



FINAL
Asbestos Management
Program (Hamilton
General Hospital)
Part A - Policies

237 Barton Street East, Hamilton, ON

Prepared for:

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GLOSSARY

Amended Water	Water with wetting agent added for purpose of reducing surface tension to allow thorough wetting of ACM.
Asbestos-Containing Material(s) (ACM)	A material that contains 0.5% or more asbestos as measured by U.S. Environmental Protection Agency Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993.
Asbestos	Any of the following fibrous silicates: Actinolite; Amosite; Anthophyllite; Chrysotile; Crocidolite; Tremolite.
Asbestos Work Area	Area where work is being performed which will or may disturb ACM including overspray and fallen material or settled dust that may contain asbestos.
Competent Worker	In relation to specific work, means a worker who, is qualified because of knowledge, training and experience to perform the work is familiar with the Act and with the provisions of the regulations that apply to the work, and has knowledge of all potential or actual danger to health or safety in the work.
Encapsulation	The application of a liquid sealant to asbestos-containing materials; the sealant may penetrate and harden the material (penetrants) or cover the surface with a protective coating (bridging sealants). Also called encasement. This is generally not advisable.
Enclosure	Enclosure of ACM means the construction of solid enclosure (walls, ceiling, bulkhead etc.) around ACM, or An Enclosure means the site isolation including hoarding walls, polyethylene sheeting and seals that isolates an Asbestos Work Area.
Friable Material	Material that: when dry, can be crumbled, pulverized or powdered by hand pressure or is crumbled, pulverized or powdered.
Glove Bag Removal	A method of removing friable insulation from a piping system using a prefabricated bag which isolates the section of insulation being removed. This is a Type 2 Procedure.
HEPA Filter	High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.



HEPA Filtered Negative Pressure Unit:	Portable air handling unit which extracts air directly from the Asbestos Work Area and discharges the air to the exterior of the building after passing through a HEPA filter.
JHSC	Joint Health and Safety Committee.
MOE	Ontario Ministry of the Environment.
MOL	Ontario Ministry of Labour.
Phase Contrast Microscopy (PCM)	A method which uses an optical microscope to determine airborne fibres, normally in an occupational setting. Particles are observed for shape and size. Results are presented as a number of fibres per cubic centimetre or millilitre of air (f/mL). The method of analysis in Ontario is based on the US National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7400, issue 2, Asbestos and Other Fibres by PCM (August 15, 1994).
Transmission Electron Microscopy (TEM)	A method which uses an electron microscope to determine airborne asbestos fibres. Results are presented in fibres per cubic centimetre of air (f/cc). The method of analysis in Ontario is The U.S. National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7402, Issue 2: Asbestos by TEM (Aug 15, 1994).
Type 1, 2 and 3 Procedures	Procedures defined under Ontario Ministry of Labour Regulation 278/05. The specific operations and their classification into these procedures are described under the Classification of Work Section.
US EPA	United States Environmental Protection Agency.



1.0 PURPOSE AND SCOPE

The Asbestos Management Program (AMP) provides information and procedures for Asbestos Management in Hamilton General Hospital (HGH), 237 Barton Street East, Hamilton, ON. The AMP applies to all Hamilton Health Sciences (HHS) staff as well as all service providers and contractors performing work in this facility.

The AMP outlines the responsibilities of HHS staff in their roles as the Owner's Representatives of building containing Asbestos-Containing Material (ACM) and as tenants of a building with ACM.

The AMP consists of two parts; PART A (this document) outlines the policies, purpose and responsibilities and PART B includes the procedures to be followed when completing asbestos related work in the facility.

The AMP incorporates the following elements:

- Asbestos Assessments and Reassessments. These documents are part of the AMP and can be found in the Engineering Office and are also available on the HHS Intranet site under Health Safety Wellness/Asbestos Sub Committee/Hamilton General Site/Survey.
- Regulatory Requirements and HHS Policies.
- Roles and Responsibilities.
- Notifications.
- Training Requirements.
- Emergency Reaction and Procedures.
- Work Practices (Type 1, 2, and Glove Bag work).
- Record Keeping.
- Contractor Requirements.

2.0 REGULATORY REQUIREMENTS AND HHS POLICIES

2.1 Regulatory Requirements

The HHS AMP was implemented in response to the following legislation.

- Ontario Regulation 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations as amended, made under the Occupational Health and Safety Act, 1980, under the jurisdiction of the Ontario Ministry of Labour (MOL).
- R.R.O. 1990, Reg. 347, as amended made under the Environmental Protection Act, under the jurisdiction of the Ontario Ministry of the Environment (MOE).



- Transportation of Dangerous Goods Act, 1992 (TDGA, 1992), S.C, 1992, c. 34 including Transportation of Dangerous Goods Regulations SOR/85/77 and subsequent amendments.

2.2 HHS Policies Related to Asbestos

HHS is committed to ensuring the health and safety of all staff, service providers, and building occupants. All building operations, whether performed by HHS staff or service providers, shall be performed in adherence to the requirements outlined in this document and Ontario Regulation 278/05, Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operation made under the Occupational Health and Safety Act and all other applicable regulations.

HHS has established certain policies which exceed the minimum requirements of O. Reg. 278/05 as follows:

- Due to future management issues and additional costs incurred over the life of the material, HHS will not utilize any ACM in new construction or installations.
- Only qualified Asbestos Abatement Contractors and HHS FM staff shall undertake asbestos operations as defined in O. Reg. 278/05. All abatement contractor workers and HHS FM staff who will undertake any asbestos operation must have successfully completed an asbestos training program that meets the requirements of Section 19 in O. Reg. 278/05.
- All Type 3 asbestos operations shall be undertaken by HHS FM staff or a qualified Asbestos Abatement Contractor employing workers and supervisors certified under the Ministry of Advanced Education and Skills Development (MAESD) Asbestos Abatement Program; formerly the Ministry of Training, Colleges and Universities (MTCU).
- Type 1 or 2 work may be undertaken by either appropriately trained abatement contractor workers or HHS FM staff.

2.3 Asbestos Work Reports

Section 21 of O. Reg. 278/05 requires HHS to submit an asbestos work report for employees of HHS who perform Type 2 or 3 Operations at least every 12 months or upon termination of employment.

The asbestos work reports are tracked by Engineering and submitted to employee health services by the Engineering Site Manager. Information is submitted by January 31st of each Calendar Year. Employee Health retains a copy for the employee file to verify the medical surveillance list and forwards the originals to the MOL.



3.0 BACKGROUND INFORMATION AND HEALTH EFFECTS

Refer to Appendix A of this document for Background Information on Asbestos in Building Materials and Health Hazards.

4.0 SUMMARY OF ASBESTOS AT HAMILTON GENERAL HOSPITAL (HGH)

Surveys prepared for this facility include:

- Asbestos Building Materials Assessment Report, dated August 21, 2002 prepared by REA.
- Asbestos Building Materials Re-assessment Report, original assessment dated August 29, 2008 (revised December 5, 2008) prepared by Pinchin Environmental Ltd.
- Asbestos Building Materials Re-assessment Report, dated June 8, 2012 prepared by Pinchin Environmental Ltd.
- Asbestos Building Materials Re-assessment Report, dated October 21, 2013 prepared by Pinchin Environmental Ltd.
- Asbestos Building Materials Re-assessment Report, dated April 8, 2014 prepared by Pinchin Environmental Ltd.
- Asbestos Building Materials Re-assessment Report, dated May 29, 2015, prepared by Pinchin Ltd.
- Asbestos Building Materials Re-assessment Report, dated April 20, 2016, prepared by ECOH.

Surveys prepared for this facility are up to date and current with the sampling criteria outlined in O. Reg. 278/05. Subsequent Re-assessment Reports submitted after 2016 are not included in the above list of completed surveys.

The following is a brief summary of the materials present in this facility:

- Residual sprayed fireproofing
- Texture finish
- Pipe insulation
- Glued-on ceiling tiles
- Plaster
- Drywall joint compound
- Asbestos cement (Transite)



- Vinyl floor tiles and mastic
- Tar
- Sink undercoating

Note: not all of these products in each area of the building contain asbestos; refer to the most recent Asbestos Reassessment Report for the facility for a complete description.

5.0 ROLES AND RESPONSIBILITIES

The following HHS personnel have responsibilities for establishing and maintaining the AMP.

