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# **Building Survey for the Presence of Asbestos-Containing Materials**

**Mountainside Recreation Centre**  
2205 Mount Forest Drive  
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**December 2010**

**OHE Project No.: 13216-052**

**Submitted by:**

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# TABLE OF CONTENTS

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<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1.0 INTRODUCTION.....</b>	<b>4</b>
<b>1.1 REPORT OUTLINE.....</b>	<b>4</b>
<b>2.0 BACKGROUND INFORMATION ON ASBESTOS.....</b>	<b>5</b>
<b>3.0 ASBESTOS REGULATIONS.....</b>	<b>6</b>
<b>3.1 ONTARIO REGULATION 278/05 .....</b>	<b>6</b>
<b>3.2 ONTARIO REGULATION 347 .....</b>	<b>9</b>
<b>3.3 TRANSPORTATION OF DANGEROUS GOODS REGULATIONS.....</b>	<b>9</b>
<b>4.0 BUILDING SURVEY FOR ASBESTOS-CONTAINING MATERIALS.....</b>	<b>10</b>
<b>4.1 SURVEY METHODOLOGY .....</b>	<b>10</b>
<b>4.2 BULK SAMPLE ANALYSIS METHODOLOGY.....</b>	<b>11</b>
<b>4.3 SITE DESCRIPTION.....</b>	<b>11</b>
<b>4.4 SURVEY FINDINGS .....</b>	<b>11</b>
<b>5.0 ASSESSMENT OF ASBESTOS-CONTAINING MATERIALS.....</b>	<b>17</b>
<b>5.1 ASSESSMENT OF ASBESTOS-CONTAINING MATERIALS METHODOLOGY .....</b>	<b>17</b>
<b>5.2 ASSESSMENT RESULTS AND RECOMMENDATIONS .....</b>	<b>19</b>
<b>6.0 DISCUSSION .....</b>	<b>19</b>
<b>7.0 RECOMENDATIONS.....</b>	<b>20</b>
<b>8.0 LIMITATIONS OF THE SURVEY.....</b>	<b>22</b>
<b>APPENDIX A:</b>	Site Drawings
<b>APPENDIX B:</b>	Results of the Analysis of Bulk Samples for the Presence of Asbestos
	• Table A
<b>APPENDIX C:</b>	Laboratory Analysis Report
	• Polarized Light Microscopy
<b>APPENDIX D:</b>	Copy of Ontario Regulation 278/05
<b>APPENDIX E:</b>	Site Photographs

## EXECUTIVE SUMMARY

OHE Consultants (OHE) was retained by Mr. Ken Pirhonen, Coordinator, Asset Management, Corporate Strategic Initiatives, The Corporation of the City of Burlington (the client), to conduct a building survey for the presence of Asbestos-Containing Materials (ACMs) at the Mountainside Recreation Centre located at 2205 Mount Forest Drive, Burlington, Ontario (subject location). The purpose of the survey is to provide a foundation for an Asbestos Management Program (AMP).

The site survey included the collection of fifteen (15) bulk samples of materials suspected of containing asbestos.

One (1) of the fifteen (15) samples collected and analyzed was found to contain asbestos as follows:

**Beige Caulking:** Asbestos-containing beige caulking was identified between the gaps of the ceiling blocks throughout the 1<sup>st</sup> floor of the subject location.

In addition to bulk samples of materials collected as part of this survey, a total of twelve (12) bulk samples of materials suspected of containing asbestos were collected as part of a Hazardous Building Materials Survey completed by OHE in the basement of the subject location in September 2010 (OHE Project 13462).

Two (2) of the twelve (12) samples collected and analyzed as part of the Hazardous Building Materials Survey were found to contain asbestos as follows:

**Beige Caulking:** Asbestos-containing beige caulking was identified between the gaps of the ceiling blocks throughout the basement of the subject location.

**White Heat Shield:** Asbestos-containing white heat shield was identified behind a transformer in the basement electrical room of the subject location.

**Exterior finishes and roofing materials were not sampled as part of the survey and are assumed to be asbestos-containing until proven otherwise through analytical testing.**

**As the survey was non-destructive in nature, asbestos may be present in areas not accessible for view and identification. In situations where the asbestos-containing materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel should be warned of the possibility of undisclosed asbestos when breaking into enclosed areas. Friable and non-friable materials discovered in these areas should be treated as asbestos-containing until proven otherwise.**

As asbestos-containing materials have been identified in the subject location, an Asbestos Management Program is required as follows:

1. A copy of this report must be kept on the premises to reflect areas where asbestos-containing material is located;
2. A record of the locations where asbestos-containing material has been removed during renovations must be kept on the premises;
3. Provide any person who is an occupier of the building with a written notice of any information in the report that relates to the area occupied by the person;
4. Provide any employer with whom **The Corporation of the City of Burlington** arranges or contracts for work with a written notice of the information in the report, if the work,
  - a. may involve material mentioned in the record, or
  - b. may be carried on in close proximity to such material and may disturb it;
5. Advise the workers employed by **The Corporation of the City of Burlington** who work in the building of the information in the record, if the workers may do work that,
  - a. involves material mentioned in the report, or
  - b. is to be carried on in close proximity to such material and may disturb it;

6. Establish and maintain, for the training and instruction of every worker employed by **The Corporation of the City of Burlington** who works in the building and may do work described in item 4 above, a program dealing with,
  - a. the hazards of asbestos exposure,
  - b. the use, care and disposal of protective equipment and clothing to be used and worn when doing the work,
  - c. personal hygiene to be observed when doing the work, and
  - d. the measures and procedures prescribed by this Regulation;
7. Develop a written program, including a management allocation of internal responsibilities, standard forms for reporting concerns and work practices or procedures to be followed;
8. The survey report shall be updated as follows:
  - a. at least once in each 12-month period (i.e. commencing in August of 2011); and
  - b. whenever **The Corporation of the City of Burlington** becomes aware of new information relating to the matters addressed in this report.

**This executive summary provides a brief overview of the survey findings. It is not intended to substitute for the complete survey report, nor does it discuss specific issues documented in the report. The executive summary should not be used as a substitute to reading the complete report.**

## 1.0 INTRODUCTION

OHE Consultants (OHE) was retained by Mr. Ken Pirhonen, Coordinator, Asset Management, Corporate Strategic Initiatives, The Corporation of the City of Burlington (the client), to conduct a building survey for the presence of Asbestos-Containing Materials (ACMs) at the Mountainside Recreation Centre located at 2205 Mount Forest Drive, Burlington, Ontario (subject location). The purpose of the survey is to provide a foundation for an Asbestos Management Program (AMP).

The site survey was conducted by Ryan Bayard of OHE on August 13, 2010.

The scope of work entailed:

- An inspection of accessible areas of the building to identify materials which could contain asbestos;
- Bulk sampling and analysis of representative materials suspected of containing asbestos; and
- An assessment of the condition of the asbestos-containing material with recommendations for appropriate corrective action if required.

## 1.1 Report Outline

The building survey is structured as follows:

- Section 2 - Background Information on Asbestos, provides a brief discussion of the properties, uses and hazards associated with asbestos exposure.
- Section 3 - Asbestos Regulations - Ontario, covers the applicable provincial regulations.
- Section 4 - Building Survey for Asbestos-Containing Materials, summarizes the building survey methodology, the bulk sample analysis methodology and the survey findings.
- Section 5 - Assessment of Asbestos-Containing Materials, covers the criteria used to

determine the condition of asbestos-containing material, the sample analysis results and the recommendations for corrective action.

