead (any concentration), Silica and Mercury] are present in different building materials within the current project locations of the McLennan Physical Laboratories (Building #078).

Designated substances [Asbestos, Lead (any concentration), Silica, Mercury and Benzene] are present in different building materials in other areas of the McLennan Physical Laboratories (Building #078).

**NOTE:** If additional materials not covered in this report are discovered during the project activities and suspected of containing designated substances, all work that may disturb the material shall be stopped and an investigation (i.e., sampling and analysis) undertaken to determine the presence of any designated substances.

## **CLOSURE**

The conclusions presented in this report represent the best technical judgment based on the data obtained from the review of available reports, abatement records, bulk sampling records and current investigations of the current project locations during this survey. The conclusions are based on the site conditions at the time the survey was performed at the specific testing and/or sampling locations, and can only be extrapolated to an undefined limited area around these locations.

Information provided in this report is intended for the subject project in compliance to the requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended. Any use by a third party of this report or any reliance by a third party on or decisions made by a third party based on the findings described in this report, is the sole responsibility of such third parties. The University of Toronto F&S Hazardous Construction Materials Group accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

Sincerely,

Prepared By:

Doug Colby, CRSP, AMRT  
Senior Inspector  
Hazardous Construction Materials Group  
University of Toronto  
F&S Property Management  
Phone: 416-791-9998  
doug.colby@utoronto.ca

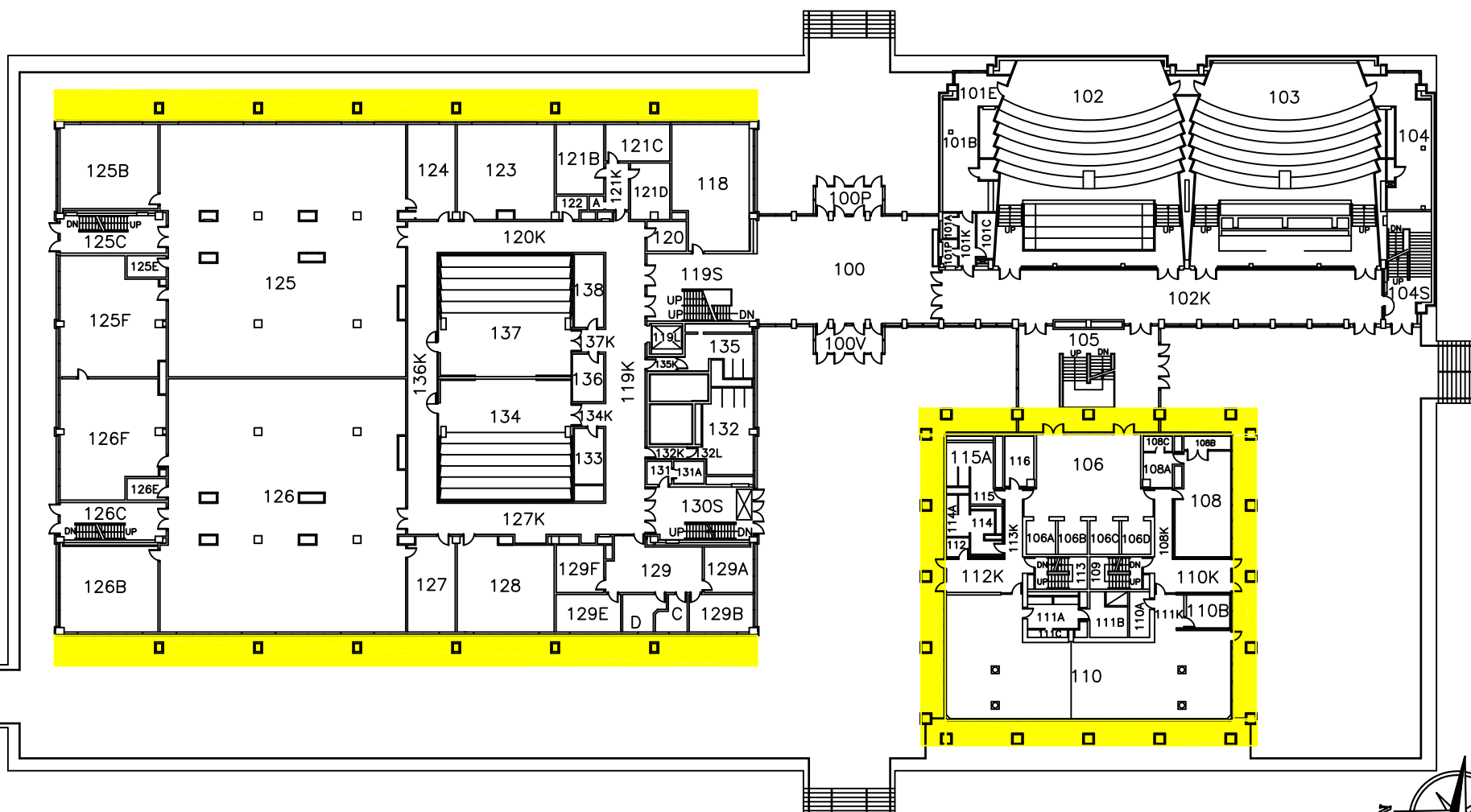
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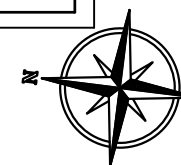


## **APPENDIX A**

### **McLennan Physical Laboratories Fireproofing & Sprayed Insulation Locations Floor Plans**



## GROUND FLOOR PLAN REVISED JAN 2019



### LEGEND:

- Asbestos-Containing Fireproofing
- No Fireproofing Present

### LOCATION:

**McLennan Physical Labs. (Building # 078)**  
**255 Huron Street, Toronto, Ontario**

### TITLE:

**Floor Plan Showing the Location of**  
**Asbestos-Containing Sprayed-on-Fireproofing**



*University of Toronto*

PROJECT No.