5.1 The HHS Hazardous Materials Specialist (HMS)

1. Ensure the asbestos assessment report and asbestos inventory list is available on-site and kept up to date at completion of any abatement projects.
2. Oversee all asbestos activities, but not responsible for CUPE, Contractors, Trades, Supervisors, Project Supervisors or Project Manager duties.
3. Ensure Project Managers, Project Supervisors and Trades Supervisors are provided with a copy of the most recent Asbestos Survey.
4. The HMS shall be provided with a copy of Pre-construction Hazardous Materials Assessment Reports prior to the tendering stage of each construction project.
5. Be aware of all planned renovation or demolition projects and, at his/her discretion review contract documents before tender, a minimum of five working days in advance.
6. Arrange for awareness training on asbestos for building occupants as required to respond to concerns over the presence of asbestos or planned asbestos work when required.
7. Maintain all documentation required by this program, including but not limited to: Asbestos Management Program, Asbestos Assessment and Reassessment Reports, Asbestos Inventories, Asbestos Project Work Record, Tenant Notification Letters, Contractor Notification Forms, Air Sampling Results, Consultant Inspection Reports and Asbestos and Respirator Training Certificates.
8. Upon an unexpected discovery of suspect ACM, or upon an uncontrolled asbestos spill or disturbance, provide direction of the proper procedures for isolation, clean-up and testing, as required. Refer to Appendices B and C of this document for further details regarding these procedures.



9. Make revisions to the asbestos inventory based on the Asbestos Project Work Record and drawings provided by Project Managers and Project Supervisors to assist with keeping the asbestos inventory up to date.
10. Notify HHS JHSC of any sampling or testing (i.e. hygiene, bulk, air sampling, etc.) as they have a right to be present during testing, if desired. When possible provide a minimum of 24 hours' notice to the HHS JHSC (by e-mail).
11. Review work areas with the Project Designate and General Contractor for acceptance of cleanliness upon completion of a project.
12. Attend HHS MOL site visits to address any questions regarding the AMP in the event that interpretation is needed, or to defend any direction provided by the HMS, as it pertains to O. Reg. 278/05.

5.2 Facilities Site Manager and Trade Supervisors

1. Responsible for CUPE workplace not assigned to capital projects. Also responsible for FM operating contractors, including but not limited to asbestos abatement contractors. Responsible for all minor asbestos repairs, clean-ups, etc. identified by the JHSC and other inspections, excluding capital project spaces. MOL contact for CUPE and FM operating contractor issues.
2. Supervisors must notify Tenant Management Representatives, the HMS and/or building occupants where their space is affected, in advance of projects which will require Type 3 Procedures. Notification to the JHSC and HMS during the Monthly Asbestos Subcommittee meeting is acceptable.
3. Maintain all documentation required by this program, including but not limited to: Tenant Notification Letters, Contractor Notification Forms, Asbestos Project Work Records, Air Sampling Results, Consultant Inspection Reports and Asbestos and Respirator Training Certificates.
4. Notify staff and outside contractors or service providers who may work with or may disturb asbestos-containing materials in the record of its presence and location (issue Contractor Notification Letter as appropriate, refer to Appendix H in PART B of the AMP. Provide HMS with a copy of the completed form.
5. Ensure all Architects, Engineers and others arranging for or planning work are provided with a copy of the most recent Asbestos Inventory and AMP.



6. Ensure all HHS staff/abatement contractor workers performing Type 3 asbestos work operations have appropriate training for the workers and supervisors prior to the start of work (MAESD Certified).
7. Ensure that a Notice of Asbestos Project Form is submitted to the MOL prior to commencing with any Type 3 asbestos abatement work, glove bag operations that exceed one square meter of friable asbestos-containing material or where an asbestos abatement project exceeds \$50,000.00.
8. Ensure an intrusive pre-construction assessment for friable and non-friable asbestos and other Designated Substances and hazardous building materials is performed prior to any renovation, alteration or demolition. Such assessments shall include destructive investigation where necessary. Ensure this information is provided to the Constructor in plans, drawings or specifications, as part of the tendering process and package.
9. Notify the HMS, JHSC and the inspector at the nearest MOL office, if material suspected of containing asbestos is discovered during a project and was not identified in the pre-construction survey report, as required by Section 10(7) of O. Reg. 278/05.
10. Upon an unexpected discovery of suspect ACM, or upon an uncontrolled asbestos spill or disturbance, follow the emergency procedures outlined Appendices B and C of this document.
11. For appropriate projects (e.g. Type 3), arrange for the inspection and air monitoring of asbestos work in the facility, as required by O. Reg. 278/05, and this AMP. Air sampling results must be presented to the JHSC and posted on the H&S Board for 14 consecutive days.
12. Complete the Asbestos Project Work Record in Appendix E in PART B of the AMP at the completion of each asbestos abatement project not related to capital projects, or prior to occupancy of any phase of the project. Submit the Asbestos Project Work Record to the HMS. Notify the HMS with updated drawings detailing the locations and asbestos-containing materials that were abated and replaced with non-ACM materials during the project.
13. Notify the HHS JHSC of any sampling or testing (i.e. hygiene, bulk, air sampling, etc.) as they have a right to be present during testing if desired. When possible provide a minimum of 24 hours' notice to the HHS JHSC (by e-mail).



5.3 FM Construction Project Manager and Project Supervisors

1. Responsible for Project Management of all FM construction projects, constructor issues and associated contractors. MOL contact for FM construction project issues in FM capital project workspaces and common areas.
2. FM Project Managers/Supervisors must notify Tenant Management Representatives, the HMS, and/or building occupants where their space is affected, in advance of projects which will require Type 2 or Type 3 procedures.
3. Maintain all documentation required by this program, including but not limited to: Tenant Notification Letters, Contractor Notification Forms, Asbestos Project Work Records, Air Sampling Results and Consultant Inspection Reports.
4. Notify staff and outside contractors or service providers who may work with or may disturb asbestos-containing materials in the record of its presence and location (issue Contractor Notification Letter as appropriate, refer to Appendix H in PART B of the AMP. Provide signed copy to HMS.
5. Ensure all Architects, Engineers and others arranging for or planning work are provided with a copy of the most recent Asbestos Inventory and AMP.
6. Ensure all HHS staff/abatement contractor workers performing Type 3 asbestos work operations have appropriate training for the workers and supervisors prior to the start of work (MAESD Certified).
7. Ensure that a Notice of Asbestos Project Form is submitted to the MOL prior to commencing with any Type 3 asbestos abatement work, glove bag operations that exceed one square meter of friable asbestos-containing material or where an asbestos abatement project exceeds \$50,000.00.
8. Ensure an intrusive pre-construction assessment for friable and non-friable asbestos and other Designated Substances and hazardous building materials is performed prior to any renovation, alteration or demolition. Such assessments shall include destructive investigation where necessary. Ensure this information is provided to the Constructor in plans, drawings or specifications, as part of the tendering process and package.
9. Notify the HMS, HHS JHSC and the inspector at the nearest MOL office, if material suspected of containing asbestos is discovered during a project and was not identified in the pre-construction survey report, as required by Section 10(7) of O. Reg. 278/05.
10. Upon an unexpected discovery of suspect ACM, or upon an uncontrolled asbestos spill or disturbance, follow the emergency procedures outlined Appendices B and C of this document.



11. For appropriate projects (i.e. Type 3), arrange for the inspection and air monitoring of asbestos work in the facility as required by O. Reg. 278/05 and this AMP. Air sampling results must be presented to the JHSC and posted on the H&S Board for 14 consecutive days. Provide copy to HMS.
12. Complete the Asbestos Project Work Record in Appendix E in PART B of the AMP at the completion of each asbestos abatement project not related to capital projects, or prior to occupancy of any phase of the project. Submit the Asbestos Project Work Record to the HMS. Notify the HMS with updated drawings detailing the locations and asbestos-containing materials that were abated and replaced with non-ACM materials during the project.
13. Notify the HMS and HHS JHSC of any sampling or testing (i.e. hygiene, bulk, air sampling, etc.) as they have a right to be present during testing if desired. When possible provide a minimum of 24 hours' notice to the HHS JHSC (by e-mail).
14. Sign-in Log: General Contractors are to keep sign-in logs for all trades accessing their construction areas. Copies of those records will be available to Project Designates upon request.

