



# Hamilton-Wentworth Catholic District School Board

Believing, Achieving, Serving

# FINAL Asbestos Management Program

Various Sites in Hamilton, Ontario

Prepared for:

Hamilton-Wentworth Catholic District School Board

57 Stuart Street Hamilton, Ontario, L8L 1B5

March 29, 2022

Pinchin File: 300640

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# **Asbestos Management Program**

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1.0 INTRODUCTION

Hamilton-Wentworth Catholic District School Board (HWCDSB) is committed to protecting the health and safety of workers and occupants. This Asbestos Management Program (AMP) has been developed to meet responsibilities as an employer, and as a building owner to manage operational issues respecting asbestos and to maintain compliance with applicable regulations for disturbance of asbestos-containing materials (ACM) during demolition, renovation, alteration, maintenance, repair, or other activities.

2.0 SCOPE

The AMP provides information and procedures for Asbestos Management of all HWCDSB owned or occupied facilities in Ontario.

The AMP applies to all HWCDSB staff as well as all tenants, service providers and contractors performing work in HWCDSB facilities.

The AMP outlines requirements for HWCDSB personnel involved in acquisition of property which may contain ACM. It applies to all categories of property with the exception of vacant lands. If HWCDSB decides to lease property in the future ACM should be considered when developing their lease agreement and this AMP should be amended to address leased properties occupied by the HWCDSB.

The AMP is a management system to control the disturbance of ACM during demolition, renovation, alteration, maintenance, repair, or other activities.

The AMP incorporates the following elements:

- Asbestos Assessments and Reassessments.
- Regulatory Requirements and HWCDSB Policies.
- Roles and Responsibilities.
- Notifications.
- Training Requirements.
- Emergency Reaction and Procedures.
- Record Keeping.
- Contractor Requirements.

# 3.0 OBJECTIVE

The AMP is a management system primarily intended to identify ACM and control disturbance of ACM by using proper procedures during demolition, renovation, alteration, maintenance, repair, or other activities. The objective in preparing and instituting this AMP is to ensure that known or suspected ACM is managed

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so that maintenance staff, construction workers, and occupants are safeguarded in accordance with applicable regulations.

# 4.0 BACKGROUND INFORMATION AND HEALTH EFFECTS

The following is a brief summary of the hazards and health effects from asbestos exposure:

- Occupational exposure to asbestos can cause fatal lung disease.
- Asbestos must become airborne and be inhaled to be hazardous. A physical disturbance
  or direct contact with ACM is required to cause it to become airborne. The mere presence
  of asbestos is not hazardous.
- Asbestos may remain in buildings so long as it is in good condition and undisturbed. No
  Provincial or Federal Regulations require the removal of ACM as long as it is enclosed,
  encapsulated or managed appropriately and removed prior to building demolition.

Refer to Appendix E for additional background information on types of asbestos and the health effects.

# 5.0 REGULATORY REQUIREMENTS

This AMP was implemented in response to the following legislation in effect as of March 29, 2022.

All building operations, whether performed by HWCDSB or service providers, shall adhere to the requirements outlined in this document and all applicable regulations, guidance documents and acceptable professional standards.

The following regulations and guidelines were in place at the time this AMP was prepared:

- Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05.
- Designated Substances, Ontario Regulation 490/09.
- 3. General Waste Management, Ontario Regulation 347/90.

# 6.0 HWCDSB PROTOCOLS RELATED TO ASBESTOS

HWCDSB has established the following protocols related to asbestos independent of applicable regulations:

- HWCDSB may opt for removal of ACM with minor damage as opposed to repair or encapsulation when cost-effective unless removal is not practicable. ACM with major damage must be removed.
- HWCDSB staff shall not perform any asbestos operations, handling, or disposal of asbestos waste.

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All asbestos operations shall be performed by an Asbestos Abatement Contractor.

# 7.0 ASBESTOS-CONTAINING MATERIALS AT HWCDSB FACILITIES

Refer to the individual Asbestos Assessment or subsequent Asbestos Reassessment Reports prepared for the facilities. In some cases, Hazardous Materials Assessment or Designated Substance Survey Reports have been prepared and these reports include information regarding asbestos and other hazardous materials.