NTS

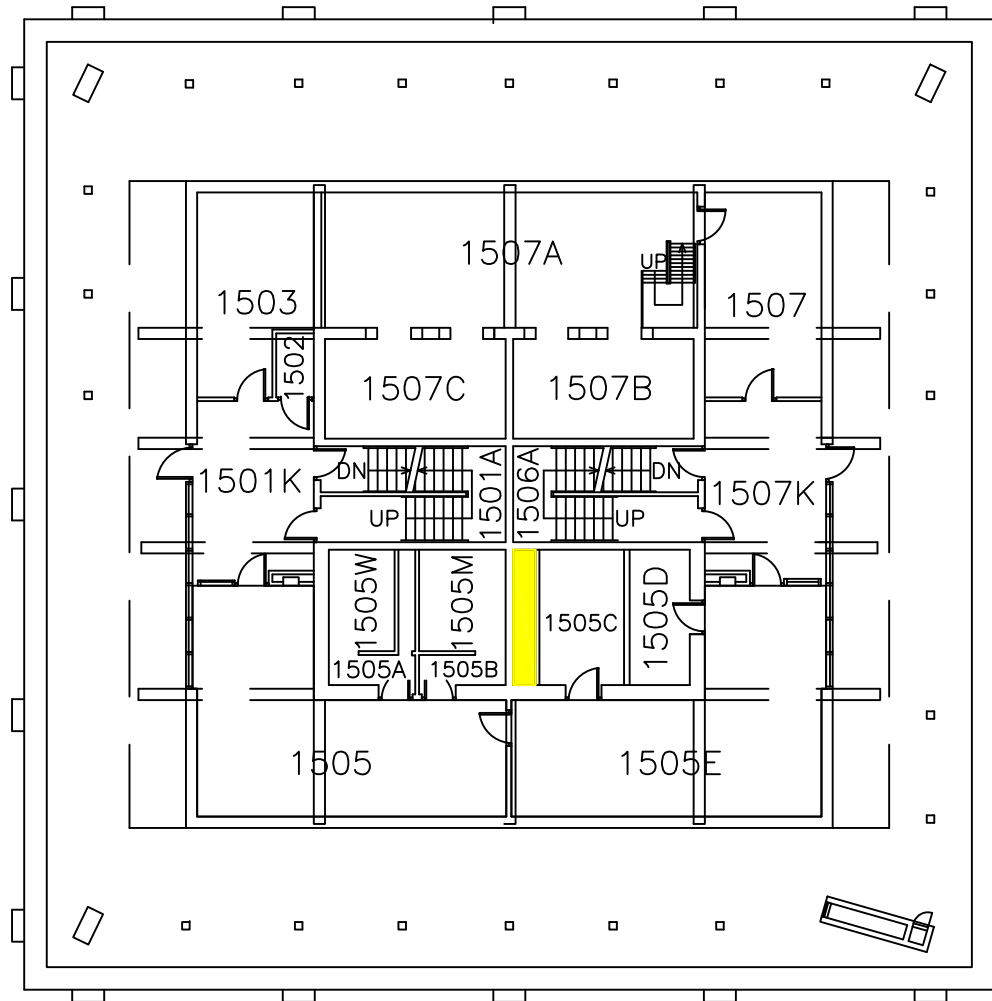
DRAWING No.

**2.1**

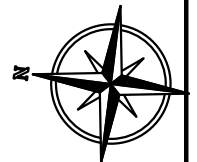
DATE:

DRAWN:

CHK'D:



**15th FLOOR PLAN REVISED MAY 2022**



**LEGEND:**



Asbestos-containing sprayed insulation  
covered with plaster like material on ceiling

**LOCATION:**

**McLennan Physical Labs. (Building # 078)  
255 Huron Street, Toronto, Ontario**

**TITLE:**

**Floor Plan Showing the Location of  
Asbestos-Containing Sprayed Insulation**



*University of Toronto*

PROJECT No.

NTS

DRAWING No.

**2.2**

DATE:

DRAWN:

CHK'D:



## **APPENDIX B**

### **Laboratory Analytical Results**



# Laboratory Analysis Report

To:

**Doug Colby**  
University of Toronto  
Environmental Health & Safety  
215 Huron Street, 7<sup>th</sup> Floor  
Toronto, Ontario  
M5S 1A1

**EMC LAB REPORT NUMBER:** A123005

**Project Name:** Physics (078)

**Analysis Method:** Polarized Light Microscopy – EPA 600

**Date Received:** Jul 28/25

**Date Analyzed:** Jul 28/25

**Analyst:** Marco Costanza

**Reviewed By:** Jayoda Perera



**Project No:** 1116691

**Number of Samples:** 3

**Date Reported:** Jul 28/25

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
078-240725-1A	A123005-1	Room 331 East/ firestopping	2 Phases: a) White, caulking b) Off white, caulking	ND ND		100 100
078-240725-1B	A123005-2	Room 337A north east/ firestopping	Off white, caulking	ND		100
078-240725-1C	A123005-3	Room 337 east/ firestopping	Off white, caulking	ND		100

**Note:**

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

UNIVERSITY OF TORONTO			REQUEST FOR ANALYSIS					
Ship To: EMC Scientific Inc. Sample Reception 5800 Ambler Drive, Suite 100, Mississauga, ON L4W4J4 Ph: 905.629.9247 Fax: 905.629.2607			Shipped From: Environmental Health & Safety, 7th Floor 215 Huron Street Toronto, Ontario M5S 1A1			PLM Bulk xx TEM Bulk Bulk Mould PCM Air Other		
Samples Collected By:	Doug Colby		Project, S.O. #:	1116691				
			Building Name:	Physics (078)				
Sample Number	Date Sampled	Sample Location	Sample Description	Analysis Turnaround Time				
				Regular	24 Hours			
078-240725-1A	24-Jul-25	Room 331 East	Firestopping		x			
078-240725-1B	24-Jul-25	Room 337A north east	Firestopping		x			
078-240725-1C	24-Jul-25	Room 337 east	Firestopping		x			
Relinquished By: Doug Colby			Signature: [Signature]		Date: July 24 2025	Comments: Stop further analysis for each alpha numerical set once asbestos is identified by PLM method. e-mail results to: yangting.shek@utoronto.ca With CC to: ehs.office@utoronto.ca irfan.miraj@utoronto.ca doug.colby@utoronto.ca faiq.amir@utoronto.ca		
Received By: Amy Bradford			Signature: [Signature]		Date: July 25 '25			
Analyzed By: Marco Costanza			Signature: [Signature]		Date: July 28 <sup>th</sup> /25			
			AS July 28/25 830					



## **APPENDIX C**

**University of Toronto Standard Operating Procedure R2.04, R2.05,  
R1.70, R2.13 and R2.14**



Office of Environmental Health and Safety  
UNIVERSITY OF TORONTO

Standard Operating Procedures  
for the Control of Asbestos Fibres  
During Type 1 Operations

ID R1.70

**DEMOLISHING CINDERBLOCK WALL WITH ASBESTOS-CONTAINING COATING USING HAND TOOL**

**1.0 APPLICATION**

- 1.1 This procedure applies to demolishing cinderblock walls with asbestos-containing coating using hand tools such as sledge hammers. This work is classified as a Type 1 operation (Section 12(3)8 of 278/05).
- 1.2 Disturbance of this material using power tools is a Type 2 procedure – refer to R2.13 (drilling only) or R2.14 (breaking, cutting, abrading, grinding, sanding or vibrating).