- Section 6 - Discussion, covers the rationale for the methodology used in interpreting the data and the results obtained.
- Section 7 - Recommendations, summarizes the recommended course of action (if required).

## 2.0 BACKGROUND INFORMATION ON ASBESTOS

Asbestos is a term applied to a family of fibrous minerals divided into two geological groups, serpentines and amphiboles. These minerals are naturally occurring and are found in every mountain formation throughout the world. Only six forms of asbestos were used commercially. These are chrysotile, the only serpentine asbestos type, and amosite, crocidolite, anthophyllite, tremolite and actinolite which are amphibole asbestos forms.

There are over 3,000 separate uses of asbestos identified in existing literature. Each use is dependent upon the physical and chemical properties of a particular asbestos type. The desirable properties of asbestos fibres differ with each type of asbestos and include:

Fire retardance	Resistance to acids and alkalis	High tensile strength
Filter action	Thermal insulating qualities	Friction and wear resistance
Cohesion	Reinforcement	Filler

Asbestos is rarely found in pure form in a product and all products are divided into two broad categories based on hardness; "friable materials" and "non-friable materials or manufactured products". "Friable materials" are defined as materials that, when dry, can be crumbled, pulverized or powdered by hand pressure. This classification includes materials such as sprayed fireproofing, thermal insulation applications, acoustical texturized material and refractory or non-friable materials that have been made to become friable.

"Non-friable materials" are generally hard and do not readily release fibres. Most asbestos-containing material types are found in this category and are typically included in the following broad classes as cement products, felts, cloths, floor and roof coverings, friction products and ceiling tiles.

Asbestos fibres, when inhaled, may cause various respiratory diseases including primarily Asbestosis, Mesothelioma and Lung Cancer. All of these diseases can result in an early death. Due to this affliction, the use of asbestos has become regulated across Canada and some products are now prohibited. The location of asbestos-containing materials must be identified in report form so that work undertaken on these materials is conducted in a safe manner and debris is safely handled.

### **3.0 ASBESTOS REGULATIONS**

Three regulations govern the control, handling, transport and disposal of asbestos in Ontario:

- Ontario Regulation 278/05 (formerly O. Reg. 838/90) The Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (refer to Section 3.1);
- Ontario Regulation 347 (as amended) under the Environmental Protection Act (refer to Section 3.2); and
- The Regulations Respecting the Handling and Offering for Transport and Transporting of Dangerous Goods (refer to Section 3.3).

A copy of Regulation 278/05 is provided in Appendix D.

#### **3.1 Ontario Regulation 278/05**

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovations or demolition work where asbestos-containing materials are or may be disturbed.

The major requirements of the asbestos management program for the building owner include:

- Preparation and maintenance of a record of the location of asbestos-containing materials in the building;
- Notification of the building's tenants of the location of such material;
- Establishment of a training program for those employees of the owner who may work in



close proximity to and disturb the material;

- Periodic inspection of the material to determine its condition;
- Remedial action on material that has deteriorated following the precautions and procedures prescribed by the regulation as Type 1, Type 2 and Type 3; and
- Removal of asbestos-containing materials to the extent practicable prior to demolition of a building or part thereof.

The regulation prescribes work to be conducted according to three procedure types. The procedure to be followed depends on the type of material and the regulation provides instruction on how the work must be performed.

The following is a summary of the three types of classification of asbestos work:

### **Classification of Asbestos Work in Ontario**

#### **The following are Type 1 operations:**

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

**The following are Type 2 operations:**

1. Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.
2. The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.
3. Enclosing friable asbestos-containing material.
4. Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.
5. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
6. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - i. the material is not wetted to control the spread of dust or fibres, and
  - ii. the work is done only by means of non-powered hand-held tools.
7. Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.
8. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.
9. Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.
10. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.
11. An operation that;
  - i. is not mentioned in any of paragraphs 1 to 10,
  - ii. may expose a worker to asbestos, and
  - iii. is not classified as a Type 1 or Type 3 operation.

**The following are Type 3 operations:**

1. The removal or disturbance of more than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of a building, aircraft, ship,

- locomotive, railway car or vehicle or any machinery or equipment.
2. The spray application of a sealant to friable asbestos-containing material.
  3. Cleaning or removing air handling equipment, including rigid ducting but not including filters, in a building that has sprayed fireproofing that is asbestos-containing material.
  4. Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos-containing materials.
  5. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.
  6. Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986.

### **3.2 Ontario Regulation 347**

Ontario Regulation 347 (as amended) applies to the transport of asbestos waste from the location of generation to a landfill site. The regulation also prescribes procedures on how the asbestos waste is to be buried at the landfill site.

The major requirements to the building owner are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placarded;
- The asbestos waste is transported on the same day as received by the landfill site; and
- The route of travel is the most direct.

The building owners are held responsible for their asbestos waste as prescribed in the regulation until it is accepted by the waste disposal site.

### **3.3 Transportation of Dangerous Goods Regulations**

These regulations govern the packaging mode of transport labelling, placarding and documentation of asbestos waste while in transport. The labelling requirements differ from Ontario Regulation 347.

The major requirement to the building owner is to ensure the waste meets the packaging requirements and that a bill of lading accompanies the shipment.

#### **4.0 BUILDING SURVEY FOR ASBESTOS-CONTAINING MATERIALS**

This section of the report summarizes the building survey methodology, the bulk sample analysis methodology and the location of asbestos-containing materials in the building.

##### **4.1 Survey Methodology**

The survey consisted of an extensive examination of all accessible areas of the building to identify materials which could contain asbestos. The materials suspected of containing asbestos were assessed based on the surveyors' knowledge regarding the historical use of asbestos in building materials, through published data and through previous experiences. Accessible is defined as an area above a suspended ceiling tile, within an access hatch or behind a closed door, not impeded by any structure, article or thing. An area enclosed by cement block, plaster, solid lumber, etc., where minor demolition is required to gain entry is considered non-accessible. The walkthrough survey was augmented with layout drawings where available.

OHE's approach to the work followed accepted industry procedures, as well as our own in-house protocols as well as our own in-house protocols. The examination of materials was largely performed visually with some occasion where physical contact was necessary to assess the condition or examine for underlying layers. No destructive examinations were performed as part of this survey.

Bulk samples were collected for subsequent analysis during the building survey. A small volume of material (approximately one teaspoon full) was removed either from a damaged section of suspect material or cut out of intact material and then repaired by sealing with an appropriate surfacing compound, tape, paint or plaster to prevent fibre release. The collected samples were placed in plastic bags and sealed until they were opened by an independent laboratory. Section 4.2 provides a brief description of the methods employed by the laboratory for the identification of asbestos.

## 4.2 Bulk Sample Analysis Methodology

The bulk samples of suspect asbestos-containing materials were analyzed in accordance with a US EPA method for the determination of asbestos content in bulk materials, EPA Method 600/R-93/116. The EPA Method requires that the samples be analyzed using the Polarized Light Microscopy (PLM) technique. The percentage of asbestos in the sample is measured as perceived by the analyst in comparison to standard area projections and is greatly influenced by the analyst's experience. The method is useful for the qualitative identification of asbestos (type) and the semi-quantitative (% estimates) determination of asbestos content in bulk samples.

The asbestos bulk samples were analyzed by EMSL Analytical Incorporated, an independent and NVLAP accredited laboratory. To ensure quality results, the independent laboratory chosen must successfully participate in an "Asbestos Proficiency Analytical Testing Program" and as such, this laboratory is responsible for their findings.