All assessment reports have been prepared to comply with applicable asbestos regulations.

Asbestos Assessment Reports are key components of this AMP, as the reports define the locations of ACM and Presumed ACM (PACM) present in the facilities, the condition of ACM, the friability, the type of asbestos and the approximate quantity.

# 7.1 Asbestos Assessments

Asbestos Assessments for Hamilton-Wentworth Catholic District School Board facilities have been completed by a Consultant (Qualified Person), in compliance with applicable regulations and acceptable professional standards.

# 7.2 Reassessment of ACM

The reassessment of ACM and PACM will be completed annually by a Consultant (Qualified Person) and the record will be updated when there is new information, at least every twelve months (O.Reg. 278/05, Section 8.5).

# 7.2.1 Reassessment in Unassessed Areas

When feasible, arrangements should be made to access previously unassessed areas during the annual reassessments. If during any annual or other inspections, materials not previously sampled are found to be damaged (spalling finishes, debris, etc.), samples are to be collected and the material is to be identified as asbestos-containing or non-asbestos. Remedial action and removal procedures are to be decided accordingly if the materials are found to contain asbestos.

# 7.3 Distribution of Assessment and Reassessment Reports

HWCDSB will ensure that each assessment and reassessment report is accessible onsite at each facility (O.Reg. 278/05, Section 8(3)(a)) and uploaded to the board website.

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# 8.0 REMEDIAL WORK - DAMAGED MATERIALS

HWCDSB will refer to the asbestos assessment or reassessment reports (as required) to determine if damaged materials are ACM.

If the regulated abatement procedure to be used is not detailed in the recommendations section of the asbestos or hazardous materials report, the HWCDSB will contact a Consultant to determine applicable asbestos abatement procedures.

HWCDSB will employ a qualified contractor to perform the remedial work required (removal of damaged ACM) and a qualified consultant to perform inspection and air monitoring as soon as practicable upon receiving the report/notice of damage.

# 9.0 REVIEWING REPORTS AND PRE-CONSTRUCTION BULK SAMPLING OF MATERIALS

Prior to disturbance (removal or renovation beyond routine maintenance work), additional assessment and sampling of materials that may contain asbestos may be conducted for materials that were not identified in the asbestos assessment report (a regulated requirement, O.Reg. 278/05, Section 10.2). The survey must be performed by a competent Asbestos Consultant and include destructive or intrusive testing for concealed materials if they will be impacted by the planned work. If additional sampling or intrusive investigation is not conducted, all materials not previously identified should be presumed asbestos-containing and handled accordingly (O.Reg. 278/05, Section 10.3(b)).

Prior to performing any work, the existing building materials that may be disturbed by the work will be assessed and a project-specific report prepared as required by O.Reg. 278/05, Section 10.4. The preconstruction asbestos assessment report, or pre-construction hazardous building materials report, as required by separate provincial legislation (O.Reg. 490/09, Section 19), for the building will be reviewed (by the party sourcing or performing the work).

Sampling required to prepare the report may include the following:

- Prior to disturbance of materials presumed to contain asbestos listed in the assessment report, collect samples of materials that were not previously sampled/identified (refer to Asbestos Assessment Report or Hazardous Materials Report).
- Unidentified suspect materials that were not sampled during the initial survey, but which
  may be present located within enclosed areas such as pipe/duct insulations in ceiling
  spaces, chases, or shafts. If such areas will be affected by the work, entry to these areas
  and sampling of suspect materials shall be performed.

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 Other hazardous building materials shall be sampled and analyzed or identified prior to disturbance as required by provincial regulatory requirements. Other hazardous building materials may include lead, mercury, silica, polychlorinated biphenyls, mould, etc.

# 10.0 ABATEMENT - CONSTRUCTION, RENOVATION OR DEMOLITION

HWCDSB will refer to the asbestos assessment report, hazardous materials report, or bulk sample analytical results (as applicable) to determine if ACM is present which may be disturbed.

HWCDSB may contract a Consultant to determine applicable asbestos abatement procedures and to develop a scope of work and performance specifications.

HWCDSB will employ a contractor to perform asbestos abatement of ACM that *may*<sup>1</sup> be disturbed by construction, renovation or demolition work using appropriate regulated procedures.