**2.0 DEFINITIONS**

- 2.1 *Damp-Wiping:* A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.
- 2.2 *Work Areas:* Where actual work activity involving asbestos takes place.

**3.0 MATERIALS AND EQUIPMENT**

- 3.1 *HEPA Vacuum:* Vacuum cleaner equipped with a High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 *Dropsheet:* Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.3 *Amended Water:* A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.
- 3.4 *Sprayer:* Sprayer with mist nozzle for application of amended water or sealant.
- 3.5 *Asbestos Waste Receptacles:* Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.
- 3.6 *Small Tools:* Sponge(s), bucket(s), ladder, etc.
- 3.7 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene bags.
- 3.8 *Respirator:* Respirators are optional. See section 4.2.
- 3.9 *Coveralls:* Full body disposable clothing of an appropriate size with attached hood. It should be elasticized at the cuffs and hood, and be made of material which does not readily retain or permit penetration of asbestos fibres.

- 3.10 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.

#### **4.0 PERSONAL PROTECTION**

- 4.1 While not mandatory, workers are strongly advised to wear respirators.
- 4.2 If a worker requests a respirator; the following shall apply:
- 4.2.1 All respiratory equipment shall be individually assigned and identified.
- 4.2.2 Each worker must attend respiratory protection training and be fit tested prior to beginning work.
- 4.2.3 Workers shall wear at least a half facepiece respirator fitted with purple HEPA (P100) filters.
- 4.2.4 Disposable single-use type respirators are not permitted.
- 4.2.5 All respirators shall be approved and labelled for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
- 4.2.6 Replace filter cartridges as appropriate (36 hours of use or more frequently).
- 4.3 Due to general construction dust, workers must wear disposable coveralls:
- 4.4 A worker who is provided with protective clothing shall, before leaving the work area:
- 4.4.1 Decontaminate his or her protective clothing and footwear by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,
- 4.4.2 If the protective clothing will not be reused, place it in an asbestos waste receptacle.
- 4.5 Eye protection and safety shoes must be worn for this task.
- 4.6 Facilities for washing hands and face must be provided and shall be used by every worker when leaving asbestos work areas.
- 4.7 Smoking, eating, drinking or chewing in asbestos work areas is prohibited.

#### **5.0 PREPARATION - WORK AREAS**

- 5.1 While it is not necessary to post signs for a Type 1 operation, it is a good practice to prevent others from entering the immediate vicinity of the work area.
- 5.2 When people are still in the area where work is to be done the Type I "Minor Asbestos Work Description" (last page of this SOP) should be filled out and distributed to anyone likely to be near the work being carried out.
- 5.3 Before beginning work, remove any visible dust from the work area by HEPA vacuuming or damp wiping.
- 5.4 Before beginning work, wherever practicable, cover floor below the work with polyethylene drop-sheets to catch debris.
- 5.5 Type 1 asbestos work does NOT require the use of enclosures. If working in a public corridor or outside a hoarded construction areas, the work must take place inside an asbestos Type 2 enclosure [with negative air pressure] to prevent the spread of construction dust.

#### **6.0 EXECUTION**

- 6.1 Use only hand-held non-powered tools. Do not use compressed air.

- 6.2 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material.
- 6.3 No power tools are allowed.
- 6.4 Outline the area to be demolished with a coloured pencil or marker.
- 6.5 Before using hammer or other large hand tools, check nearby surrounding. Other nearby workers or objects may be struck by the swing of the hammer or hand tool. Swing and move the tool only if there is sufficient space to prevent injury to others and/or unwanted damage.
- 6.6 Strike or hit the desired area with the hammer. Repeat as required.
- 6.7 On completion of work, clean all surfaces, tools, equipment, and work shoes by HEPA vacuuming or by damp wiping. Drop-sheets and used cleaning cloths must be wetted and disposed of as asbestos waste. Double bag all waste and dispose of as described in section 7.1.

## **7.0 WASTE TRANSPORT AND DISPOSAL**

- 7.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 7.2 \*For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.
- 7.3 Cinderblock waste with asbestos-containing coating must be disposed of as asbestos waste.



## APPENDIX A: MINOR ASBESTOS WORK DESCRIPTION (TYPE 1)

Date: \_\_\_\_\_ Start time: \_\_\_\_\_ Stop time (approx.): \_\_\_\_\_

Building: \_\_\_\_\_

Brief Work Description: \_\_\_\_\_

Supervisor of work party: \_\_\_\_\_

Name of Contractor or Trade: \_\_\_\_\_

Property or Project Manager: \_\_\_\_\_

**Please note that workers that work on a daily basis with asbestos may be wearing respiratory protection and protective coveralls when working in an area where U of T employees, students or Faculty are present in their normal work clothes. This personal protective equipment (PPE) is optional for this kind of work under the asbestos regulations, but may be requested by the asbestos worker if desired. Asbestos workers wear this PPE because they are closer to the work being carried out, and are thus exposed at a much higher level than bystanders. In addition they are exposed to asbestos on a daily basis, and may wish to ensure that their total exposure is as low as possible. U of T employees in the area are not exposed on a daily basis, and thus are not subjected to the same level of risk. Please see the section on non-occupational exposure for more details.**

### **ASBESTOS WORK**

University employees as well as contractors are sometimes required to conduct work that involves the disturbance of asbestos-containing materials. Such work activities are strictly regulated. They are first categorized into three types of work operations - **Type 1 (low risk – the type covered by this form)**, Type 2 (moderate risk) or Type 3 (high risk). For each of these, the Asbestos Management Program designates corresponding standard operating procedures to prevent the exposure to airborne asbestos. These procedures include strict requirements for preparation of the work area, use of personal protective equipment, use of proper work practices to reduce the spread of asbestos fibres, personal hygiene practices, and asbestos waste handling.