5.4 Director, Capital Development and Capital Project Managers

1. Responsible for Project Management of all FM construction projects, constructor issues and associated contractors. MOL contact for FM construction project issues in FM capital project workspaces and common areas.
2. FM Project Managers/Supervisors must notify Tenant Management Representatives, the HMS, and/or building occupants where there space is affected, in advance of projects which will require Type 2 or Type 3 procedures.
3. Maintain all documentation required by this program, including but not limited to: Tenant Notification Letters, Contractor Notification Forms, Asbestos Project Work Records, Air Sampling Results and Consultant Inspection Reports.
4. Notify staff and outside contractors or service providers who may work with or may disturb asbestos-containing materials in the record of its presence and location (issue Contractor Notification Letter as appropriate, refer to Appendix H in PART B of the AMP. Provide signed copy to HMS.
5. Ensure all Architects, Engineers and others arranging for or planning work are provided with a copy of the most recent Asbestos Inventory and AMP.



6. Ensure all HHS staff/abatement contractor workers performing Type 3 asbestos work operations have appropriate training for the workers and supervisors prior to the start of work (MAESD Certified).
7. Ensure that a Notice of Asbestos Project Form is submitted to the MOL prior to commencing with any Type 3 asbestos abatement work, glove bag operations that exceed one square meter of friable asbestos-containing material or where an asbestos abatement project exceeds \$50,000.00.
8. Ensure an intrusive pre-construction assessment for friable and non-friable asbestos and other Designated Substances and hazardous building materials is performed prior to any renovation, alteration or demolition. Such assessments shall include destructive investigation where necessary. Ensure this information is provided to the Constructor in plans, drawings or specifications, as part of the tendering process and package.
9. Notify the HMS, HHS JHSC and the inspector at the nearest MOL office, if material suspected of containing asbestos is discovered during a project and was not identified in the pre-construction survey report, as required by Section 10(7) of O. Reg. 278/05.
10. Upon an unexpected discovery of suspect ACM, or upon an uncontrolled asbestos spill or disturbance, follow the emergency procedures outlined Appendix B and C of this document.
11. For appropriate projects (e.g. Type 3), arrange for the inspection and air monitoring of asbestos work in the facility as required by O. Reg. 278/05 and this AMP. Air sampling results must be presented to the JHSC and posted on the H&S Board for 14 consecutive days. Provide copy to HMS.
12. Complete the Asbestos Project Work Record in Appendix E in PART B of the AMP at the completion of each asbestos abatement project not related to capital projects, or prior to occupancy of any phase of the project. Submit the Asbestos Project Work Record to the HMS. Notify the HMS with updated drawings detailing the locations and asbestos-containing materials that were abated and replaced with non-ACM materials during the project.
13. Notify the HMS and HHS JHSC of any sampling or testing (i.e. hygiene, bulk, air sampling, etc.) as they have a right to be present during testing if desired. When possible provide a minimum of 24 hours' notice to the HHS JHSC (by e-mail).
14. Sign-in Log: General Contractors are to keep sign-in logs for all trades accessing their construction areas. Copies of those records will be available to Project Designates upon request.



5.5 HHS Health, Safety and Wellness (HSW), Manager of Safety and Safety Specialist

1. A HSW Rep will attend all MOL visits.

5.6 HHS Staff who Arrange Leases with HHS Tenants

Personnel involved in Leasing to HHS Tenants shall:

1. Ensure all leases signed by tenants of HHS include reference to this AMP and that tenants are to follow the requirements of the AMP. Letter of notification regarding asbestos in the premises is also to be sent to tenants.

5.7 Contractor Responsibilities

Contractors shall:

1. Ensure that their staff are properly trained in asbestos hazards as per the OH&S Act and the applicable regulations (O. Reg. 278/05 and O. Reg. 490/09).
2. Ensure all work which may involve asbestos is performed in compliance with the site specific procedures, general requirements of this AMP and O. Reg. 278/05.
3. Report to their HHS Project Designate and/or the General Contractor, if material suspected of containing asbestos is discovered during a project and was not identified in the pre-construction survey report. The Project Designate will be responsible for contacting the nearest MOL office, as required by Section 10(7) of O. Reg. 278/05.
4. Report to their HHS Project Manager/Supervisor on a monthly basis to document the removal of any asbestos-containing materials in order for HHS to update the asbestos inventory and maintain accurate records.
5. Provide HHS Project Designate two days notification to arrange JHSC worker representation for any sampling or testing (i.e. hygiene, bulk, air sampling, etc.) to be conducted for asbestos; HHS JHSC worker representation is only required to be notified where testing is to be conducted in areas of the facility that are occupied by HHS staff.

6.0 ASBESTOS ASSESSMENT AND REASSESSMENT POLICIES

6.1 Asbestos Assessments for Management Purposes (Section 8 of O. Reg. 278/05)

A description of ACM in the facility is included in the most recent Asbestos Assessment Report, which is available in the Engineering Office. All HHS Facilities constructed prior to 1986 shall have, on-site, an asbestos assessment report that includes friable and non-friable ACM. The survey shall be conducted on a room-by-room basis and shall indicate the location, condition, friability, accessibility and type of



asbestos present in the Facility as outlined below. A simplified report (not room-by-room) shall be maintained for 1986 and later buildings.

As existing surveys have been performed for management and maintenance purposes they do not include destructive sampling that may destroy the material or damage the building. Typical materials that are not part of the assessment include:

- elevator and lift brakes
- components or wiring within motors or lights
- high voltage wiring
- mechanical packing, ropes and gaskets
- exterior cladding, soffit and fascia boards on building
- fire-door cores
- window caulking
- demountable fire resistant metal clad walls
- roofing, roofing felt and building paper
- mastics, adhesives and tar (some are included but not comprehensively)
- vermiculite above solid ceilings, inside masonry or other wall assemblies
- moulded plastic components (laboratory bench tops)
- underground services or piping
- paper products used under flooring or under metal or slate roofing
- concrete levelling compound (for floors)
- refractory brick in boilers or incinerators

The survey of pre-1986 buildings include the information gathered on a room-by-room basis together with recommendations for asbestos management, control or removal for each material detected in each location. The location of materials suspected to contain asbestos but shown by analysis to be non-asbestos are reported. The original laboratory report of all analyses provided as part of the report. Samples were collected at a rate that is in compliance with the requirements of O. Reg. 278/05, which states a minimum number of samples are to be collected and analyzed from each area of homogeneous material for the material to be considered non-asbestos. This frequency is indicated in the Table 1 of O. Reg. 278/05.



Type of Material	Size of Homogeneous Material	Minimum Number of Bulk Samples
Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings, fireproofing materials on structural members and plaster	Less than 90 square metres	3
	90 or more square metres, but less than 450 square metres	5
	450 or more square metres	7
Thermal insulation, except as described below	Any size	3
Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
Other materials	Any size	3

6.2 Bulk Sample Collection Procedures

Bulk samples collected during the initial survey and all samples collected for future testing including testing of unexpected suspect asbestos discovered during a project shall be collected following the procedures provided in Appendix A in Part B of the AMP. Following these procedures, samples can be collected by qualified HHS staff or by an Asbestos Consultant, under the direction of the HMS or Project Designate. A worker member of the JHSC must be notified prior to any sampling being conducted and invited to be present at the start of sampling. When possible a minimum of 24 hours' notice should be given to the JHSC to be present.

6.3 Bulk Analysis

Bulk samples will be analysed for asbestos in accordance with O. Reg. 278/05 section 3(1)1. All analyses shall be performed by laboratories accredited in the US National Voluntary Laboratory Accreditation Program (NVLAP) or the American Industrial Hygiene Association (AIHA) asbestos in bulk sample programs.

6.4 Distribution of Assessment Record and Reassessment

The HMS and/or the JHSC will arrange with an Asbestos Consultant for regular reassessments of all accessible areas identified by the survey to contain ACM. The reassessment will be performed at least annually if ACM is present. If a specific area is subject to any change of use, frequent maintenance



which may disturb the material, or if any report of damaged or deteriorated ACM is brought to the attention of the HMS, the reassessment of materials in the specific area shall be performed on a more frequent basis. Reassessment shall always be performed of specific materials when damage or deterioration is reported. In Facilities which are entirely leased and in which HHS are responsible for maintenance, renovation or alteration, the initial survey and the reassessment are the responsibility of the landlord. Copies of the initial survey and reassessments shall be provided by the landlord to the HMS and maintained on-site.

6.5 Pre-construction Designated Substance and Hazardous Materials Assessment (Section 10 of O. Reg. 278/05)

The Project Designate is to ensure that **destructive testing** has occurred prior to the work and that a **pre-construction designated substance and hazardous materials assessment** has been conducted and provided to the contractor as part of the tender package. In addition, a copy of the current asbestos inventory and AMP is to be provided to the contractor as part of the tender package.