Upon completion of asbestos abatement required for construction, renovation, or demolition the HWCDSB Project Manager will provide abatement records to the AMP Facilitator to ensure that the asbestos report for the building may be updated.

# 11.0 NOTIFICATION

# 11.1 Notification of Hygiene Testing

The JHSC of the workplace will be informed of any planned sampling that is to be conducted within the applicable HWCDSB building(s) to ensure that all aspects of committee involvement are complied with (Occupational Health and Safety Act, 11(1)).

# 11.2 Notification of Abatement or Assessment

HWCDSB will inform the JHSC through the site manager and will inform tenants of planned assessments, abatement, or remedial work in their space when feasible. Notification may not be provided for unplanned work or work being performed in unoccupied spaces. Notification of abatement or visual assessment is not a regulatory requirement.

# 11.3 Notification of Maintenance Personnel and HWCDSB Staff

HWCDSB will inform their own staff that will perform custodial work, maintenance work or project work of the presence of asbestos in the facility in which they are working (O.Reg. 278/05, s. 8(3)(d)). This will be completed by providing access to the AMP, the asbestos assessment report and training.

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<sup>&</sup>lt;sup>1</sup> Regulations state that ACM that may be disturbed must be removed (or asbestos precautions must be followed) prior to any other work (O.Reg. 278/05 s.6(1)&(2)).

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# 11.4 Notification of Project Managers, Architects and Engineers

HWCDSB will inform their project managers, architects, and engineers of the presence of asbestos in the facility in which they are arranging for or planning work. This will be completed by providing access to the AMP, and the most recent asbestos assessment/hazardous building materials report. The team planning projects will be responsible for providing the asbestos documents to any prospective constructor/contractor (O.Reg. 278/05, s. 10(5)).

# 11.5 Notification of Contractors

Contractors that perform work which may disturb ACM within the facility must be notified of the presence of asbestos (by providing the asbestos or hazardous materials assessment report). Notification will be sent to these parties prior to project or maintenance work (e.g., custodial, telephone, cable, etc.). This is a regulatory requirement (O.Reg. 278/05, s. 8(3)(c)).

Prior to performing work, contractors must complete and return the Contractors Notification Package (Appendix B) and HWCDSB will maintain acknowledgement forms from these packages. This notification may be performed at initial onboarding of the contractor.

Where Tenants retain contractors within their leased space, the Tenant is responsible for the Contractor Notification Package, and must provide a copy of the completed package to HWCDSB.

# 11.6 Notification to Tenants

Tenants must be notified of ACM in their leased space and in common areas of the building that they have access to and may disturb the ACM. This is a regulatory requirement (O.Reg. 278/05, s. 8(3)(b)).

HWCDSB will notify all new tenants of the presence of ACM in the space they are occupying. Notification is to be completed prior to occupancy via the tenant lease agreement.

Upon institution of this AMP, and upon completion of asbestos assessments in a recently assessed or recently purchased property, where tenants have not been notified via their lease agreement, HWCDSB will notify tenants of the presence of asbestos in the space they are occupying.

The notification is to be provided by sending a letter to the Tenant Representative. Suggested language to be used to notify Tenants regarding asbestos is present in Appendix A but should be reviewed by HWCDSB's legal counsel prior to issuing.

HWCDSB will ensure that all tenants provide an emergency contact number (in the event of an accidental disturbance).

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# 11.7 Notification of Authorities Having Jurisdiction

The Constructor or Abatement Contractor will perform the required notification of the Authorities Having Jurisdiction, for the following:

- All work classified as a Type 3 operation (O. Reg 278/05, s. 11(1)).
- Glove Bag work greater than 1 square meter of friable ACM (O. Reg 278/05, s. 11(2)).
- All projects with a value greater than \$50,000, regardless of scope (O.Reg. 213/91, s. 6(1)(a)(l)).

# 12.0 TRAINING REQUIREMENTS

HWCDSB will ensure staff have received appropriate training (O.Reg. 278/05, s. 8(3)(e)).

HWCDSB employees will not undertake asbestos abatement work or disturb asbestos. Therefore, training, where provided, shall be limited to the following:

- Health effects of asbestos exposure.
- Overview of the existence of applicable regulations and risk classification.
- Identification of common types of ACM.
- Understanding a typical asbestos survey report.
- Their responsibilities under the policies in this AMP and Regulations.