### **NON-OCCUPATIONAL EXPOSURE**

Asbestos-specific diseases are almost always a result of occupational exposure to asbestos. Non-occupational exposures resulting in disease have only been seen in spouses or other family members living with an asbestos worker, or those who have lived in the neighbourhood of asbestos plants.

Asbestos fibres are naturally occurring and result in a natural background present in our environment. This combined with the widespread use of asbestos in products such as truck brake linings, means that we are all exposed to very small amounts of asbestos in our daily lives. It is not this very low level of exposure that results in asbestos disease but the higher levels of occupational exposure that are of concern to most authorities. Studies have not shown any evidence of asbestos-specific diseases in individuals who breathe asbestos in the outdoor air or who inhale asbestos as occupants of asbestos-containing buildings. Regardless, proper measures for preventing or minimizing exposure to asbestos must always be in place.

**If you have any questions about the work being conducted, then please contact the Property Manager or Project Manager listed above.**



Office of Environmental Health and Safety  
UNIVERSITY OF TORONTO

Standard Operating Procedures  
for the Control of Asbestos Fibres  
During Type 2 Operations

ID R2.04

**DRILLING ASBESTOS CONTAINING MATERIALS (E.g. plaster, mastics, textured boards, stucco, etc. ) WITH A  
HEPA FILTERED POWER TOOL**

The exposure of workers and the corresponding measures and procedures for the drilling of holes in friable asbestos-containing material are classified as Type 2.

When authorized workers conduct Type 2 activities involving the clean-up of friable asbestos-containing material, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the methods in Ontario Ministry of Labour, Regulations Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Reg. 278/05) and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

**1.0 APPLICATION**

- 1.1 These procedures apply to the drilling of holes (each less than ½ inch in diameter) in the asbestos-containing plaster application for the sole purpose of attaching fasteners for wall hangings and the like. This activity may generate enough airborne asbestos to require protective equipment, but is of short duration.

**2.0 DEFINITIONS**

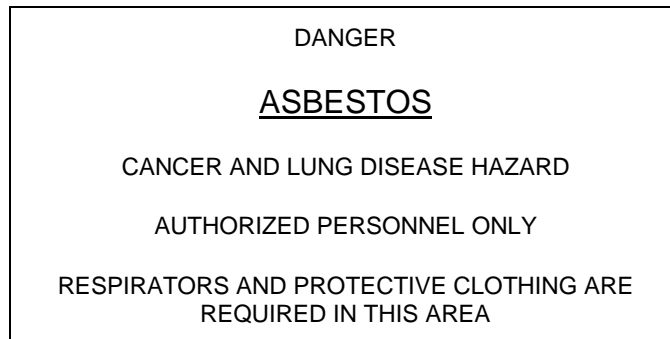
- 2.1 *Work Areas:* Where actual work activity involving friable asbestos takes place.
- 2.2 *Damp Wiping:* A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

**3.0 MATERIALS AND EQUIPMENT**

- 3.1 *HEPA Vacuum:* Vacuum cleaner equipped with High Efficiency Particulate Arresting HEPA Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 *HEPA Filtered Tool:* A tool that has been manufactured specifically for the intended purpose and equipped with a filtering system that meets the same definition for filter efficiency as in Item 3.1.
- 3.3 *Dropsheet:* Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.4 *Amended Water:* A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.
- 3.5 *Sprayer:* Sprayer with mist nozzle for application of amended water or sealant.
- 3.6 *Asbestos Waste Receptacles:* Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area.

Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.

- 3.7 *Small Tools:* Sponge(s), metal bristle brush(es), bucket(s), ladder(s), heavy duty scraper(s), etc.
- 3.8 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene to all surfaces to be covered.
- 3.9 *Respirator:* See section 5 Personal Protective Equipment.
- 3.10 *Coveralls:* Full body disposable clothing of appropriate with attached hood and elasticized at cuffs and hood, made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.11 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.12 *Signage:* Warning of asbestos hazard in the work area:



#### **4.0 NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities involving friable asbestos. The following methods of communication apply:

- 4.1 The notification is to include a description of the planned Type 2 activity, its proposed duration, and in general terms the precautionary measures required to maintain a safe work environment. This information is to be provided to the following parties.
  - 4.1.1 All appropriate Directors (St. George, UTM, UTSC, Capital Projects)
  - 4.1.2 Manager, Environmental Hazards and Safety (St. George only)
  - 4.1.3 Director, Environmental Health and Safety
  - 4.1.4 Co-chairs of both the Trades and the Utilities Joint Health and Safety Committees
  - 4.1.5 Co-chairs, Local Joint Health and Safety Committee
  - 4.1.6 Local Area Occupants
- 4.2 Signage at Work Location
  - 4.2.1 This sign informs building users of the asbestos-related work being conducted at that work location and that entry into the area is restricted to authorized personnel only. Signs are to be posted in the work area in sufficient numbers to warn of the hazard.

#### **5.0 PERSONAL PROTECTION**

- 5.1 *Respirators:* Workers are required to don respirators when performing Type 2 work. The following shall apply:
  - 5.1.1 All respiratory equipment shall be individually assigned and identified.
  - 5.1.2 Each worker must be instructed and tested with his/her respirator.

- 5.1.3 Workers shall wear at least a half-face piece air-purifying respirator fitted with HEPA (P100) filters (material wetted). If the material cannot be wetted, a full face air-purifying respirator is required. All respirators shall be approved and labelled for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
- 5.1.4 Replace filter cartridges as appropriate (36 hours of use or more frequently). Dispose of used cartridges as asbestos waste.
- 5.1.5 No supervisor or worker shall have facial hair which affects respirator-to-face seal.
- 5.2 *Protective Clothing:* All workers must be provided with full body disposable coverall and shoe covers as described in Section 3.
- 5.3 *Facilities:* Provide facilities for washing hands and face which shall be used by every worker when leaving asbestos work areas.
- 5.4 *Practice:* Workers shall not eat, drink, smoke or chew while in contaminated work areas.
- 5.5 *Work Area Entry:* All persons shall don respirators with HEPA (P100) filters and clean coveralls before entering work area.
- 5.6 *Work Area Exit:* Before leaving the Work Area and still wearing a respirator, a worker shall:-
  - 5.6.1 Thoroughly HEPA vacuum protective clothing, respirator and footwear.
  - 5.6.2 Remove decontaminated coveralls and wash hands and face with water (in Work Area).
  - 5.6.3 Leave the Work Area in street clothes and proceed to the nearest washroom to wash hands and face.
  - 5.6.4 Coveralls may be reused throughout a day provided they are disposed of after each shift, or left inside the Work Area after each use.