7.0 NOTIFICATION

7.1 Notification to Tenants

Upon completion of the asbestos assessment, HHS will inform all Tenant Representative of the presence of asbestos within their leased space and provide them with access to portions of the record regarding their premises and common areas. The letter of notification to Tenants regarding asbestos shall be used for this purpose; refer to Appendix G in Part B of the AMP. This notice will be provided to all existing and new tenants as required.

7.2 Notification of Contractors and HHS Employees Performing Work at HHS Facilities

All contractors and HHS employees who perform work at facilities where ACM is present shall be notified of the presence of the ACM if their work may bring them into contact or close proximity to the ACM and they may disturb it. This notification may include janitorial, security, telephone, computer cabling suppliers, mechanical maintenance contractors, etc. This notification shall be performed by the Project Designate.

7.3 Notification of Maintenance Personnel

Upon completion of the asbestos reassessment, all FM Staff will have access to the updated asbestos inventory.



7.4 Notification of Asbestos Abatement

Contractors are to:

- Notify orally and in writing, an inspector at the office of the Ontario Ministry of Labour nearest the project site (Notice of Project), as per Regulation 278/05, prior to commencing Type 3 abatement, Glove Bag abatement or any abatement project that exceeds \$50,000.00 in cost.
- Provide a copy of all Notice of Asbestos Removal Work Forms provided by the MOL.
- Notify Sanitary Landfill site as per Ontario MOE Regulation 347 as amended.
- Inform all sub trades of the presence of ACM identified in the contract documents.
- Notify the Project Designate if suspect ACM not identified in the contract documents is discovered during the course of the work. The HHS Project Designate is to notify the HMS immediately. **HHS will engage the MOL as well as the JHSC and follow all measures as outlined in in Section 10(7) of O. Reg. 278/05.**

7.5 Notification of General Employees

- HHS will notify general employees that asbestos is present in the facility during the new employee orientation program and/or using the E-Learning Program.
- HHS will notify employees that detailed information can be found by going to the Engineering Office.

8.0 TRAINING REQUIREMENTS

HHS requires all service providers, contractors, etc. to provide appropriate training to all workers who perform Type 1, 2 or 3 work in HHS Facilities.

Contractors who perform Type 1 or Type 2 work shall ensure all workers and supervisors are provided with sufficient training in these operations to satisfy the requirements of O. Reg. 278/05 and any HHS site specific requirements.

All contractors who perform Type 3 work shall ensure that all Workers who perform such work are certified under the MAESD program 253W and that all Supervisors who supervise such work are certified under the MAESD program 253S.



9.0 EMERGENCY PROCEDURES AND CONTACTS

9.1 Fallen Debris or Damaged Material

Contractors or HHS staff may encounter fallen material that is suspected to contain asbestos. This may occur in locations where asbestos has been documented or in areas not included in the asbestos inventory due to limited accessibility, etc.

Contractors and HHS staff shall follow the protocol “Emergency Reaction in the Event of a Suspected Asbestos Spill” if discovered in the occupied area; refer to Appendices B and C of this document.

In the event that Emergency Work must be undertaken, follow the procedures outlined in Appendix C of this document, Work Practices – Type 2 Emergency Work. All emergency situations shall be reported to the HHS Project Designate, Facilities Site Manager and HMS as soon as possible. The HHS Project Designate shall engage the HMS and Health Safety and Wellness as appropriate.

Hazardous Materials Specialist:	905.521.2100, ext. 75443
Safety Specialist On-call:	Paged through Telecommunications
FM Construction Manager:	Paged through Telecommunications
Capital Development Project Manager:	Paged through Telecommunications
Facilities Site Manager:	Paged through Telecommunications
Infection Control:	Paged through Telecommunications
Security:	905.521.2100, ext. 75555

9.2 Disturbance of Previously Unidentified Friable Material

Previously unidentified ACM or suspect ACM may also be uncovered during demolition of finishes, walls etc. during construction. Contractors and HHS staff shall follow the protocols for “Emergency Reaction in the Event of a Suspected Asbestos Spill” and “Work Practices – Type 2 Emergency Work (Appendices B and C of this document).

If the material is found to contain asbestos, the contractor or HHS staff is to notify the Project Designate and the HHS Project Designate is to notify the HMS immediately. HHS will engage the MOL as well as the JHSC and follow all measures as outlined in in Section 10(7) of O. Reg. 278/05.

10.0 ASBESTOS WORK PRACTICES

The following sections briefly describe the standard operating procedures adopted for asbestos-related work. These meet or exceed the requirements of O. Reg. 278/05 and other regulatory requirements in effect on November 1, 2005.



These procedures are provided as a minimum standard for all asbestos work in HHS Facilities. Type 1 or Type 2 work shall be undertaken only by workers who have been appropriately trained to perform Type 1 or Type 2 work. Type 3 work shall be undertaken only by workers who have been certified under MAESD programs 253W and 253S (as appropriate).

10.1 Classification of Scheduled Work

The Ministry of Labour Regulation classifies asbestos work into Types 1, 2, and 3 operations, depending on the type of disturbance, the material being disturbed, and the extent of work. The Ministry of Labour also allows the use of Glove Bags for removal of ACM pipe insulation as a Type 2 operation. Work procedures are described in Appendices B, C and D in Part B of the AMP.

11.0 INSPECTION AND AIR MONITORING OF ASBESTOS WORK

11.1 Visual Inspection

Asbestos procedures provided in Part B of the AMP are suitable for the performance of most work on non-friable and friable ACM. Type 3 operations require a project specific scope of work or specification. The Project Designate and/or Asbestos Consultant will be responsible for ensuring these procedures are followed. The primary method of ensuring compliance for Type 1, Type 2, Type 3 and Glove Bag use is visual inspection of the site and work practices by a Competent Worker, supervisor, the HMS, or Asbestos Consultant. The procedures outlined in the Appendices are to be enforced by those supervising the work. Where an Asbestos Consultant is not retained, the Project Designate will use the Asbestos Inspection Form in Appendix L in Part B of the AMP.

11.2 Air Monitoring During Asbestos Work

O. Reg. 278/05 requires clearance monitoring only for Type 3 projects in buildings that will be occupied subsequent to the asbestos work. In Type 3 projects air monitoring is useful to provide proof of compliance with the specified work practices and, if performed, will be performed as outlined below on HHS projects.

Air monitoring and analysis during active asbestos removal will be performed using NIOSH 7400 method by Phase Contrast Microscopy (PCM). PCM field blanks will be collected as per the NIOSH 7400 method. PCM air samples may or may not be analyzed by the consultant performing the sample collection. PCM air samples must be submitted for analysis to a laboratory participating in a recognized quality control program such as the AIHA AAR. Program, the Quality Control Program of the IRSST (Institute de Recherché en Santé et en Sécurité du Travail du Quebec), and the Canadian Association for Lab Accreditation (CALA). The acceptable limit for samples collected outside the asbestos work area will be 0.05 fibres/mL (f/cc).



Transmission Electron Microscopy (TEM) air monitoring will be performed using NIOSH 7402 method when clearance of Type 3 work areas cannot be achieved by the PCM method. TEM air samples must be submitted for analysis to a laboratory with a National Voluntary Laboratory Accreditation Program (NVLAP).

A member of the JHSC must be notified prior to any sampling being conducted and invited to be present at the start of sampling. When possible a minimum of 24 hours-notice should be provided to the JHSC of a sampling event.

11.3 Type 1 – Inspection and Air Monitoring

11.3.1 Inspection

The HMS, Project Designate, Asbestos Consultant or an assigned Competent Worker, may inspect Type 1 work upon completion of work to ensure all ACM has been removed and the area adequately cleaned of dust and debris. Where inspections are carried out by the Project Designate, the inspection findings will be documented using the Asbestos Inspection Form in Appendix L in Part B of the AMP.

11.3.2 Air Monitoring

Air monitoring is not required during or after Type 1 work.

11.4 Type 2 and Glove Bag – Inspection and Air Monitoring

11.4.1 Inspection

The HMS, Asbestos Consultant or an assigned Competent Worker, may inspect Type 2 and Glove Bag work at reasonable intervals and upon completion of work to ensure all ACM has been removed and the area adequately cleaned of dust and debris. The frequency of inspections will be determined by the extent and duration of the work. Where inspections are carried out by the Project Designate, the inspection findings will be documented using the Asbestos Inspection Form in Appendix L in Part B of the AMP.