HWCDSB will maintain a record of training of their employees.

HWCDSB requires all service providers to provide appropriate training to all workers who perform work in HWCDSB Facilities which will, or potentially may, disturb ACM.

# 13.0 RESPONSE TO DISTURBANCE OF ASBESTOS, PROCEDURES, AND CONTACTS

HWCDSB staff and contractors may encounter fallen material that is suspected or confirmed to contain asbestos or uncover a material that was previously unidentified and is suspected to contain asbestos. HWCDSB staff and contractors shall follow the protocol "Response to Disturbance of Asbestos" in Appendix C.

For tendered work for demolition, alteration or repair of all or part of machinery, equipment, or a building; upon unexpected discovery/disturbance of a material suspected to contain asbestos, not previously identified in the reports, it is a Regulated requirement to notify the JHSC, the contractor, the Owner, and the local Ministry of Labour office (O.Reg. 278/05, s. 10(8)).

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# 14.0 CLASSIFICATION OF ABATEMENT WORK

Refer to Appendix D for the classification of asbestos work.

# 15.0 INSPECTION AND AIR MONITORING OF ASBESTOS WORK

# 15.1 Visual Inspection

The primary method of ensuring compliance when conducting asbestos removal or abatement work is visual inspection of the site and work practices by a Competent Worker or Asbestos Consultant.

# 15.2 Air Monitoring During Asbestos Work

O. Reg. 278/05 only requires clearance monitoring following Type 3 operations in buildings that will be occupied after the asbestos work (O.Reg. 278/05, s. 18(4)16).

Air monitoring and analysis will be performed using the NIOSH 7400 method using Phase Contrast Microscopy (PCM). PCM air samples must be submitted for analysis to a laboratory participating in a recognized quality control program such as the AIHA Asbestos Analysts Testing (AAT) Program or the Quality Control Program of the IRSST (the Institut de recherche Robert-Sauvé en santé et en sécurité du travail).

Accurate determination of a lower concentration may be affected by the presence of low levels of non-asbestos fibrous dust in office or building environments.

# 15.3 Type 1 – Inspection and Air Monitoring

# 15.3.1 Inspection

The Project Manager, an assigned Competent Worker, or an outside Asbestos Consultant, will inspect the work upon completion of work to ensure all ACM has been removed and the area adequately cleaned of dust and debris. This is not regulatory requirement.

# 15.3.2 Air Monitoring

Air monitoring is not required.

# 15.4 Type 2 and Glove Bag – Inspection and Air Monitoring

# 15.4.1 Inspection

An assigned Competent Worker or an outside Asbestos Consultant may perform part-time inspections throughout the abatement and will inspect the work upon completion of work to ensure all ACM has been removed and the area adequately cleaned of dust and debris. Upon completion of inspection the site

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isolation will be dismantled. The Project Manager or an assigned Competent Worker may inspect for final cleanliness after the site isolation has been dismantled. This is not regulatory requirement.

# 15.4.2 Air Monitoring

Air monitoring is not required.

# 15.5 Type 3 – Inspection and Air Monitoring

# 15.5.1 Inspection

An outside Asbestos Consultant will perform part-time inspections throughout the abatement and inspect the work upon completion of work to ensure all ACM has been removed and the area adequately cleaned of dust and debris. Inspections during the abatement are not a regulatory requirement. Upon completion of inspection and air monitoring by the Consultant, the site isolation will be dismantled.

The Project Manager or an assigned Competent Worker may inspect for final cleanliness after the site isolation has been dismantled.

# 15.5.2 Air Monitoring

Clearance air monitoring must be performed within the Asbestos Work Areas. Clearance levels of 0.01 f/cc using PCM method must be achieved prior to dismantling the enclosure (O.Reg. 278/05, s. 18(6)5). Where PCM samples fail to meet the 0.01 f/cc criteria:

- Contractors may be requested to reclean the Asbestos Work Areas, or;
- Transmission Electron Microscopy (TEM) may be used with a clearance criterion of 0.01 asbestos fibres/cc (O.Reg. 278/05, s. 18(6)6).