## **6.0 PREPARATION - WORK AREAS**

- 6.1 Do not use compressed air.
- 6.2 Clear immediate work areas of all moveable furnishings or equipment.
- 6.3 Erect tape barriers to keep all non-protected personnel at least 30 feet away. Post signs warning of asbestos hazard at tape barrier (see Appendix).
- 6.4 An enclosure is not necessary for this activity. As appropriate, a drop-sheet below the work is required; extend the drop-sheet at least 3 feet beyond line of work. Use rip-proof polyethylene if work is above rough concrete or other surface that could tear polyethylene.
- 6.5 When drilling friable asbestos materials (e.g. plaster), shut down all ventilation to and from the work area. As appropriate, seal and tape all ventilation openings close to the work area with polyethylene plastic sheeting.
- 6.6 When drilling non-friable asbestos materials (e.g. mastic, textured boards, etc.), a ventilation shut down is not required. However, as appropriate, seal and tape all ventilation openings close to the work area with polyethylene plastic sheeting.
- 6.7 Post signs warning of asbestos hazard at the entrances to the work area
- 6.8 Don respiratory equipment and coveralls as described above.

## **7.0 EXECUTION**

- 7.1 Do not use compressed air.
- 7.2 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.3 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material

- 7.4 Drill using a power tool attached to HEPA dust collection following manufacturer's instructions.
- 7.5 Repeat steps above for each additional proposed drilling location.
- 7.6 At completion of work, HEPA vacuum or wet wipe the drop-sheet, tools and equipment.
- 7.7 Any polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste..

## **8.0 WASTE TRANSPORT AND DISPOSAL**

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually rip-proof polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 \*For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.



Office of Environmental Health and Safety  
UNIVERSITY OF TORONTO

Standard Operating Procedures  
for the Control of Asbestos Fibres  
During Type 2 Operations

ID R2.05

**DRILLING OF HOLES IN WALL WITH ASBESTOS JOINT DRYWALL COMPOUND  
WITH A HEPA FILTERED POWER TOOL**

The exposure of workers and the corresponding measures and procedures for the minor disturbance of friable asbestos are classified as Type 2.

When authorized workers conduct Type 2 activities involving the minor disturbance of friable asbestos, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the requirements outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **1.0 APPLICATION**

- 1.1 These procedures apply to the drilling of holes in walls that contain asbestos drywall joint compound. Asbestos drywall joint compound is a non-friable asbestos-containing material.
- 1.2 Where possible, the use of hand tools to drill in drywall with asbestos drywall joint compound should be encouraged. The use of hand tools (instead of power tools) combined with the wetting down of materials will result in less airborne fibres and Type 1 procedures can be followed. See procedure R1.00 Non-Friable Asbestos Disturbance.
- 1.3 The procedures follow the methods in Ontario Ministry of Labour, Regulations Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Reg. 278/05) and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **2.0 DEFINITIONS**

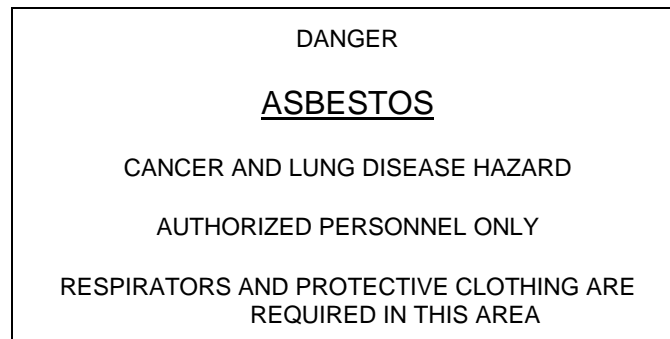
- 2.1 *Work Areas:* Where actual work activity involving non-friable asbestos takes place.
- 2.2 *Damp Wiping:* A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

## **3.0 MATERIALS AND EQUIPMENT**

- 3.1 *HEPA Vacuum:* Vacuum cleaner equipped with High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 *HEPA Filtered Tool:* A tool that has been manufactured specifically for the intended purpose and equipped with a filtering system that meets the same definition for filter efficiency above.
- 3.3 *Drop-sheet:* Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.4 *Amended Water:* A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.



- 3.5 *Sprayer:* Sprayer with mist nozzle for application of amended water or sealant.
- 3.6 *Asbestos Waste Receptacles:* Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.
- 3.7 *Small Tools:* Sponge(s), metal bristle brush(es), bucket(s), ladder(s), heavy duty scraper(s), etc.
- 3.8 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene to all surfaces to be covered.
- 3.9 *Respirator:* See section 5 Personal Protective Equipment.
- 3.10 *Coveralls:* Full body disposable clothing of an appropriate size with attached hood and elasticized at cuffs and hood, made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.11 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.12 *Signage:* Warning of asbestos hazard in the work area:



#### **4.0 NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities. Where this work is part of a larger construction project, follow communications protocols for projects which are more broad and may include notifications to a large group of building occupants and relevant directors in Facilities Management (UTM and UTSc), Facilities Services (St. George) and EHS.

- 4.1 The notification is to include a description of the planned Type 2 activity, its proposed duration, and in general terms the precautionary measures required to maintain a safe work environment. This information is to be provided to the following:
- 4.1.1 Local area occupants (see Appendix I – The notification template in Appendix I can be handed to the occupants during emergency repairs, etc. or as part of an email communication when scheduling the work with the occupants. An email template version is available from EHS.).
- 4.1.2 Where appropriate, Manager, Hazardous Construction Materials Group (St. George only)
- 4.2 Signage at Work Location
- 4.2.1 This sign informs building users of the asbestos-related work being conducted at that work location and that entry into the area is restricted to authorized personnel only. Signs are to be posted in the work area in sufficient numbers to warn of the hazard.