## 4.3 Site Description

The subject location is a two-storey recreational centre, consisting mostly of open outdoor pool space with associated change rooms, life guard stations, office / administration and mechanical / electrical components. The subject location covers an area of approximately 14,951 ft<sup>2</sup> and was reported by the client to have been constructed in 1962.

## 4.4 Survey Findings

Locations where the bulk samples were collected are shown on Drawings 1.1 and 1.2 presented in Appendix A. A summary of the bulk sample analysis results is presented in Table A presented in Appendix B. The laboratory analysis report (EMSL Analytical Inc.) is presented in Appendix C. Selected photographs taken during the survey are presented in Appendix E.

The site survey included the collection of fifteen (15) bulk samples of materials suspected of containing asbestos. Asbestos was detected in one (1) of the fifteen (15) samples submitted for analysis and the results have been extrapolated to provide a reasonable estimate of the locations and the extent of asbestos-containing material in the subject location. In addition to samples collected as

part of this survey, samples of materials suspected of containing asbestos at subject location were collected as part of a Hazardous Building Materials Survey for the Basement Renovation Project completed at the subject location in September 2010 (OHE Project 13462). Asbestos was detected in two (2) of the twelve (12) samples submitted for analysis as part of the Hazardous Building Materials Survey completed at the subject location and the results have been extrapolated to provide a reasonable estimate of the locations and the extent of asbestos-containing material in the subject location. It should be noted that O. Reg. 278/05 s.3 sets out the minimum number of bulk material samples to be collected from an area of homogeneous material. It should also be noted that, although fifteen (15) samples were collected as part of the survey, not all of the fifteen (15) samples required analysis. As detailed in O. Reg. 278/05 s.4: *if analysis establishes that a bulk material sample contains 0.5 per cent or more asbestos by dry weight, s.4 a) it is not necessary to analyze other bulk material samples taken from the same area of homogeneous material, s.4 b) the entire area of homogeneous material from which the bulk materials sample was taken is deemed to be asbestos-containing material.*

The locations of identified non-friable asbestos-containing materials are shown on Drawings 2.1 – 2.3 presented in Appendix A.

No samples were taken of glass fibre applications as this material can be positively identified visually and does not contain asbestos.

The following is a brief discussion of the suspected asbestos-containing materials identified and sampled.

#### **4.4.1 Sprayed Fireproofing Material**

Sprayed fireproofing material was not observed at the subject location.

#### **4.4.2 Mechanical Systems Insulation**

Mechanical Systems Insulation (MSI), other than fiberglass applications, was not observed at the subject location.

#### **4.4.3 Suspended Ceiling Tiles**

Suspended Ceiling Tiles (SCTs) were observed in 1<sup>st</sup> floor cash office at the subject location.

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13216-052-3A, 13216-052-3B and 13216-052-3C), of SCTs observed at the subject location was collected as part of the survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

#### **4.4.4 Texture Coat Material**

Texture coat material was not observed at the subject location.

#### **4.4.5 Plaster**

Plaster was not observed at the subject location.

#### **4.4.6 Drywall Joint Compound**

Drywall Joint Compound (DJC) was observed on walls throughout the subject location.

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13216-052-2A, 13216-052-2B and 13216-052-2C), of DJC observed at the subject location was collected as part of the survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

In addition to samples of DJC collected as part of this survey, DJC present in the basement of the subject location was collected as part of the Hazardous Building Materials Survey for the Basement Renovation Project completed by OHE at the subject location in September 2010 (OHE Project 13462).

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13462-3A, 13462-3B and 13462-3C), of DJC observed in the basement of the subject location was collected as part of the Hazardous Building Materials Survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

#### **4.4.7 Vinyl Floor Tiles and Vinyl Sheet Flooring**

Vinyl Floor Tiles (VFTs) and Vinyl Sheet Flooring (VSF) were not observed at the subject location.

In cases of demolition and/or renovation, all VFTs, VSF and underlying mastics other than the materials sampled and, including VFTs, VSF and mastics which may be concealed beneath carpeting, shall be assumed asbestos-containing until proven otherwise by bulk sampling and analysis.

#### **4.4.8 Asbestos Cement Products**

Asbestos cement products were not observed at the subject location.

#### **4.4.9 Exterior Finishes**

No samples of the exterior finishes and associated materials and equipment were collected during the survey to avoid damaging the finishes and associated materials and equipment. Any such materials and equipment shall be considered asbestos-containing until proven otherwise by bulk sampling and analysis.

#### **4.4.10 Roofing Tar and Felts**

Historically, asbestos is known to be present in roofing felts and tar material. Before conducting any roof related work, we recommend that a detailed sampling program of the roof felts and tar be carried out to determine if the felts and tar contain asbestos.

No samples of the roofing materials and associated materials and equipment were collected during the survey in order to avoid damaging roofing membranes and associated materials and equipment. Any such materials and equipment shall be assumed asbestos-containing until bulk sampling and analysis proves otherwise.



#### 4.4.11 Other ACMs

##### Beige Caulking

Beige caulking, used as a sealant, was observed between the gaps in the ceiling blocks throughout the subject location.

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13216-052-1A, 13216-052-1B and 13216-052-1C), of beige caulking observed at the subject location was collected as part of this survey. OHE sample 13216-052-1A, collected from the ceiling of the east storage room, was found to contain 5% Chrysotile asbestos. The remaining samples in the set were not analyzed as per O. Reg. 278/05.

In addition to samples of beige caulking collected as part of this survey, beige caulking present between the ceiling blocks in the basement of the subject location was collected as part of the Hazardous Building Materials Survey for the Basement Renovation Project completed by OHE at the subject location in September 2010 (OHE Project 13462).

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13462-1A, 13462-1B and 13462-1C), of beige caulking observed in the basement of the subject location was collected as part of the Hazardous Building Materials Survey. OHE sample 13462-1A, collected from the ceiling of the basement, was found to contain 2% Chrysotile asbestos. The remaining samples in the set were not analyzed as per O. Reg. 278/05.

##### White Heat Shield

A white heat shield was observed behind a transformer in the basement electrical room of the subject location.

Although no samples of this material were collected as part of this survey, samples of the white heat shield were collected as part of a Hazardous Building Materials Survey for the Basement Renovation Project completed by OHE at the subject location in September 2010 (OHE Project 13462).

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13462-2A, 13462-2B and 13462-2C), of the white heat shield present in the basement electrical room of the subject location was collected as part of the Hazardous Building Materials Survey. OHE sample 13462-2A, collected from behind the transformer in the basement electrical room, was found to contain 40% Chrysotile asbestos. The remaining samples in the set were not analyzed as per O. Reg. 278/05.

#### White Paper Wrap

White paper wrap was observed on fiberglass insulated pipe straights throughout the basement of the subject location.

Although no samples of this material were collected as part of this survey, samples of the white paper wrap were collected as part of a Hazardous Building Materials Survey for the Basement Renovation Project completed by OHE at the subject location in September 2010 (OHE Project 13462).

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13462-4A, 13462-4B and 13462-4C), of the white paper wrap present in the basement of the subject location was collected as part of the Hazardous Building Materials Survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

#### Black Paper Wrap

Black paper wrap was observed on fiberglass insulated pipe straights throughout the basement of the subject location.

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13216-052-4A, 13216-052-4B and 13216-4C), of black paper wrap observed at the subject location was collected as part of the survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

#### Black Tar Paper

Black tar paper was observed on the concrete blocks around the entry to the northeast pipe chase in the basement of the subject location.