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

- 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
- A copy shall be provided to the JHSC or the health and safety representative, if any, for the workplace and for the building.

Posting and providing the clearance air testing results is a regulatory requirement (O.Reg. 278/05, s. 18(8)).

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# 16.0 RECORD KEEPING AND DOCUMENTATION RETENTION

HWCDSB will keep the following records:

- Asbestos (Hazardous Materials) Assessment Reports.
- Reassessment Reports.
- Tenant Notification Letters and dates posted or transmitted.
- Contractor Notification Packages and Acknowledgement Forms.
- Asbestos Project Work Records.
- Consultant Asbestos Abatement Completion Reports (including Inspection and Air Monitoring Reports).
- Bulk sample analytical results from any sampling.
- Emergency response project records.

# 17.0 HAZARDOUS MATERIALS CONSULTANT QUALIFICATIONS

Consultants employed by HWCDSB for asbestos work are to meet the following minimum requirements:

- Display competency in asbestos consulting (be the "competent person" required in applicable regulations).
- Maintain a health and safety management system that meets provincial standards.
- Maintain valid provincial worker's compensation coverage (e.g., Workplace Safety and Insurance Board in Ontario).
- Accredited to analyze PCM air samples or use an accredited laboratory.

# 18.0 ABATEMENT CONTRACTOR QUALIFICATIONS

Contractors employed by HWCDSB are to meet the following minimum requirements:

- Maintain valid provincial worker's compensation coverage (e.g., Workplace Safety and Insurance Board in Ontario).
- All supervisors and workers performing abatement work are to be trained in the procedures being used, health effects of asbestos, applicable personal hygiene procedures, personal protection equipment used and respirator care.
- Workers are to be trained as per the requirements of provincial regulations in the province the contractor is working within. In Ontario, all workers and supervisors are to have their MTCU training certification to perform Type 3 work.
- All workers are to be fit tested for respirators.

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Maintain a health and safety management system that meets provincial standards.

# 19.0 MAINTENANCE AND CUSTODIAL WORK

HWCDSB custodial personnel will not:

- Sweep/vacuum in areas of damaged ACM.
- Sweep/vacuum/remove ACM debris.
- Disturb ACM.
- Remove ACM.

HWCDSB will employ an abatement contractor to perform these tasks.

Alternately, HWCDSB will employ the appropriately trained trade contractor if there is other work to be completed that will disturb ACM (e.g., installing electrical equipment through an asbestos-containing plaster wall).

# 20.0 MAINTENANCE OF THE AMP

This AMP is to be re-evaluated, and possibly revised, each time there is a substantial change to any provincial regulation, or policy change.

# 21.0 ROLES AND RESPONSIBILITIES

This section defines the roles and responsibilities of HWCDSB personnel instituting this AMP and providing effective management of ACM at their facilities.

The AMP Facilitator has the primary responsibility to administer the AMP and ensure it is instituted and effective.

The following table summarizes the responsibilities of HWCDSB personnel:

Reference No.	Responsibility/Task	AMP Section Reference	AMP Facilitator	Project Team	Client Staff	Prime Consultant
1	Maintenance of the AMP	20.0	X			
2	Employ a Consultant to prepare Asbestos Assessment Reports for any facility where one is not available/prepared	7.1	Х			

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Reference No.	Responsibility/Task	AMP Section Reference	AMP Facilitator	Project Team	Client Staff	Prime Consultant
3	Employ a Consultant to prepare Asbestos Assessment Reports in newly purchased facilities	7.1	Х			
4	Employ a Consultant to reassess facilities where ACM has been confirmed	7.2	Х			
5	Make Asbestos Assessment and Reassessment Reports available	7.3	Х			
6	Upon receiving assessment and reassessment reports, employ a contractor to perform remedial abatement work to remove damaged ACM. Use applicable provincial procedures	8.0	Х			
7	As required (Type 3 procedures), prior to performing remedial work, engage a Consultant to perform inspection and air monitoring	15.0	Х			
8	Ensure that an intrusive pre-construction assessment for ACM is performed prior to any renovation, alteration, or demolition	9.0		Х	Х	Х
9	Conduct bulk sampling of suspect materials that have not been sampled or presume the materials to be an ACM	9.0		Х	Х	Х
10	Employ a Consultant (as applicable) to prepare a scope of work prior to large scale abatement as part of construction, renovation, or demolition.	10.0		Х	X	Х
11	Amend leases to provide notification to new tenants informing them of ACM within their space, and instruct them not to disturb ACM	11.1			X	
12	Provide existing tenants at the outset of this AMP, or tenants in newly purchased facilities, a letter notifying the lessee of ACM within their space, and instruction not to disturb the ACM	11.1			Х	
13	Ensure all Project Managers, Architects, Engineers and others arranging for, or planning, work in the Facility are provided with the most current asbestos (re)assessment report	11.4		Х	Х	Х