#### **5.0 PERSONAL PROTECTION**

- 5.1 *Respirators:* Workers are required to don respirators when performing Type 2 work. The following shall apply:

- 5.1.1 All respiratory equipment shall be individually assigned and identified.
- 5.1.2 Each worker must be instructed and fit tested with his/her respirator.
- 5.1.3 Workers shall wear at least a half-face piece air-purifying respirator fitted with HEPA (P100) filters (material wetted). If the material cannot be wetted, a full face air-purifying respirator is required.
- 5.1.4 Disposable single-use type respirators are not permitted.
- 5.1.5 All respirators shall be approved and labelled for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
- 5.1.6 Replace filter cartridges as appropriate (36 hours of use or more frequently). Dispose of used cartridges as asbestos waste.
- 5.1.7 No supervisor or worker shall have facial hair which affects respirator-to-face seal.
- 5.2 *Protective Clothing:* All workers must be provided with full body disposable protective clothing (coveralls), extra large size with attached hood and elasticized at the cuffs and hood, made of material which does not readily retain nor permit penetration of asbestos fibres.
- 5.3 *Facilities:* Provide facilities for washing hands and face which shall be used by every worker when leaving asbestos work areas.
- 5.4 *Practice:* Workers shall not eat, drink, smoke or chew while in contaminated work areas.
- 5.5 *Work Area Entry:* All persons shall don respirators with HEPA (P100) filters and clean coveralls before entering work area.
- 5.6 *Work Area Exit:* Before leaving the Work Area and still wearing a respirator, a worker shall:-
  - 5.6.1 Thoroughly HEPA vacuum protective clothing, respirator and footwear.
  - 5.6.2 Remove decontaminated coveralls and wash hands and face with water (in Work Area).
  - 5.6.3 Leave the Work Area in street clothes and proceed to the nearest washroom to wash hands and face.
  - 5.6.4 Coveralls may be reused throughout a day provided they are disposed of after each shift, or left inside the Work Area after each use.

## **6.0 PREPARATION - WORK AREAS**

- 6.1 Do not use compressed air.
- 6.2 Clear immediate work areas of all moveable furnishings or equipment.
- 6.3 Erect tape barriers to keep all non-protected personnel at least 20 feet away. Post signs warning of asbestos hazard at tape barrier (see Signage in Section 3).
- 6.4 An enclosure is not necessary for this activity. As appropriate, a drop-sheet below the work is required; extend the drop-sheet at least 3 feet beyond line of work. Use rip-proof polyethylene if work is above rough concrete or other surface that could tear polyethylene.
- 6.5 Seal and tape all ventilation openings close to the work area with polyethylene plastic sheeting. No ventilation shutdown is required.
- 6.6 Post signs warning of asbestos hazard at the entrances to the work area
- 6.7 Don respiratory equipment and coveralls as described above.

## **7.0 EXECUTION**

- 7.1 Do not use compressed air.
- 7.2 Wet (with amended water) any asbestos-containing material in the vicinity.

- 7.3 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.4 Drill using a power tool physically attached to HEPA dust collection following manufacturer's instructions. Alternatively, use the power drill with the Bitbuddie Dust Shroud attachment and connect to a HEPA vacuum to collect dust. The alternative Bitbuddie method should only be used on asbestos drywall joint compound is within 0.5-5% dry weight per sampling results.
- 7.5 With the HEPA filtration operating, begin the drilling process by positioning the operating drill bit at the proposed drilling location and carefully applying gentle force on the drill while the drill bit **slowly** produces a "**clear-cut**" hole in the wall; remove the tool about 5 seconds after the hole is drilled.
- 7.6 Repeat steps above for each additional proposed drilling location.
- 7.7 At completion of work, HEPA vacuum or wet wipe the drop-sheet, any other surfaces below the work area, tools and equipment.
- 7.8 Any polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste.

## **8.0 WASTE TRANSPORT AND DISPOSAL**

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually rip-proof polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 \*For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.
- 8.3 Drywall containing asbestos drywall joint compound must be disposed of as asbestos waste.

## Appendix I

### **Notification of Type 2 Asbestos Work for SOP 2.05 Drilling of Holes in Wall with Asbestos Drywall Joint Compound with a HEPA Filtered Power Tool (no ventilation shutdown required).**

**\*\*\*Please forward to all applicable occupants in or near the affected room(s).\*\*\***

Date: \_\_\_\_\_ Start time: \_\_\_\_\_ Stop time (approx.): \_\_\_\_\_

Building: \_\_\_\_\_ Room: \_\_\_\_\_

Brief Work Description: \_\_\_\_\_

Name of Contractor or Trade: \_\_\_\_\_ Phone number: \_\_\_\_\_

Property or Project Manager: \_\_\_\_\_ Phone number: \_\_\_\_\_

**Please note that workers that work on a daily basis with asbestos may be wearing respiratory protection and protective coveralls when working in an area where U of T employees, students or Faculty are present in their normal work clothes. Asbestos workers wear this PPE because they are closer to the work being carried out, and are thus exposed at a much higher level than bystanders. In addition, they perform asbestos work on a routine, and may wish to ensure that their total exposure is as low as possible. U of T employees in the area are not exposed on a daily basis, and thus are not subjected to the same level of risk. Please see the section on non-occupational exposure for more details.**

#### **ASBESTOS WORK**

University employees as well as contractors are sometimes required to conduct work that involves the disturbance of asbestos-containing materials. Such work activities are strictly regulated. They are first categorized into three types of work operations - Type 1 (low risk), Type 2 (moderate risk) or Type 3 (high risk). For each of these, the Asbestos Management Program designates corresponding standard operating procedures to prevent the exposure to airborne asbestos. These procedures include strict requirements for preparation of the work area, use of personal protective equipment, use of proper work practices to reduce the spread of asbestos fibres, personal hygiene practices, and asbestos waste handling.

#### **NON-OCCUPATIONAL EXPOSURE:**

Asbestos-specific diseases are almost always a result of occupational exposure to asbestos. Non-occupational exposures resulting in disease have only been seen in spouses or other family members living with an asbestos worker, or those who have lived in the neighbourhood of asbestos plants. Asbestos fibres are naturally occurring and result in a natural background present in our environment. This combined with the widespread use of asbestos in products such as truck brake linings, means that we are all exposed to very small amounts of asbestos in our daily lives. It is not this very low level of exposure that results in asbestos disease but the higher levels of occupational exposure that are of concern to most authorities. Studies have not shown any evidence of asbestos-specific diseases in individuals who breathe asbestos in the outdoor air or who inhale asbestos as occupants of asbestos-containing buildings. Regardless, proper measures for preventing or minimizing exposure to asbestos must always be in place.

**If you have any questions about the work being conducted, then please contact the Property Manager or Project Manager listed above.**



Office of Environmental Health and Safety  
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Standard Operating Procedures  
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During Type 2 Operations

ID R2.13

**DRILLING INTO A WALL THAT CONTAINS A NON-FRIABLE ASBESTOS-CONTAINING COATING USING  
A HEPA VACUUM FOR DUST COLLECTION**

The exposure of workers and the corresponding measures and procedures for the minor disturbance of non-friable asbestos are classified as Type 2.