A total of one (1) sample set, consisting of three (3) samples (OHE samples 13216-052-5A, 13216-052-5B and 13216-052-5C), of black tar paper observed at the subject location was collected as part of the survey. Asbestos was not detected in any of the three (3) samples collected and analyzed.

#### Flexible Duct Joint Material

Flexible joint material was observed on the heating, ventilation and air-conditioning systems and associated components throughout the subject location. Samples of this material were not collected in order to avoid damaging the seals around the air handling equipment. All flexible duct joint material present in all parts of the subject location shall be treated as asbestos-containing until proven otherwise by Material Safety Data Sheets review or by bulk sampling and analysis.

## **5.0 ASSESSMENT OF ASBESTOS-CONTAINING MATERIALS**

This section covers the assessment of the condition of asbestos-containing materials including the criteria used, the assessment results and the recommendations for corrective actions.

### **5.1 Assessment of Asbestos-Containing Materials Methodology**

The assessment of asbestos-containing materials involves the evaluation of a number of factors by the surveyor including:

- Asbestos content
- Condition of the material
- Accessibility
- Water damage
- Activity and vibration
- Presence in air plenum/direct air stream

Where asbestos-containing material is found to be in good condition, firmly bound and not likely to deteriorate or fall, the recommended procedure is to evaluate the condition of the material on a periodic basis (which should be at least once a year unless specified more frequently) in order to detect gradual deterioration. This process is referred to as an "Operation and Maintenance Program". Damaged material is identified by surface crumbling, blistering, water stains, gouges, marring or being otherwise abraded. The accumulation of powder dust or debris similar in appearance to the suspect material can be used as confirmatory evidence.

In situations where the asbestos-containing materials are found to have deteriorated or likely to fall,

the following are the four abatement options that may be specified in this report:

1. **Cleaning.** The cleaning of asbestos-containing debris may be performed using a High Efficiency Particulate Air (HEPA) filter vacuum cleaner or by damp wiping techniques. All fallen asbestos material must be cleaned upon discovery. In situations where the material will continue to fall due to deterioration, damage or abrasion, additional corrective work is required, i.e., the material must be repaired, permanently enclosed or removed.
2. **Repairs.** This option is usually selected in situations where damage to the asbestos-containing material is of a minor nature and is not likely to reoccur due to accessibility or activity. This method of repair is chosen in situations where performing the repair activities will not cause significant disturbance to the underlying material. Typical repairs include the repair of thermal insulation by the application of mastic (paint adhesive) to lagging (canvas cloth). The repair of sprayed fireproofing or acoustical texturized material can involve the application of an encapsulant to limited areas of abraded or damaged material. If this option is followed, the sprayed material must be capable of supporting the additional weight of the encapsulant.
3. **Enclosure.** An enclosure consists of the construction of a physical barrier, typically constructed from drywall or metal sheeting. This option is applicable in situations where the removal of materials with asbestos is not practicable, is of a high financial cost, or where damage is likely to occur without a protective barrier. Where the installation of the barrier is likely to disturb the asbestos-containing materials, the work must be performed in isolation from the building's normal environment.
4. **Removal.** This option is recommended in situations where the asbestos-containing material is damaged beyond repair and the material is highly likely to be damaged due to nearby activities, by renovation or during demolition. The precautions employed may vary depending on the volume of the material to be removed and whether the material is friable or not. Typical programs can include the use of glove bags for limited amounts of thermal pipe insulation or minor amounts of fireproofing may be removed within a small polyethylene lined enclosure. For larger amounts of asbestos, more stringent protocols are used and consist of attached shower facilities, the establishment of a negative pressure differential, a

filtration system for the air and monitoring for exposure to asbestos fibres.

## 5.2 Assessment Results and Recommendations

Asbestos-containing materials were found to be in good condition during the survey, therefore no corrective actions are required at this time.

## 6.0 DISCUSSION

Renovations and removal of any asbestos-containing materials must be recorded to ensure the status of the building is kept current.

Non-friable asbestos-containing materials were identified at the subject location. As such, an asbestos management program is required for which this report will form the foundation. This report presumes that materials from a common construction time and addition that have a high degree of similarity (i.e. in appearance, colour and texture) have a similar asbestos content. This presumption is based on normal construction practice.

Non-friable asbestos-containing materials have been identified in the form of a beige caulking and a white heat shield at the subject location. Asbestos is assumed to be present in roofing felts and tar, exterior finishes and flexible duct joint material. Samples of these materials were not collected to avoid leaks and damage to surface finishes or were excluded from the scope of work provided by The Corporation of the City of Burlington prior to the start of the survey for asbestos.

In cases where asbestos was identified in some but not all samples of similar materials, the conservative approach was applied and all such material was assumed and reported to contain asbestos. When a renovation is planned, we recommend a detailed sampling of suspected asbestos-containing material to confirm the presence of asbestos. Materials that are removed through renovations should be replaced with non-asbestos-containing materials only. This must be documented. Confirmatory sampling will not be required on any new products if the manufacturer supplies written confirmation that these materials are asbestos free.

As the survey was non-destructive in nature, asbestos may be present in areas not accessible for view and identification. In situations where the asbestos-containing materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel should be warned of the possibility of undisclosed asbestos when breaking into enclosed areas. Friable and non-friable materials discovered in these areas should be treated as asbestos-containing until proven otherwise.

## 7.0 RECOMENDATIONS

As asbestos-containing materials have been identified in the subject location, an Asbestos Management Program is required as follows:

1. A copy of this report must be kept with the premises to reflect areas where asbestos-containing material is located;
2. A record of the locations where asbestos-containing material has been removed during renovations must be kept on the premise;
3. Provide any person who is an occupier of the building with a written notice of any information in the report that relates to the area occupied by the person;
4. Provide any employer with whom **The Corporation of the City of Burlington** arranges or contracts for work with a written notice of the information in the report, if the work,
  - a. may involve material mentioned in the record, or
  - b. may be carried on in close proximity to such material and may disturb it;
5. Advise the workers employed by **The Corporation of the City of Burlington** who work in the building of the information in the record, if the workers may do work that,
  - a. involves material mentioned in the report, or

- b. is to be carried on in close proximity to such material and may disturb it;
6. Establish and maintain, for the training and instruction of every worker employed by **The Corporation of the City of Burlington** who works in the building and may do work described in item 4 above, a program dealing with,
- a. the hazards of asbestos exposure,
  - b. the use, care and disposal of protective equipment and clothing to be used and worn when doing the work,
  - c. personal hygiene to be observed when doing the work, and
  - d. the measures and procedures prescribed by this Regulation;
7. Develop a written program, including a management allocation of internal responsibilities, standard forms for reporting concerns and work practices or procedures to be followed;
8. The survey report shall be updated as follows:
- a. at least once in each 12-month period (i.e. commencing in August of 2011); and
  - b. whenever **The Corporation of the City of Burlington** becomes aware of new information relating to the matters addressed in this report.

## 8.0 LIMITATIONS OF THE SURVEY

In the performance of the Asbestos Survey, OHE has exercised a degree of thoroughness and competence that is consistent with the profession. OHE believes the information presented in this report to be factual at the time of the assessment survey for the building sections that were accessible to the surveyor.

Due to the nature of building construction, especially in a building that has been renovated and developed extensively, some limitations exist as to the identification of pockets of asbestos-containing materials. Professional judgment has been exercised in gathering and analyzing the information obtained. We cannot warrant or guarantee that the conclusions we reach are absolutely complete or accurate however, we commit ourselves to care and competence in reaching those conclusions.