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Reference No.	Responsibility/Task	AMP Section Reference	AMP Facilitator	Project Team	Client Staff	Prime Consultant
14	Provide contractors working in HWCDSB facilities the most current asbestos (re)assessment report and notification via the Contractor Information Package	11.2		Х	Х	Х
15	Arrange training for HWCDSB personnel	12.0			Х	
16	Response to an uncontrolled spill or disturbance of asbestos following emergency procedures in Appendix C	13.0	X	Х	Х	
17	Keep all records as required by this program (except contractor package acknowledgement)	20.0	Х			
18	Keep records of contractor package acknowledgement for each project (contractors to submit via email and keep record)	16.0		Х	Х	Х
19	Ensure Asbestos Consultants meet the required qualifications	17.0	Х	Х	Х	Х
20	Ensure contractors meet the required qualifications	18.0	Х	Х	Х	Х
21	Ensure maintenance and custodial work is performed so that it does not disturb ACM and unnecessary disturbance of ACM is avoided	19.0			Х	
22	Report any unplanned disturbance to ACM or damage to ACM	13.0		Х	Х	Х
23	Employ an Asbestos Consultant to perform inspections and air monitoring for Type 3 operations	15.0		Х		
24	Annual reassessment to provide access to previously unassessed areas if possible	7.2	Х			

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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.				
COHSR	Canada Occupational Health and Safety Regulation (SOR/86-304).				
Competent Worker	In relation to specific work, means a worker who,				
	<ul> <li>is qualified because of knowledge, training and experience to perform the work</li> </ul>				
	<ul> <li>is familiar with the Act and with the provisions of the regulations that apply to the work, and</li> </ul>				
	<ul> <li>has knowledge of all potential or actual danger to health or safety in the work.</li> </ul>				
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 after passing through a HEPA filter.				
JHSC	Joint Health and Safety Committee.				
MOECP	Ministry of Environment, Conservation and Parks.				

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Pinchin File: 300640

MOL	Ministry of Labour, Training, and Skills Development.
Phase Contrast Microscopy (PCM)	A method which uses an optical microscope to determine airborne fibres, normally in an occupational setting. Results are presented as a number of fibres per cubic centimetre (f/cc). The method of analysis 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 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.

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# **APPENDIX A**

Letter of Notification to Tenants Regarding Asbestos in Premises

# LETTER OF NOTIFICATION TO TENANTS REGARDING ASBESTOS IN PREMISES

The following wording may be used in communicating the presence of asbestos to a tenant or lessee.

Pinchin File: 300640 Appendix A

To Tenant Management Representative

This letter is being provided as notification of the presence of asbestos within the building at ADDRESS in Hamilton, Ontario. HWCDSB has recently had an asbestos assessment performed of the entire building and has established a program to manage all asbestos in a safe and prudent fashion. O.Reg. 278/05 requires notification of the building's tenants of the location of such material, as well as notification of workers who may work in close proximity to the material and who may disturb it.

Our Consultant inspected all areas of the building and made recommendations, where necessary, for removal or repair of asbestos. All such work [has been completed/will be completed shortly] with appropriate inspection and supervision. All asbestos remaining is subject to the Asbestos Management Program (AMP) as required by Provincial Regulations and our own due diligence. A copy of the assessment report and the AMP are available for review on the board website.