11.4.2 Air Monitoring

Air monitoring is not required during or after Type 2 work.

11.5 Type 3 – Inspection and Air Monitoring

11.5.1 Inspection

The HMS, Asbestos Consultant or an assigned Competent Worker may inspect Type 3 work at reasonable intervals. The inspection will include conformity with the specifications by the contractor and



confirming the effectiveness of protection for areas outside the work site. The frequency of inspections will be determined by the extent and duration of work. Where inspections are carried out by the Project Designate, the inspection findings will be documented using the Asbestos Inspection Form in Appendix L in Part B of the AMP.

11.5.2 Air Monitoring

PCM air monitoring may be conducted periodically during Type 3 work. Where air monitoring is conducted, two occupied air samples will be conducted at the perimeter of the Asbestos Work Area (in occupied areas adjacent to the Type 3 Work Area) to ensure no leakage from the enclosure. Where necessary, air monitoring will be performed within the enclosure to ensure that respirator protection factors are not exceeded.

Clearance air monitoring must be performed within Type 3 Asbestos Work Areas. The air sample will be relied upon to allow clean access to the site for the Teardown Inspection. Clearance levels of 0.01 f/ml must be achieved prior to dismantling the enclosure, as required by O. Reg. 278/05. Only if clearance using PCM is not possible, will the TEM method be utilized, which will be at the discretion of the Project Designate and/or HMS.

Once the clearance air testing is satisfactory and within 24 hours after the clearance air testing results are received,

- a. The Project Designate, on behalf of the owner and the employer, shall post a copy of the results in a conspicuous place or places,
 - i. At the workplace, and
 - ii. If the building contains other workplaces, in a common area of the building and on the health, safety and wellness board; and
- b. A copy shall be provided to the JHSC or the health and safety representative, if any, for the workplace and for the building.

The owner of the building shall keep a copy of the clearance air testing results for at least one year after receiving them and shall provide a copy to the HMS.

12.0 RECORD KEEPING AND DOCUMENTATION OF AMP

The following records are to be kept by the HMS and Project Designate for each site with ACM:

- Asbestos Assessment Reports.
- Reassessment Reports.
- Tenant Notification Letters.



- Contractor Notification and Acknowledgement Forms.
- Asbestos Project Work Record (Appendix E in Part B of the AMP)
- Inspection reports during abatement from Asbestos Consultants.
- Bulk sample analytical results from any sampling.
- Abatement or emergency response project records.
- Air monitoring reports. Note clearance air monitoring reports must be retained for a minimum of one year.

This AMP is to be re-evaluated each time there is a substantial change to the Asbestos Regulation (O. Reg. 278/05).

13.0 ASBESTOS ABATEMENT CONTRACTOR REQUIREMENTS

Contractors performing asbestos abatement work shall carry all insurance required by the general conditions and shall:

- Must maintain a Comprehensive General Liability Policy, provided on an “occurrence” basis, for a minimum of \$5,000,000 in coverage.
- Must maintain an Asbestos Liability or Pollution Liability Policy, provided on an “occurrence” basis, for a minimum of \$5,000,000 in coverage.
- Must maintain an Automobile or Fleet Policy, and Non-owned Automobile Policy for a minimum of \$2,000,000 in coverage.
- Maintain a valid Workplace Safety and Insurance Board Clearance Certificate.
- Ensure that all supervisors and workers performing Type 3 work are certified by the MAESD (235W for workers and 235S for supervisors).
- All workers are to be fit tested for respirators and trained in respirator care in accordance with CSA-Z94.4. Standard and trained in respirator care and maintenance within the previous two years. Ensure that no person required to enter an asbestos work area has facial hair which affects the seal between respirator and face.
- Ensure that all workers have received training on infection control during construction, renovation, and maintenance of health care facilities according to CSA Z317.13-12.

13.1 Contractor Non-compliance

All work performed within areas designated by HHS as requiring conformance to HHS Asbestos Management Procedures shall be subject to penalty for non-compliance as detailed in the HHS Contractor Guideline Document. Penalties shall be assigned to the General Contractor for non-



compliance by the General Contractor and/or any of the General Contractor's Sub-Contractors. HHS will record in writing, photograph or video the instance of non-compliance and issue a "Notice of Asbestos Management Non-Compliance" stating the time, date, location and nature of the non-compliance.

14.0 REVIEW OF THE ASBESTOS MANAGEMENT PROGRAM

The AMP will be reviewed annually by the Asbestos Sub Committee, which is comprised of the HMS, HHS JHSC and Management Representatives.

15.0 ASBESTOS MEDICAL SURVEILLANCE PROCEDURE FOR HHS STAFF

Appendix F in Part B of the AMP contains the Medical Surveillance Procedure for Hamilton Health Sciences staff who perform asbestos-related work. HHS staff's participation in the program is voluntary. Employee Health Services will be advised in writing by the staff's department that the staff member does asbestos-related work, or has been hired or transferred to work in a position where there is a potential for asbestos exposure.

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HAMILTONHEALT,MUMC,AMPUpdate,ASB,CONS\Deliverables\FINAL\HGH\217420.028 Final Part A Asbestos Management Program HGH HHS March 25 2019.docx
Master Template for Asbestos Management Program, July 19, 2017

APPENDIX A
Background Information on Asbestos in Building Materials and Health
Hazards

BACKGROUND INFORMATION ON ASBESTOS IN BUILDING MATERIALS AND HEALTH HAZARDS BACKGROUND ON ASBESTOS

Occurrence and Types of Asbestos

Asbestos is not one mineral but a generic term used to describe a family of naturally occurring fibrous hydrated silicates. These are divided on the basis of mineralogical features into two groups; serpentines and amphiboles. The important property of asbestos as compared to non-asbestiform varieties of silicates is the presence of long, thin fibres that can be easily separated. According to some definitions, there are as many as thirty varieties of asbestos, but only six are of commercial importance. Chrysotile, which is by far the most abundant, is the only type that belongs to the serpentine group. Crocidolite and amosite, the two other most commonly used fibres, together with anthophyllite, tremolite, and actinolite belong to the amphibole group. The distinction between asbestos types is important due to the different degrees of severity of asbestos related disease with different asbestos types. Of the three commercially important types (chrysotile, amosite and crocidolite), chrysotile is considered the least hazardous. In general, Canadian regulations reflect this variation of health effects.



Chrysotile Asbestos



Amosite Asbestos

Health Effects of Asbestos

For many years asbestos has been recognized as a health hazard for workers employed in asbestos mining, processing and installing of asbestos products. Several serious, debilitating diseases that often end in death have been linked to the inhalation of fine asbestos fibres. It is not clear how asbestos fibres cause disease after they enter the lung. For each disease there is a period of latency, usually more than ten years, between first exposure to asbestos and the appearance of the disease. The diseases linked to asbestos exposure are described below.



Asbestosis

Asbestosis is a fibrosis (scarring) of the lung tissue, which makes breathing difficult. The most prominent symptom is breathlessness. Detection of asbestosis is by physical examination, X-ray examination and lung function testing. The disease is irreversible and may continue to progress even after exposure is stopped. Rarely a cause of death itself, asbestosis results in an appreciable reduction in life expectancy due to deaths from related illnesses. Asbestosis will develop only with chronic (long term) exposure to high levels of airborne asbestos.

Mesothelioma

This is a rare cancer of the cells of the pleura (lining of the chest cavity and lungs) and the peritoneum (lining of the abdominal cavity). The development of mesothelioma is characterized by a long latency period, usually at least 15 years and sometimes more than 40. There is no effective treatment for mesothelioma. Large proportions of mesothelioma patients die within a year of diagnosis; few survive longer than five years. The amphibole asbestos materials are considered more important than chrysotile in the causation of mesothelioma. Although asbestos was once thought to be responsible for all mesothelioma, other causes have now been identified. Still, the chance of getting mesothelioma in the absence of asbestos exposure is considered to be extremely remote. Mesothelioma is a very rare cancer in the general population.

Lung Cancer

Unlike asbestosis and mesothelioma, lung cancer is not associated only with asbestos exposure. Cigarette smoking has been and continues to be the major cause of lung cancer. Furthermore, there is no basic difference between lung cancer caused by asbestos and that due to other causes. In general, the risk of getting lung cancer increases with the extent of asbestos exposure, in terms of both intensity and duration. This risk is also greatly enhanced by smoking; most asbestos workers who develop lung cancer are smokers. There is no difference in the risk for lung cancer between chrysotile and the amphibole asbestos minerals.