When authorized workers conduct Type 2 activities involving the minor disturbance of non-friable asbestos, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the requirements outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **1.0 APPLICATION**

- 1.1 This procedure applies to drilling holes in a wall that contains a non-friable asbestos-containing coating (e.g. sealant, paint) by means of power tools. For other disturbances (abrading, grinding, sanding or vibrating), refer to Procedure R2.14.
- 1.2 The procedure describes a modified method in Ontario Ministry of Labour, Regulations Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Reg. 278/05) as allowed by Section 23 of the Regulation and is for St. George Campus only. This procedure follows the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **2.0 DEFINITIONS**

- 2.1 **Work Areas:** Where actual work activity involving non-friable asbestos takes place.
- 2.2 **Damp Wiping:** A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

## **3.0 MATERIALS AND EQUIPMENT**

- 3.1 **HEPA Vacuum:** Vacuum cleaner equipped with a High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 **Dropsheet:** Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.3 **Amended Water:** A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.
- 3.4 **Sprayer:** Sprayer with mist nozzle for application of amended water or sealant.
- 3.5 **Asbestos Waste Receptacles:** Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.
- 3.6 **Small Tools:** Sponge(s), metal bristle brush(es), bucket(s), ladder(s), heavy duty scraper(s), etc.
- 3.7 **Tape:** Reinforced duct tape or double-sided tape suitable for sealing polyethylene to all surfaces to be covered.

- 3.8 *Respirator:* See section 5 Personal Protective Equipment.
- 3.9 *Coveralls:* Full body disposable clothing of an appropriate size with attached hood. It should be elasticized at the cuffs and hood, and be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.10 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.

#### **4.0 NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities. The following methods of communication apply:

- 4.1 Small scale activities where only a few holes are required, such as installing shelves, frames, wires, etc.: Notify local occupants of the work to be done per local site procedures.
- 4.2 Larger-scale activities, for example, as part of an overall abatement or construction project, should follow the same "Notice of Asbestos Work" procedures used for other Type 2 and 3 activities.

#### **5.0 PERSONAL PROTECTION**

- 5.1 Based on air sampling survey, respiratory protection is not required for coatings that contain 0.5-5% asbestos. However, workers performing the drilling are strongly advised to wear respirators. If the asbestos is >5%, respiratory protection is required.
- 5.2 When wearing a respirator, the following shall apply:
- 5.2.1 All respiratory equipment shall be individually assigned and identified.
- 5.2.2 Each worker must attend respiratory protection training and be fit tested prior to beginning work.
- 5.2.3 Workers shall wear at least a half facepiece respirator fitted with purple HEPA (P100) filters.
- 5.2.4 Disposable single-use type respirators are not permitted.
- 5.2.5 All respirators shall be approved for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
- 5.2.6 Replace filter cartridges as appropriate (36 hours of use or more frequently).
- 5.3 While not mandatory, workers are strongly advised to wear disposable coveralls.
- 5.4 A worker who is provided with protective clothing shall, before leaving the work area:
- 5.4.1 Decontaminate his or her protective clothing and footwear by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing. Thoroughly clean respirator if applicable.
- 5.4.2 If the protective clothing will not be reused, place it in an asbestos waste receptacle.
- 5.5 *Facilities:* Provide access to facilities for washing hands and face which shall be used by every worker when/after leaving asbestos work areas.
- 5.6 Smoking, eating, drinking or chewing in asbestos work areas is prohibited.

## **6.0 PREPARATION - WORK AREAS**

- 6.1 Do not use compressed air.
- 6.2 Clear immediate work areas of all moveable furnishings or equipment.
- 6.3 In common areas, erect tape barriers to keep occupants at least 20 feet away. Other works not associated with the asbestos work shall stay away at least 20 feet from the work area. No signage is required.
- 6.4 An enclosure is not necessary for this activity. As appropriate, a drop-sheet below the work is required; extend the drop-sheet at least 3 feet beyond line of work. Use rip-proof polyethylene if work is above rough concrete or other surface that could tear polyethylene.
- 6.5 No ventilation shutdown is required. Seal and tape all ventilation openings close to the work area with polyethylene plastic sheeting.
- 6.6 Don respiratory equipment and coveralls if applicable.

## **7.0 EXECUTION**

- 7.1 Do not use compressed air.
- 7.2 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.3 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material.
- 7.4 Follow manufacturer's direction to operate the HEPA vacuum. Position the tool at the proposed location and the nozzle of the HEPA vacuum directly below the proposed location. Apply a gentle force and move the tool slowly as needed. Remove the drill about 5 seconds after the hole or cut is completed. HEPA vacuum the hole with nozzle to remove any loose dust from the hole.
- 7.5 Repeat steps above for each additional proposed location.
- 7.6 At completion of work, HEPA vacuum or wet wipe the drop-sheet, any other surfaces below the work area, tools and equipment.
- 7.7 Any polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste.

## **8.0 WASTE TRANSPORT AND DISPOSAL**

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually rip-proof polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 \* For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.



Office of Environmental Health and Safety  
UNIVERSITY OF TORONTO

Standard Operating Procedures  
for the Control of Asbestos Fibres  
During Type 2 Operations

ID R2.14

**DISTURBANCE OF WALL THAT CONTAINS A NON-FRIABLE ASBESTOS-CONTAINING COATING USING  
A HEPA FILTERED POWER TOOL**

The exposure of workers and the corresponding measures and procedures for the minor disturbance of non-friable asbestos are classified as Type 2.