The continuing presence of the remaining asbestos does not pose a risk of exposure to your employees as long as it remains under this management program. Staff that may disturb these materials have been given appropriate training and are aware of its presence. If you are planning maintenance or renovation work please notify the AMP Facilitator who will determine if the planned work will affect the asbestos in any way and provide information regarding necessary work practices and obligations to maintain a safe and healthy environment for Occupants and Contractors.

Please ensure that your Staff are aware of the above information. If you have any concerns please contact the AMP Facilitator at 905.525.2930 ext. 2144 or <a href="mailto:drysdalet@hwcdsb.ca">drysdalet@hwcdsb.ca</a>.

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**APPENDIX B** 

**Contractor Notification and Acknowledgement Form** 

# CONTRACTOR NOTIFICATION AND ACKNOWLEDGEMENT FORM

HWCDSB has identified the presence of various asbestos-containing materials (ACM) in Various Sites in Hamilton, Ontario. An asbestos inventory report showing the locations and amounts of these materials is available for each School or Site for viewing on the board website or from the AMP Facilitator.

The disturbance of ACM is to be undertaken by Abatement Contractors that maintain the appropriate insurance coverage and meet the requirements set out in the Asbestos Management Program (AMP).

The following activities may disturb asbestos materials. The HWCDSB Project Manager, Building Manager, or AMP Facilitator must be notified of the following:

- Any removal, repair or disturbance of any ACM.
- Ceiling entry which may disturb pipe insulation.
- Any other operation which may generate airborne asbestos from friable asbestos.
- The disturbance of any material excluded from the building's asbestos assessment report.
- Discovery of any material excluded from the survey.

# **Declaration by Contractor**

The Contractor and their sub-contractors shall follow the work procedures as specified by HWCDSB's AMP and shall not disturb ACM without using proper procedures in accordance with the provincial regulations and guidelines, and this AMP, including prior notification to the HWCDSB Project Manager, Building Manager, or AMP Facilitator. All asbestos waste will be packaged, transported and disposed of in accordance with applicable regulations.

# **Notification of Asbestos Abatement**

All Contractors and HWCDSB employees who perform work at facilities where ACM is present must be notified of the presence of the ACM if their work may bring them into contact, or close proximity to, the ACM. This notification may include custodial, security, telephone, computer cabling suppliers, mechanical maintenance contractors, etc. This notification shall be performed by the HWCDSB employee onboarding the contractor.

# 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), of Type 3 operations or Type 2 Glove Bag operations where one square metre or more of friable insulation is to be removed, as per Regulation 278/05.

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# PINCHIN

# **Asbestos Management Program**

Hamilton-Wentworth Catholic District School Board Contractor Notification and Acknowledgement Form Pinchin File: 300640 Appendix B

- Notify municipal Landfill site as per provincial regulations.
- Inform all sub trades of the presence of ACM identified in the contract documents.
- If suspect ACM not identified in the contract documents are discovered during the course
  of the work, the Contractors are to stop all work which might disturb the suspect ACM.
   The contractor is to notify orally and in writing the Constructor, an inspector at the nearest
  MOL office, the Owner and the JHSC for the workplace.

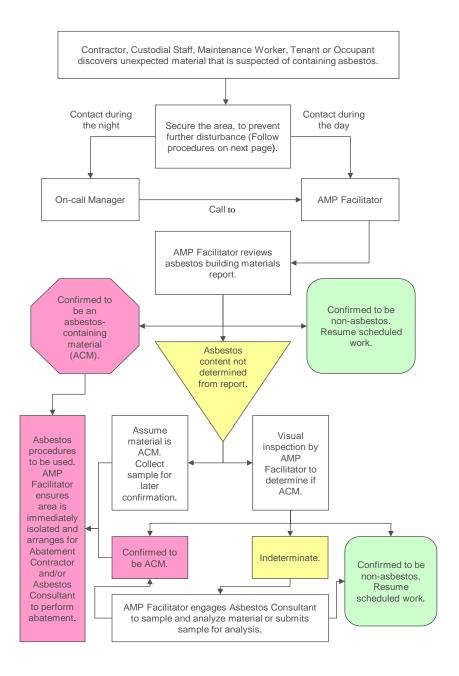
By signing below, the Contractor acknowledges they have received, read and understand the requirements of HWCDSB's AMP.