Other Asbestos-Related Cancers

The relationship between asbestos exposure and asbestosis, mesothelioma and lung cancer has been clearly established and is beyond argument. Several other cancers have also been associated with inhalation of asbestos. Although the evidence is not as good as for the diseases discussed above, these cancers should be noted. They are gastrointestinal cancer affecting all sites in the gastrointestinal tract (oesophagus, stomach, colon and rectum) and cancer of the larynx. The elevated risks of these diseases in the most heavily exposed asbestos workers have always been much less than the elevated risk for lung cancer and mesothelioma. If asbestos exposures are controlled to prevent any increase in lung cancer or mesothelioma risk, the other potential cancer risks should also be well controlled.



Other Asbestos-Related Conditions

A number of less serious effects have been associated with asbestos exposure, namely pleural plaques and asbestos warts. Pleural plaques are areas of scarring of the pleural surfaces. In general, they are not associated with any functional abnormality and are merely an indicator of asbestos exposure. Asbestos warts are harmless skin growths that occur when asbestos fibres penetrate the skin. These will usually retract when exposure ceases.

Uses of Asbestos in Building Materials

Asbestos has been widely used in buildings and several uses continue today. The uses of asbestos are generally classed into two groups for purposes of hazard assessment; friable and non-friable products. A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure. The use of friable materials in construction is banned today but due to the widespread use of friable materials in the past, these materials still are present in many buildings. In order to establish an asbestos management program, the possible uses of asbestos must be known. These are discussed below in the categories of non-friable, potentially friable and friable products.

Non-Friable Asbestos Materials

Asbestos-cement Products (Transite)

The largest use of asbestos, in terms of the tonnage of fibres employed, is as a reinforcing agent in cement products. Asbestos-reinforced cement is strong, durable, rigid and resistant to both fire and weather. Portland cement, water and asbestos are mixed to form a slurry from which end-products can be fabricated by a process similar to that used in paper making. Products include sheets, pipes and a wide variety of other shapes. The asbestos fibre content of asbestos cement products is usually about 15 percent.

Asbestos-cement sheet is produced in four basis forms: flat sheet, corrugated sheet, siding shingles and roofing shingles. The main use of asbestos cement sheet is for the roofing and cladding of buildings. Other uses are ceiling tiles, decorative panelling, electrical insulation, fume hood liners and laboratory tabletops. Asbestos-cement pipe is used for water supply, sewage, irrigation, drainage applications, the transport of corrosive chemical fluids, and electric and telephone conduits. Asbestos cement products are still in production. Non-asbestos substitute cement products are available for some though not all asbestos products.



Transite Drain Pipe



Corrugated Transite Siding/Roofing



Laboratory Bench Countertop



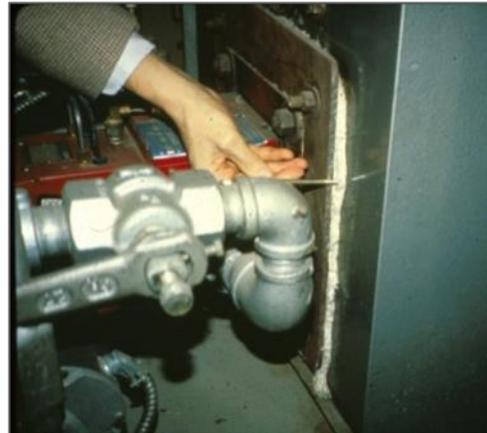
Transite Blocks in Elevator Switchgear

Gaskets and Packings

The combination of long asbestos fibres and high temperature rubbers has provided some of the best gasket materials. The asbestos, in bulk fibre, woven, or plaited form, provides strength and temperature resistance, while the rubber or synthetic compound acts as binder and sealing material. Asbestos yarns have been commonly used in the manufacture of braided and woven packing materials. Many of these uses, particularly in sheet forms are still in production and use.



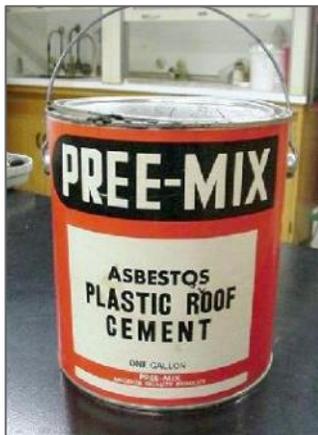
Rope gasket



Rope gasket at boiler plate

Coatings and Sealants

Asbestos has been used in roof coatings and cement and, to a lesser extent, in sealants and caulks. Roof coatings consist of asphalt liquefied with solvents and asbestos fibre filler. Roof cements are similar, but are formulated to a thicker consistency so that they can be used to seal openings through which a liquid coating would flow. Some of these are still in production.



Asbestos Roof Cement



Caulking at Glazing

Paper Products

Asbestos paper products have been used in a wide variety of applications. Among the most important in construction are roofing felt, gaskets, pipe wrap, as building paper under roof tiles and wood flooring, tape at joints on ducts and duct insulation, as a finishing layer over fiberglass pipe insulation, as heat shields in incandescent light fixtures, as an underpad beneath vinyl sheet flooring, millboard and electrical insulation. Some of these applications are discussed under the headings "Insulation" and "Gaskets and Packings".



Paper heat shield on incandescent fixture



Paper on seams of duct



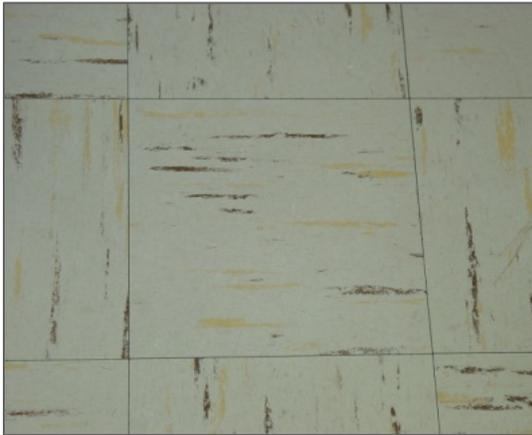
Vinyl sheet flooring with paper underpad



Building paper under roof tiles

Plastics

Asbestos has been used as a reinforcing agent in a wide range of asbestos/polymer composites. Applications include, floor tiles, engine housings, bins and containers, and a variety of coatings, adhesives, caulks, sealants, and patching compounds. Two areas dominated asbestos use in plastics: phenolic moulding compounds and vinyl-asbestos tile. Few of these products remain in production.



Vinyl asbestos tile

Asbestos Textiles

Asbestos textile materials are manufactured from chrysotile fibres. Two types of yarn are produced: plain, possibly braced with organic fibres, and reinforced, which incorporates either wire or another yarn such as nylon, cotton or polyester. Major uses for asbestos textiles are gaskets, packings, vibration damper/duct connectors, friction materials, thermal and electrical insulation, and fire resistant applications, e.g. welding curtains, protective clothing, theatre curtains, hot conveyor belts and ironing board covers. These products may be considered or become friable in use. Asbestos textiles are no longer in widespread production.



Textile Vibration Damper/Duct Connector



High Voltage cable insulation

Friction Materials

Asbestos has been used in the manufacture of brake and clutch linings and pads. The asbestos fibres may be embedded in a phenolic resin with various mixtures of fillers or a woven asbestos cloth may be impregnated with the resin. Friction products are primarily used in vehicles but may be used in any

rotating machinery, for example elevators or printing presses. They are still produced and used although not widely.

Drywall Joint Compound

Drywall joint compound also contained asbestos until the early 1980's. The concentration is quite low (near or less than 5%; always chrysotile). The product in place is quite hard and is normally treated as non-friable.



Drywall joint compound on drywall



Drywall joint compound 1963-1965

Potentially Friable Asbestos Materials

Acoustic Ceiling Tiles

Some types of mineral wool type acoustic ceiling tiles were formulated with asbestos from the early 1960's. The use of asbestos in ceiling tiles was discontinued in the early 1980's. Analytical testing is required to distinguish the asbestos and non-asbestos ceiling tiles. From field experience at Pinchin Ltd., the fire-rated tiles are more likely to contain asbestos. Amosite was the predominant fibre type used. Acoustic tile, particularly if splined or glued on, can become friable or release dust when removed. They are usually considered non-friable as they are normally handled intact.