When authorized workers conduct Type 2 activities involving the minor disturbance of non-friable asbestos, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the requirements outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **1.0 APPLICATION**

- 1.1 This procedure applies to breaking, cutting, abrading, grinding, sanding or vibrating a wall that contains a non-friable asbestos-containing coating (e.g. sealant, paint) by means of power tools that are attached to dust-collecting devices equipped with HEPA filters. This work is classified as a Type 2 operation (Section 12(3)8 of 278/05). For drilling holes in the same type of wall, refer to Procedure R. 2.13.
- 1.2 The procedures follow the methods in Ontario Ministry of Labour, Regulations Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Reg. 278/05) and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

## **2.0 DEFINITIONS**

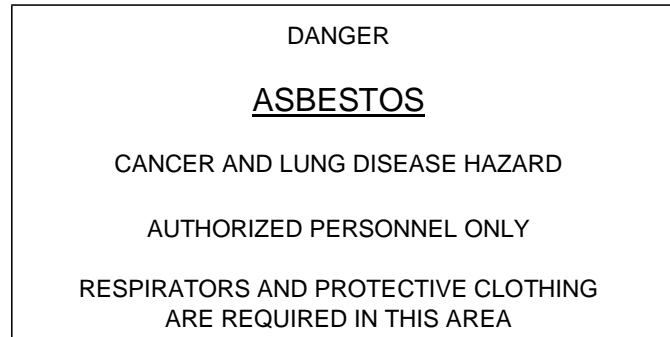
- 2.1 **Work Areas:** Where actual work activity involving non-friable asbestos takes place.
- 2.2 **Damp Wiping:** A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

## **3.0 MATERIALS AND EQUIPMENT**

- 3.1 **HEPA Vacuum:** Vacuum cleaner equipped with High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 **HEPA Filtered Tool:** A tool that has been manufactured specifically for the intended purpose and equipped with a filtering system that meets the same definition for filter efficiency as in Item 3.1.
- 3.3 **Dropsheet:** Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos..
- 3.4 **Sprayer:** Sprayer with mist nozzle for application of amended water or sealant.
- 3.5 **Asbestos Waste Receptors:** Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.



- 3.6 *Small Tools:* Sponge(s), metal bristle brush(es), bucket(s), ladder(s), heavy duty scraper(s), etc.
- 3.7 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene to all surfaces to be covered.
- 3.8 *Respirator:* See section 5 Personal Protective Equipment.
- 3.9 *Coveralls:* Full body disposable clothing of appropriate size with attached hood and elasticized at cuffs and hood, made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.10 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.11 *Signage:* Warning of asbestos hazard in the work area:



#### **4.0 NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities. The following methods of communication apply:

- 4.1 The notification is to include a description of the planned Type 2 activity, its proposed duration, and in general terms the precautionary measures required to maintain a safe work environment. This information is to be provided to the following parties:
  - 4.1.1 All appropriate Directors (St. George, UTM, UTSC, Capital Projects)
  - 4.1.2 Manager, Hazardous Construction Materials Group (St. George only)
  - 4.1.3 Director, Occupational Health and Safety
  - 4.1.4 Co-chairs of both the Trades and the Utilities Joint Health and Safety Committees
  - 4.1.5 Co-chairs, Local Joint Health and Safety Committee
  - 4.1.6 Local Area Occupants
- 4.2 Signage at the Work Location
  - 4.2.1 This sign informs building users of the asbestos-related work being conducted at that work location and that entry into the area is restricted to authorized personnel only. Signs are to be posted in the work area in sufficient numbers to warn of the hazard.

#### **5.0 PERSONAL PROTECTION**

- 5.1 *Respirators:* Workers are required to don respirators when performing Type 2 work. The following shall apply:
  - 5.1.1 All respiratory equipment shall be individually assigned and identified.
  - 5.1.2 Each worker must be instructed and fit tested with his/her respirator.
  - 5.1.3 Workers shall wear at least a half-face piece air-purifying respirator fitted with HEPA (P100) filters (material wetted). If the material cannot be wetted, a full face air-purifying respirator is required.

- 5.1.4 Disposable single-use type respirators are not permitted.
- 5.1.5 All respirators shall be approved for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
- 5.1.6 Replace filter cartridges as appropriate (36 hours of use or more frequently). Dispose of used cartridges as asbestos waste.
- 5.1.7 No supervisor or worker shall have facial hair which affects respirator-to-face seal.
- 5.2 *Protective Clothing:* All workers must be provided with full body disposable coverall and shoe covers as described in Section 3.
- 5.3 *Facilities:* Provide access to facilities for washing hands and face which shall be used by every worker when/after immediately leaving asbestos work areas.
- 5.4 *Practice:* Workers shall not eat, drink, smoke or chew while in contaminated work areas.
- 5.5 *Work Area Entry:* All persons shall don respirators with HEPA (P100) filters and clean coveralls before entering work area.
- 5.6 *Work Area Exit:* Before leaving the Work Area and still wearing a respirator, a worker shall:-
  - 5.6.1 Thoroughly HEPA vacuum protective clothing and footwear.
  - 5.6.2 Remove decontaminated coveralls and respirator, and wash hands and face with water (in Work Area).
  - 5.6.3 Leave the Work Area in street clothes and proceed to the nearest washroom to wash hands and face.
  - 5.6.4 Coveralls may be reused throughout a day provided they are disposed of after each shift, or left inside the Asbestos Work Area after each use.

## **6.0 PREPARATION - WORK AREAS**

- 6.1 Do not use compressed air.
- 6.2 Clear immediate work areas of all moveable furnishings or equipment.
- 6.3 Erect tape barriers to keep all non-protected personnel at least 20 feet away. Post signs warning of asbestos hazard at tape barrier (see Signage in Section 3).
- 6.4 An enclosure is not necessary for this asbestos work under the O. Regulation 278/05. However, an enclosure may be used to provide general dust control or provide a barrier in public areas. As appropriate, a drop-sheet below the work is required; extend the drop-sheet at least 3 feet beyond line of work. Use rip-proof polyethylene if work is above rough concrete or other surface that could tear polyethylene.
- 6.5 Seal and tape all ventilation openings close to the work area with polyethylene plastic sheeting. No ventilation shutdown is required.
- 6.6 Post signs warning of asbestos hazard at the entrances to the work area
- 6.7 Don respiratory equipment and coveralls as described above.

## **7.0 EXECUTION**

- 7.1 Do not use compressed air.
- 7.2 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.3 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material.
- 7.4 Follow manufacturer's direction to operate the HEPA vacuum. Apply a gentle force and move the tool Follow manufacturer's direction to operate the HEPA filtered tool slowly as needed. Remove the tool about 5 seconds after the hole or cut is completed.

- 7.5 Repeat steps above for each additional proposed location.
- 7.6 At completion of work, HEPA vacuum or wet wipe the drop-sheet, any other surfaces below the work area, tools and equipment.
- 7.7 Any polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste.

## **8.0 WASTE TRANSPORT AND DISPOSAL**

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually rip-proof polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 \* For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.
- 8.3 Cinderblock waste with asbestos-containing coating must be disposed of as asbestos waste.