Building (Address):		
Project:		
Contractor:		
Name and Title:		
Signature:		
Date:		

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APPENDIX C
Response to Disturbance of Asbestos

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



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# EMERGENCY REACTION IN THE EVENT OF DISTURBANCE OF SUSPECTED FRIABLE ASBESTOS

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

- Do not clean up, cover, move or contact asbestos-containing or suspect material. Cease
  work in the area and do not resume work that risks disturbing the suspect material.
   Workers are to leave the area and the HWCDSB AMP Facilitator and/or Project Team is
  to be notified immediately.
- Isolate the area by locking doors if this can be done without blocking emergency or fire routes.
- If it is not possible to safely isolate the area, the AMP Facilitator and/or Project
   Team/Client Staff will notify appropriate persons not to enter the area. If possible, post security to prevent unnecessary access.
- The AMP Facilitator, Project Team or assigned Client Staff will arrange to shut down ventilation systems to the affected area including supply, return and exhaust.
- The AMP Facilitator, Project Team or assigned Client Staff will determine if asbestos is contained in the debris. If material cannot be confirmed asbestos-free by records or appearance, follow procedures below.
- The AMP Facilitator, Project Team or assigned Client Staff will contact an Asbestos Consultant to sample the material or identify the material visually.
- If the material is confirmed or assumed to contain asbestos, the AMP Facilitator, Project
  Team or assigned Client Staff is to contract an Asbestos Abatement Contractor to cleanup contaminated area.
- Enable ventilation systems after air monitoring or clean up of ACM.

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APPENDIX D
Classifications of Abatement Work

# **CLASSIFICATIONS OF ABATEMENT WORK**

A summary of the asbestos work classifications for Ontario is as follows:

# Type 1 (Low Risk)

- installation or removal of ACM ceiling tiles (less than 7.5 m²) without damage\*;
- installation or removal of non-friable ACM, other than ceiling tiles, without damage\*;

Pinchin File: 300640

Appendix D

- damaging\* non-friable ACM that is wetted and where the work is done using non-powered hand-held tools; and,
- removal of less than one square metre of drywall where ACM joint-filling compounds were used.

# Type 2 (Moderate Risk)

- the removal of all or part of a false ceiling to access a work area, if ACM is likely to be lying on the surface of the false ceiling;
- enclosure of friable ACM;
- application of tape, a sealant or other covering to pipe or boiler insulation that is ACM;
- installing or removing ACM ceiling tiles that cover an area of 7.5 m2 or more if the work is done without damaging the tiles;
- damaging non-friable ACM using non-powered hand-held tools if the material is not wetted;
- cleaning or removing filters used in air handling equipment in a building that has sprayed
   ACM insulation;
- removal or disturbance of one square metre or less of friable ACM;
- glove bag removals of ACM insulation.
- Work that may expose a worker to asbestos and that is not classified as a Type 1 or Type
   3 operation, is also to be classified as a Type 2 operation.

# Type 3 (High Risk)

- removal or disturbance of more than one square metre of friable ACM;
- spray application of a sealant to friable ACM;
- cleaning or removal of air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed ACM insulation;

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# **Asbestos Management Program**

Hamilton-Wentworth Catholic District School Board Classifications of Abatement Work

Pinchin File: 300640 Appendix D

- repair, alteration or demolition of a kiln or furnace made, in part, of refractory materials that are ACM;
- Use of power tools not attached to dust-collecting devices with HEPA filters on nonfriable ACM; and,
- repair, alteration or demolition of a building in which asbestos products were
   manufactured, unless the asbestos was cleaned up and removed before March 16, 1986.

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<sup>\*</sup> damage includes breakage, cutting, abrading, grounding, sanding, and vibration.

# APPENDIX E

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.







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.





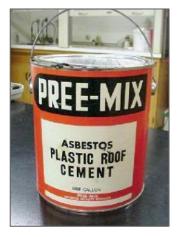


Rope gasket

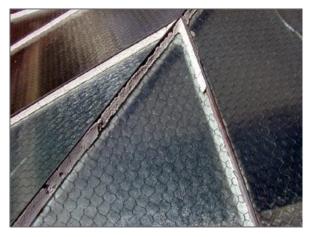
Rope gasket at boiler plate

# 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 fibreglass 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 like 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.