Glued on (laminated) ceiling tiles



Lay-in ceiling tile

Plaster

Asbestos was used in random fashion in the brown coat and surface coat of smooth plaster finishes. This has been used at a low level (less than 5% in most cases). In many instances the asbestos content is less than 1% or even less than 0.5%. This is often due to the presence of vermiculite in plaster. Vermiculite frequently contains actinolite or chrysotile as an impurity which contributes to the asbestos content. Only Chrysotile was ever intentionally added to plaster.

Plaster is non-friable in place but removal is impossible without causing it to become friable. This is significantly different than lay-in acoustic tiles or transite boards which can be removed intact.



Plaster on wood lath



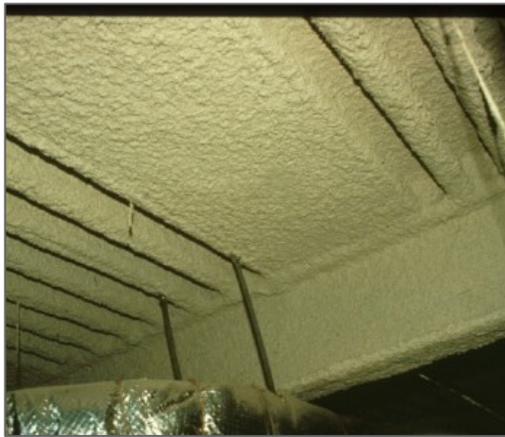
Plaster on speed tile

Friable Asbestos Materials

Friable asbestos products are the main concern of the public and the asbestos management program due to the ease of fibre release. None of the products are still in production in North America or Europe.

Fireproofing or Sprayed Insulation

Several types of fireproofing or insulation were applied by spraying or trowel application in the period from the mid 1930's to 1974. Fibrous products were spray applied after being blown as a dry mix through an application gun. These products may contain up to 90% asbestos and any of the three major types (chrysotile, amosite or crocidolite). Cementitious products were trowelled or sprayed as a wet slurry. These were harder products that did not contain more than 25% asbestos. Only chrysotile asbestos was used in the cementitious type materials.



Cementitious sprayed fireproofing



Debris from fireproofing on top of ceiling



Fibrous sprayed fireproofing



Fibrous sprayed fireproofing (beam only)

Texture or Acoustic Plasters

The use of asbestos was widespread in trowelled or sprayed texture coats, stipple coats and acoustic plasters from the 1950's to the late 1970's (at least as late as 1980). These products always contain less than 25% chrysotile. Some of the harder stipple coats may be considered non-friable in place and only

become friable when disturbed by construction or demolition. Other products in this group can be very soft and extremely friable.



Sprayed limpet texture ceiling on lath



Texture coat ceiling

Mechanical Insulation

This is the most widespread use of friable asbestos in buildings. The use dates from the late 1800's to the late 1970's. The material can have a number of appearances and asbestos contents. The more prevalent types of asbestos mechanical insulations are:

- white, brown, pink or grey block (Magnesia block, Caposite)
- white or grey corrugated paper (Aircell)
- white, grey or brown layered paper (sweatwrap)
- grey trowelled or hand applied material (with the appearance of hard or granular, grey, dry mud) (Parging cement)

It is possible to find all asbestos types in mechanical insulation although chrysotile is predominant and amosite the next most common.



Aircell insulation (corrugated paper)



Caposite block insulation



Parging cement on pipe fitting



Parging cement on sweatwrap and Aircell

Vermiculite

Vermiculite, a mineral mined around the world, is used in a variety of commercial and consumer products. After crushing and processing, the raw ore was shipped to many plants in Canada for exfoliation or expanding. At these plants, the ore was heated to about 1000°C causing it to expand like popcorn into a lightweight granular material that is fire-resistant, absorbent, light weight and a good insulator. Vermiculite has been and continues to be used in a variety of building materials. It was made into a variety of insulation products, was used as a loose fill insulation inside masonry block walls (the largest volume use), stove pipe and stack insulation, fire separations, cold rooms and in walls and attics of buildings, mostly homes. It is important to understand not all vermiculite contains asbestos.



Vermiculite attic insulation



Libby vermiculite

Hazards of Asbestos Materials in Buildings

Beginning in the late 1970's, public health authorities, the media, and the public in general, became concerned about the health effect of these asbestos materials on building occupants. It was known that asbestos miners and factory workers and installers who handled asbestos materials suffered a higher incidence of several respiratory diseases. These groups had been exposed to very high levels of asbestos dust for prolonged periods. In order to assess whether the public anxiety over the current situation of asbestos materials and the hazard of in-place materials was justified, the Ontario Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario was established in 1981. This 3 year study considered all aspects of the asbestos problem, from production, through installation and use in-place, to maintenance and demolition. After considering all available data and commissioning several research studies, the Commission concluded in its final report (Chapter 9, Page 585):

"...The risk to occupants from asbestos in buildings is a small fraction of the risks faced by workers exposed to asbestos under the 1 f/cc control limit for chrysotile (which was the current exposure limit for industrial asbestos use in Ontario at that time). It is less than 1/50 as great as the risk of commuting by car to and from those buildings. In concluding that this risk is insignificant, we conclude that the risk does not present a public health problem. While asbestos has caused serious health problems for workers and may present a problem for building maintenance, renovation, construction, and demolition workers, we conclude that it does not pose a significant problem for the general occupants of a building, except in the three situations outlined in Section D of this chapter, namely: (i) the occupant is in the immediate vicinity of work that disturbs friable asbestos-containing insulation; (ii) the occupant is within the range of air circulation of work that disturbs friable asbestos-containing insulation; or (iii) significant quantities of friable asbestos-containing insulation have fallen onto building surfaces and are being disturbed."

and in the overview to this section (Chapter 9, page 548):



"We will conclude that it is rarely necessary to take corrective action in buildings containing asbestos insulation in order to protect the general occupants of those buildings. On the other hand, construction, demolition, renovation, maintenance, and custodial workers in asbestos-containing buildings may be exposed to significant fibre levels and may, during their work, cause elevated fibre levels for nearby occupants."

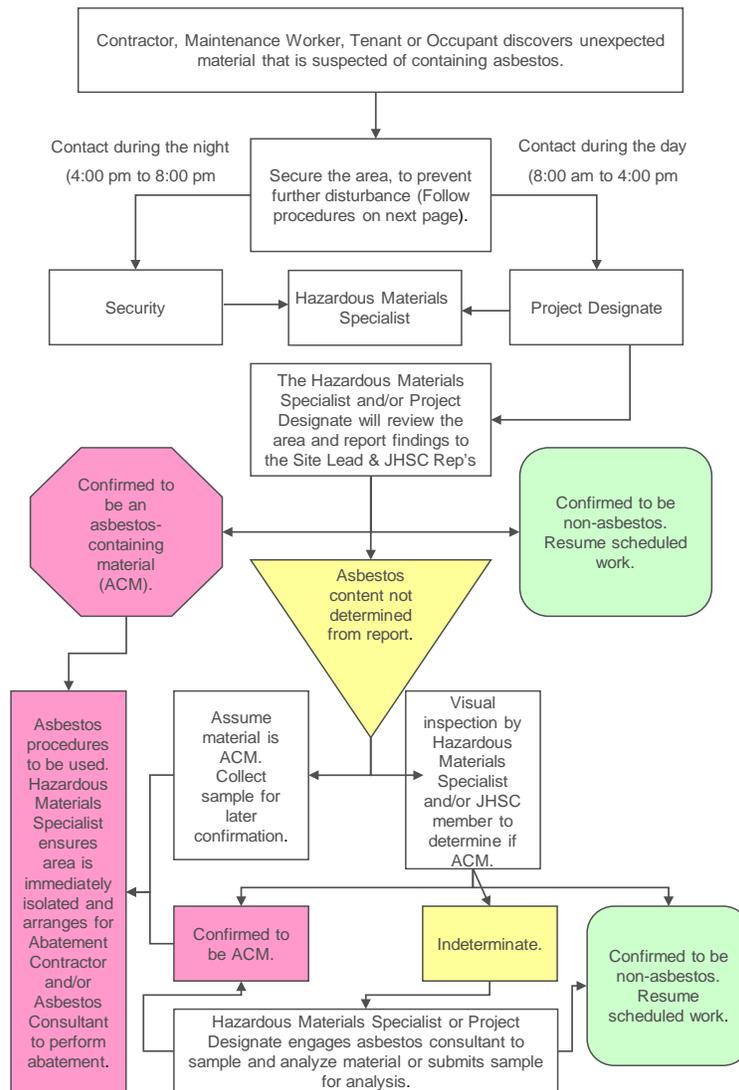
The general conclusions of the Royal Commission have been supported by independent testing by independent researchers, the Ontario Ministry of Labour, and authorities in other jurisdictions. Air sampling has shown that the airborne asbestos levels in buildings with sprayed asbestos are no higher than outdoor levels, unless the friable asbestos or asbestos debris is being disturbed at the time. Airborne levels in buildings are not elevated even when the ceiling space containing the sprayed asbestos or asbestos mechanical insulation functions as an air plenum.

The Ministry of Labour Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations was modelled on the Commission findings. Several other provinces have since issue regulations or guidelines similar to the Ministry of Labour Regulation. The Asbestos Management Program was prepared to be consistent with the recommendations of the Commission and to meet all requirements of the Regulation.

APPENDIX B
Emergency Reaction in the Event of Suspected Asbestos Spill



EMERGENCY RESPONSES AND NOTIFICATION IN THE EVENT OF ASBESTOS-SUSPECT MATERIAL DISCOVERED DURING MAINTENANCE OR CONTRACTED WORK OR REPORTED BY OCCUPANT/TENANT





EMERGENCY REACTION IN THE EVENT OF SUSPECTED ASBESTOS SPILL

If asbestos-containing materials or suspect materials have been disturbed improperly, follow these directions:

1. Do not clean-up, cover, move or contact the asbestos-containing or suspect material. Cease work in the immediate area and do not resume work that risks disturbing the suspect material.
2. The immediate area should be isolated and secured appropriately based on the following scenarios:
 - a. **Large Open Areas** – move all occupants out of the immediate area. If it safe to do so, isolate and secure the immediate area by installing caution tape at a minimum distance of 15 feet surrounding the affected area and post warning signs to restrict access. If possible, post security to prevent unnecessary access as an added pre-caution.
 - b. **Small Isolated Rooms** - move all occupants out of the affected room. Isolate and secure the affected room by locking doors if this can be done without blocking emergency or fire routes and post warning signs to restrict access. If it is not possible to safely isolate the affected room, security will notify appropriate persons not to enter the area. If possible, post security to prevent unnecessary access as an added pre-caution.
3. During regular hours (8:00 am to 4:00 pm), immediately notify the Facilities Management Department or Project Designate; if unsuccessful, the Hazardous Materials Specialist should be contacted. During afterhours (after 4:00 pm), immediately contact the on-call Safety Specialist and they will contact the on-call Manager for Facilities Management. The on-call Safety Specialist can be contacted through switchboard by dialing Extension 0 from any HHS phone. Security can assist if need be, to ensure that the on-call Safety Specialist or on-call Manager has been contacted.
4. The Facilities Manager, Project Designate or Hazardous Materials Specialist or the Engineering Supervisor on duty will arrange to shut down ventilation systems to the affected area, including supply, return and exhaust.
5. Entry to the affected area will be restricted to Type 2 precautions until either the suspect material has been confirmed to be non-asbestos or the material has been cleaned-up following appropriate asbestos procedures.
6. The Facility Manager, Project Designate or Hazardous Materials Specialist will attempt to determine if asbestos is contained in the debris. If the material cannot be confirmed to be asbestos-free by either reviewing existing records or by the appearance of the material, then the following will be necessary.



- a. The Facility Manager, Project Designate or Hazardous Materials Specialist will collect and submit three bulk samples of the suspect material for analysis or will contact an Asbestos Consultant to collect bulk samples of the suspect material. A JHSC worker representative is to be notified prior to any sampling taking place and shall be present during the sampling, if they choose. Refer to Appendix A in Part B of the AMP for bulk sample collection procedures.
7. If the material is confirmed or is assumed to contain asbestos due to the absence of sampling, the Facility Manager, Project Designate or Hazardous Materials Specialist will either have trained HHS FM staff or the contracted HHS Asbestos Abatement Contractor clean-up the affected area using Type 2 Emergency Procedures outlined Appendix C of this document.
8. At their option, the Facility Manager, Project Designate or Hazardous Materials Specialist may decide to employ an Asbestos Consultant to perform air monitoring and consulting, prior to and/or after the clean-up operation is completed to ensure airborne fibre levels for asbestos are within acceptable limits and that the space suitable for re-occupancy. A JHSC worker representative is to be notified prior to any sampling taking place and shall be present during the sampling, if they choose.
9. Upon completion of the Type 2 clean-up operation and acceptable air monitoring results, if air monitoring is conducted, the Facility Manager, Project Designate or Hazardous Materials Specialist will instruct the HHS FM staff or the contracted HHS Asbestos Abatement Contractor to dismantle the site isolation. Once the site isolation is dismantled, the ventilation systems will be re-enabled to the affected area and the space will be turned over for normal occupancy.

APPENDIX C
Work Practices – Type 2 Emergency Work



WORK PRACTICES – TYPE 2 EMERGENCY CLEAN UP

Emergency asbestos procedures shall be implemented, when required, in order to protect those undertaking the work, as well as to protect all others from, or limit exposure to, airborne asbestos. Procedures indicated shall be followed as closely as possible, in the event of an emergency situation at the discretion of Facility Manager, Project Designate, Hazardous Materials Specialist or Asbestos Consultant.

Procedures for asbestos work, required as an immediate response to floods through asbestos fireproofing, accidental disturbance of asbestos-containing materials, ceiling collapses of asbestos-containing ceiling tiles, or other emergencies that affect asbestos-containing materials, are as follows:

- Clear occupants from the immediate area within at least 15 feet in the case of a large open area or the entire space in the case of small isolated room. In patient or critical spaces, clear the area of only non-essential personnel only, and provide essential personnel with proper respiratory protection.
- Where possible, shut down the ventilation systems serving the affected area including supply, return and exhaust. In areas where the ventilation system cannot be shut down for the duration of the clean-up work, the ducts (supply diffusers, returns, exhausts, etc.) are to be effectively sealed with polyethylene sheeting and tape.
- Isolate the area based the following scenarios.
 - **Large Open Areas** – isolate and secure the immediate area by installing caution tape at a minimum distance of 15 feet surrounding the affected area and post warning signs to restrict access. In areas that are visible to the public, orange or white polyethylene sheeting should be used in place of caution tape to ensure a visual barrier separates the work area and occupied areas, while clean-up work is being completed. If possible, post security to prevent unnecessary access as an added pre-caution.
 - **Small Isolated Rooms** - isolate and secure the affected room by locking doors if this can be done without blocking emergency or fire routes and post warning signs to restrict access. If it is not possible to safely isolate the affected room, security will notify appropriate persons not to enter the area. If possible, post security to prevent unnecessary access as an added pre-caution.
- Close access doors to area or construct enclosure around area if time permits. Do not obstruct emergency exits under any circumstances.



**Asbestos Management Program (Hamilton General Hospital)
Part A - Policies**

Hamilton Health Sciences
Contractor Notification and Acknowledgement Form

Pinchin File: 217420.028
Appendix C

- Only trained HHS FM workers or the HHS contractor Abatement Contractor will perform the emergency clean-up.
- Entrance to the area will now be limited to those wearing applicable respiratory protection and disposable Tyvek coveralls. Half face NIOSH approved respirators with P100 (HEPA) filters are adequate.
- No eating, smoking or chewing in the Asbestos Work Area.
- Remove all debris within the area of the accidental disturbance of ACM using HEPA vacuums.
- Place polyethylene drop sheets under area of repair.
- Repair ACM pipe insulation, replace ceiling tiles or stabilize the asbestos-containing material as required with minimum disturbance to the asbestos-containing material.
- Remove dust using HEPA vacuums or wet wiping from all surfaces within area of disturbance.
- Dispose of items that cannot be cleaned as asbestos waste.
- Dispose of all cleaning supplies and drop sheets as asbestos waste.
- Remove coveralls and dispose of as asbestos waste.
- Proceed to washroom and wash face and hands.
- At their option, the Facility Manager, Project Designate or Hazardous Materials Specialist may decide to employ an Asbestos Consultant to perform air monitoring and consulting, after clean-up to ensure airborne fibre levels for asbestos are within acceptable limits to re-occupy the space.
- The Facility Manager, Project Designate or Hazardous Materials Specialist must notify the Joint Occupational Health and Safety Committee to be present at the start of testing of the results of air monitoring or testing.