The information provided by this report is intended for the sole use of The Corporation of the City of Burlington. OHE reserves the right to review and comment on any interpretation of the data or conclusions derived by The Corporation of the City of Burlington. No other warranty or representation, either expressed or implied, is included in this report.

Dated December 2010

### **OHE Consultants**

Occupational Hygiene & Environment

Original Signed By:

Prepared by:  
Ryan Bayard, B.E.S.  
Project Consultant

Original Signed By:

Reviewed by  
Michal Zitnik, M.H.Sc., ROH, CIH  
Senior Consultant

Original Signed By:

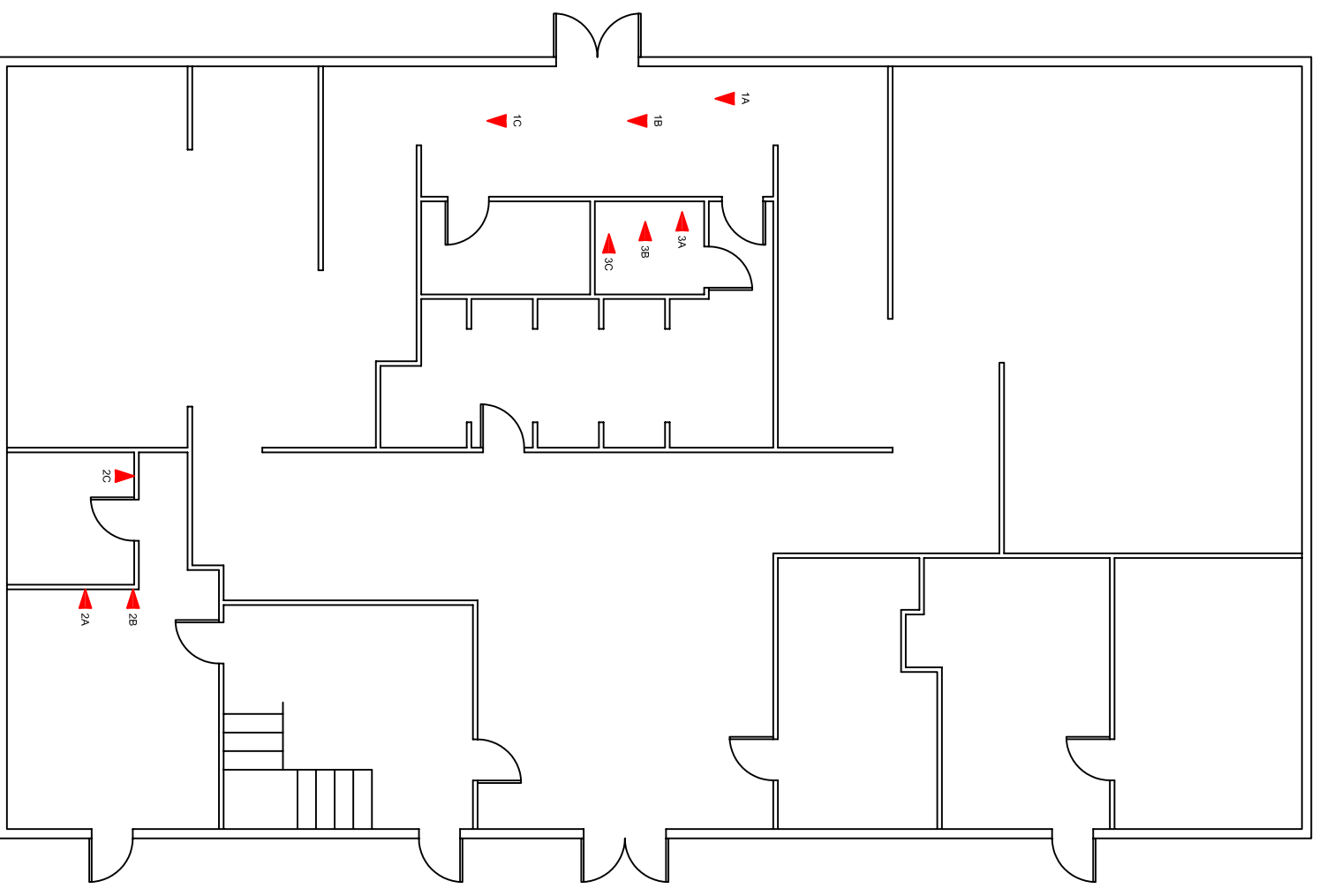
Reviewed by:  
Fred Atrash, M.H.Sc., ROH, CIH  
Director/Senior Consultant



**Drawings**

**LEGEND**

xx ▲ Bulk Sample Location



Notes: Locations of site features are approximate and may vary from that shown


Client:

The Corporation of  
The City of Burlington  
426 Brant St.  
Burlington, ON

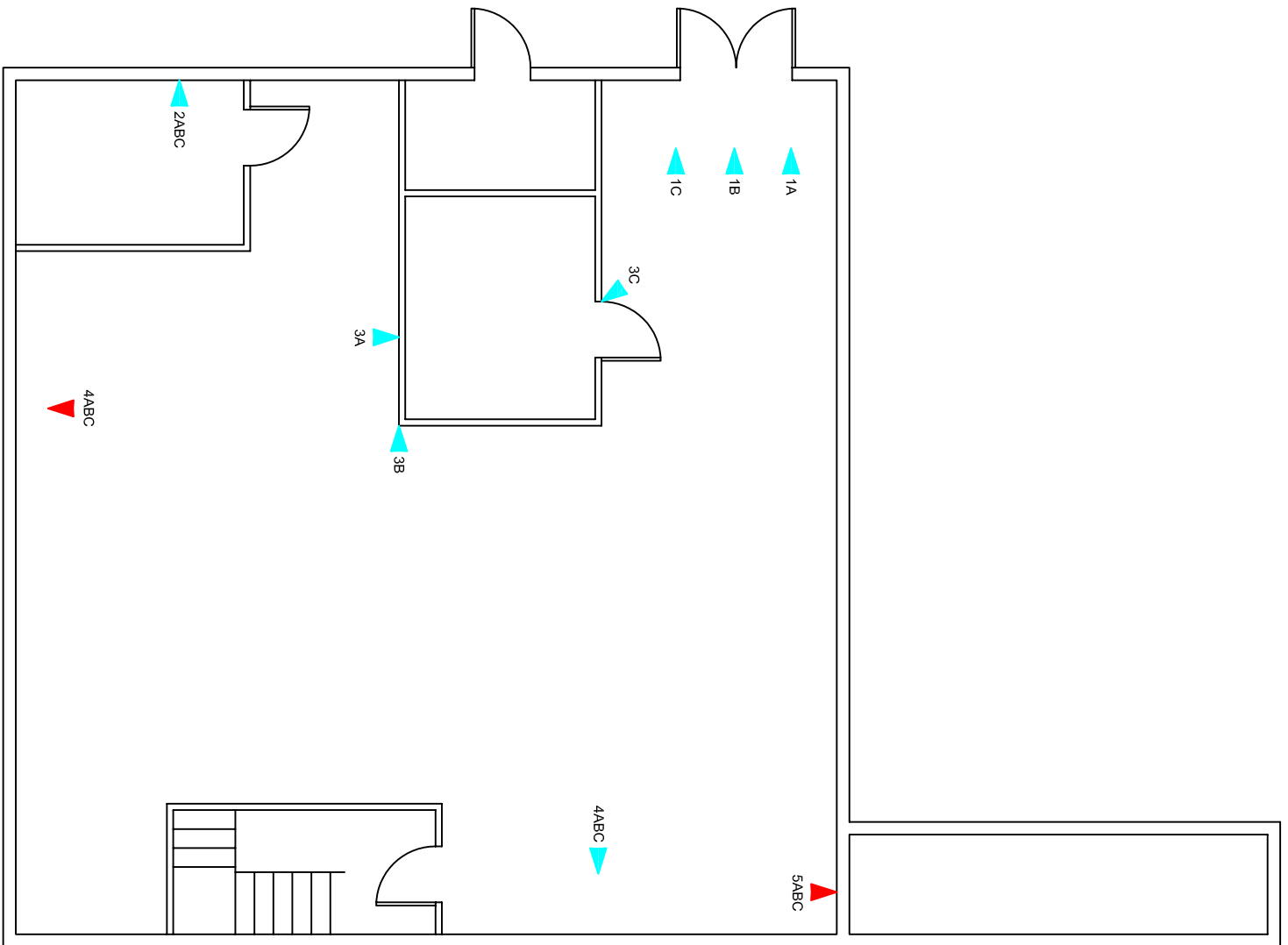
Project Location:

Main Floor  
Mountainside Pool  
2205 Mount Forest  
Burlington, ON

**Drawing Showing  
Bulk Sample Locations**

Reviewed By	FA	
Drawn By	CS	
Project N°	13216-052	
Date	Dec 2010	DWG N°
Scale	NTS	1.1





**LEGEND**

- xx ▼ Bulk Sample Location
- xx ▲ Bulk Sample Location (OHE project #13462)

Notes: Locations of site features are approximate and may vary from that shown

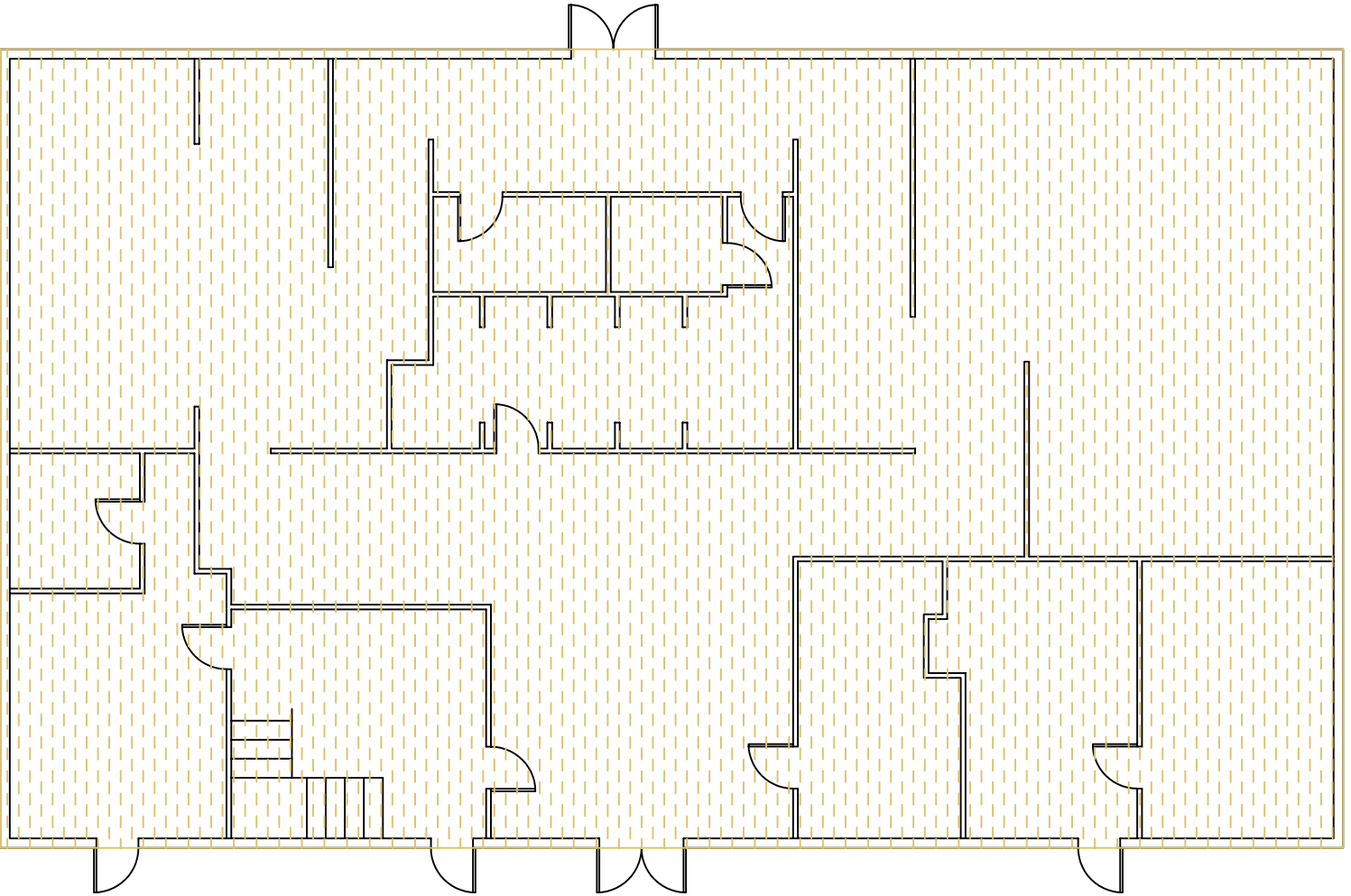
Client:  
The Corporation of  
The City of Burlington  
426 Brant St.  
Burlington, ON

Project Location:  
Basement  
Mountainside Pool  
2205 Mount Forest  
Burlington, ON

**Drawing Showing  
Bulk Sample Locations**

Reviewed By	FA	
Drawn By	CS	
Project N°	13216-052	
Date	Dec 2010	DWG N°
Scale	NTS	1.2





**LEGEND**

 Beige Caulking

Notes: Locations of site features are approximate and may vary from that shown

Client:


The Corporation of  
The City of Burlington  
426 Brant St.  
Burlington, ON

Project Location:

Main Floor  
Mountainside Pool  
2205 Mount Forest  
Burlington, ON

Drawing Showing  
Non-Friable  
Asbestos-Containing  
Materials

Reviewed By

FA 

Drawn By

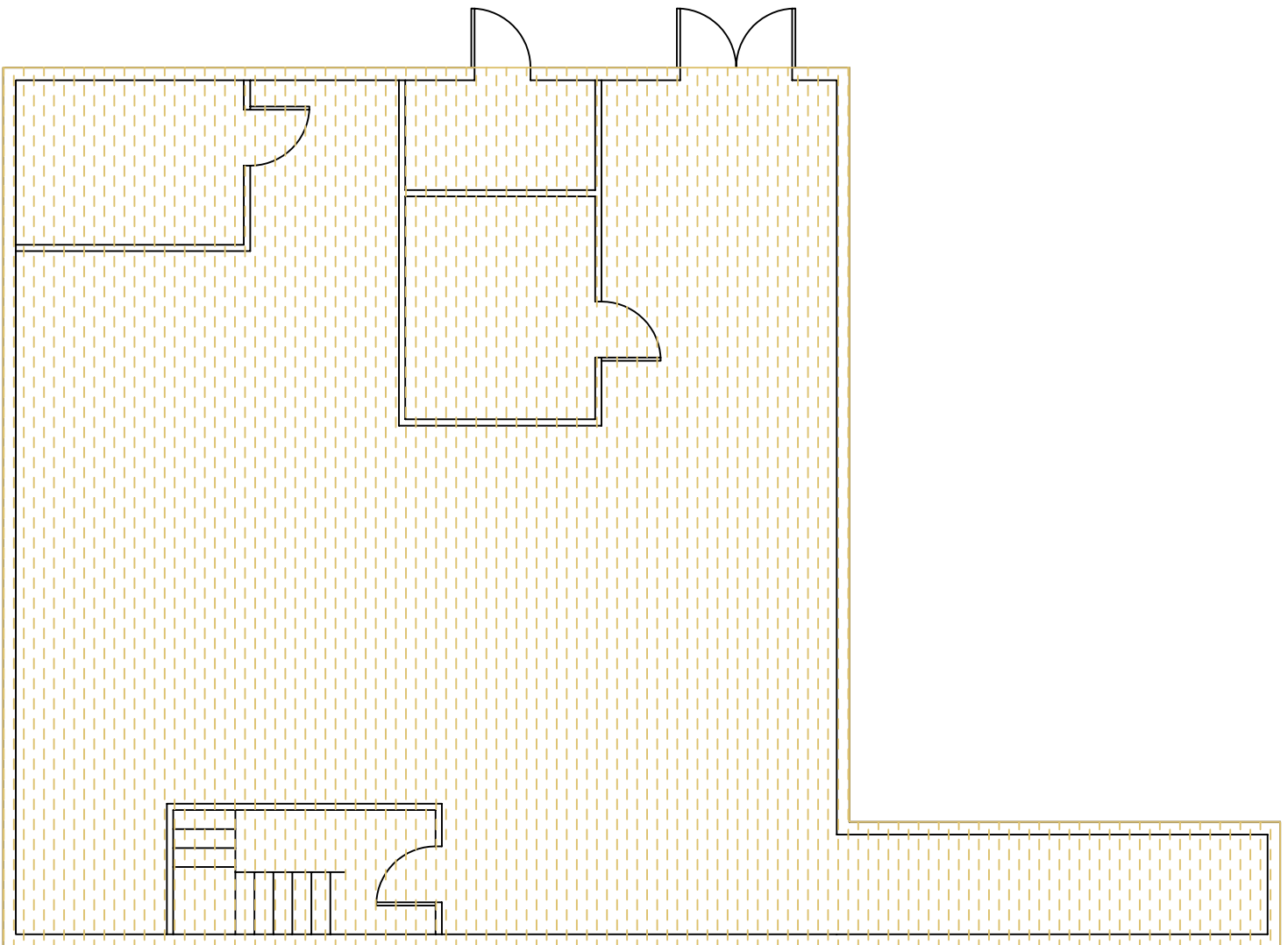
CS

Project N° 13216-052

Date Dec 2010 DWG N°

Scale NTS 2.1





**LEGEND**

 Beige Caulking

Notes: Locations of site features are approximate and may vary from that shown

Client:


The Corporation of  
The City of Burlington  
426 Brant St.  
Burlington, ON

Project Location:

Basement  
Mountainside Pool  
2205 Mount Forest  
Burlington, ON

Drawing Showing  
Non-Friable  
Asbestos-Containing  
Materials

Reviewed By

FA 

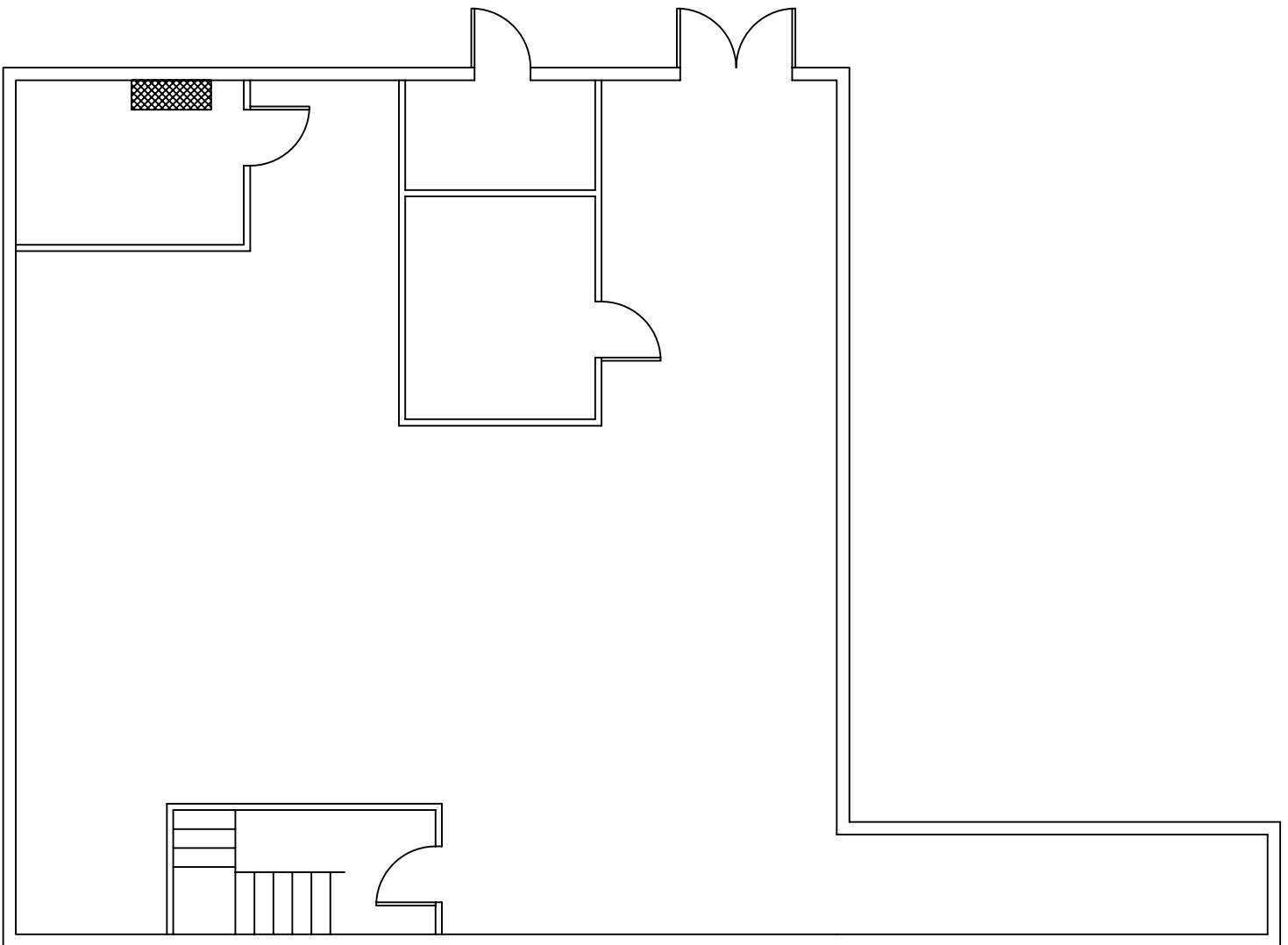
Drawn By

CS

Project N° 13216-052

Date Dec 2010 DWG N°

Scale NTS 2.2



**LEGEND**



White Heat Shield

Notes: Locations of site features are approximate and may vary from that shown

Client:

The Corporation of  
The City of Burlington  
426 Brant St.  
Burlington, ON

Project Location:

Basement  
Mountainside Pool  
2205 Mount Forest  
Burlington, ON

Drawing Showing  
Non-Friable  
Asbestos-Containing  
Materials

Reviewed By

FA



Drawn By

CS

Project N° 13216-052

Date Dec 2010

Scale NTS

2.3

**Results of Analysis of Bulk Samples  
for the Presence of Asbestos**

**Table A**  
**Summary of Analysis of Bulk Samples**  
**by Polarized Light Microscopy (PLM) with Dispersion Staining**

**Project No.: 13216-052**

**Collected August 13, 2010**

<b>Bulk Sample Number</b>	<b>Sample Description</b>	<b>Sample Location</b>	<b>Percent and Type of Asbestos</b>
13216-052-1A	Beige caulking	In the gaps of the ceiling blocks	5% Chrysotile
13216-052-1B	Beige caulking	In the gaps of the ceiling blocks	Stop Positive (Not Analyzed)
13216-052-1C	Beige caulking	In the gaps of the ceiling blocks	Stop Positive (Not Analyzed)
13216-052-2A	Drywall joint compound	Wall of the employee washroom	None Detected
13216-052-2B	Drywall joint compound	Wall of the employee washroom	None Detected
13216-052-2C	Drywall joint compound	Wall of the employee washroom	None Detected
13216-052-3A	Suspended ceiling tile – 2'x2' with pinholes and fissures	Ceiling of the cash office	None Detected
13216-052-3B	Suspended ceiling tile – 2'x2' with pinholes and fissures	Ceiling of the cash office	None Detected
13216-052-3C	Suspended ceiling tile – 2'x2' with pinholes and fissures	Ceiling of the cash office	None Detected
13216-052-4A	Black paper wrap	Pipe straight in the basement mechanical room	None Detected
13216-052-4B	Black paper wrap	Pipe straight in the basement mechanical room	None Detected
13216-052-4C	Black paper wrap	Pipe straight in the basement mechanical room	None Detected
13216-052-5A	Black tar paper	Entrance of basement pipe chase	None Detected
13216-052-5B	Black tar paper	Entrance of basement pipe chase	None Detected
13216-052-5C	Black tar paper	Entrance of basement pipe chase	None Detected

**Table A (Continued)**  
**Summary of Analysis of Bulk Samples**  
**by Polarized Light Microscopy (PLM) with Dispersion Staining**

**Project No.: 13462**

**Collected August 13, 2010**

<b>Bulk Sample Number</b>	<b>Sample Description</b>	<b>Sample Location</b>	<b>Percent and Type of Asbestos</b>
13462-1A	Beige caulking	Between the gaps in the ceiling blocks	2% Chrysotile
13462-1B	Beige caulking	Between the gaps in the ceiling blocks	Stop Positive (Not Analyzed)
13462-1C	Beige caulking	Between the gaps in the ceiling blocks	Stop Positive (Not Analyzed)
13462-2A	White heat shield	Adjacent to the transformer in the electrical room	40% Chrysotile
13462-2B	White heat shield	Adjacent to the transformer in the electrical room	Stop Positive (Not Analyzed)
13462-2C	White heat shield	Adjacent to the transformer in the electrical room	Stop Positive (Not Analyzed)



**Table A (Continued)**  
**Summary of Analysis of Bulk Samples**  
**by Polarized Light Microscopy (PLM) with Dispersion Staining**

**Project No.: 13462**

**Collected August 13, 2010**

<b>Bulk Sample Number</b>	<b>Sample Description</b>	<b>Sample Location</b>	<b>Percent and Type of Asbestos</b>
13462-3A	Drywall joint compound	Wall of the storage room	None Detected
13462-3B	Drywall joint compound	Wall of the storage room	None Detected
13462-3C	Drywall joint compound	Wall of the storage room	None Detected
13462-4A	White paper wrap	Pipe straight in the basement	None Detected
13462-4B	White paper wrap	Pipe straight in the basement	None Detected
13462-4C	White paper wrap	Pipe straight in the basement	None Detected

**Laboratory Analysis Report**



**EMSL Analytical, Inc.**

490 Rowley Road, Depew, NY 14043

Phone: (716) 651-0030 Fax: (716) 651-0394 Email: [buffalolab@emsl.com](mailto:buffalolab@emsl.com)

Attn: **Fred Atrash**  
**OHE Consultants**  
**496 South Service Road**  
**Mississauga, Ontario, CN L5G 2S5**

Customer ID: OHEI93  
Customer PO:  
Received: 08/20/10 10:00 AM  
EMSL Order: 141004615  
EMSL Proj:  
Analysis Date: 8/31/2010

Fax: (905) 278-0090 Phone: (905) 278-7000  
Project: **13216-052**

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
13216-052-1A <i>141004615-0001</i>	in the gaps of the ceiling blocks	Beige Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
13216-052-1B <i>141004615-0002</i>	in the gaps of the ceiling blocks				Stop Positive (Not Analyzed)
13216-052-1C <i>141004615-0003</i>	in the gaps of the ceiling blocks				Stop Positive (Not Analyzed)
13216-052-2A <i>141004615-0004</i>	wall of the employee washroom	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
13216-052-2B <i>141004615-0005</i>	wall of the employee washroom	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
13216-052-2C <i>141004615-0006</i>	wall of the employee washroom	White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
13216-052-3A <i>141004615-0007</i>	ceiling of the cash office	Tan Fibrous Homogeneous	40% Cellulose 40% Glass	20% Non-fibrous (other)	None Detected

Initial report from 08/29/2010 17:50:25

Analyst(s)  

---

*Rachel Giese (13)*

*Rhonda McGee*  

---

Rhonda McGee, Laboratory Manager  
or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.  
Samples analyzed by EMSL Analytical, Inc. 490 Rowley Road, Depew NY NVLAP Lab Code 200056-0, NYS ELAP 11606



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Received: 08/20/10 10:00 AM  
EMSL Order: 141004615  
EMSL Proj:  
Analysis Date: 8/31/2010

Fax: (905) 278-0090 Phone: (905) 278-7000  
Project: **13216-052**

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
13216-052-3B <small>141004615-0008</small>	ceiling of the cash office	Tan Fibrous Homogeneous	40% 40%	Cellulose Glass	20% Non-fibrous (other) <b>None Detected</b>
13216-052-3C <small>141004615-0009</small>	ceiling of the cash office	Tan Fibrous Homogeneous	40% 40%	Cellulose Glass	20% Non-fibrous (other) <b>None Detected</b>
13216-052-4A <small>141004615-0010</small>	pipe straight in the basement mechancial rm	Black Fibrous Homogeneous	90%	Cellulose	10% Non-fibrous (other) <b>None Detected</b>
13216-052-4B <small>141004615-0011</small>	pipe straight in the basement mechancial rm	Black Fibrous Homogeneous	90%	Cellulose	10% Non-fibrous (other) <b>None Detected</b>
13216-052-4C <small>141004615-0012</small>	pipe straight in the basement mechancial rm	Black Fibrous Homogeneous	90%	Cellulose	10% Non-fibrous (other) <b>None Detected</b>
13216-052-5A <small>141004615-0013</small>	entrance of the basement pipe chase	Black Fibrous Homogeneous	50%	Cellulose	50% Non-fibrous (other) <b>None Detected</b>
13216-052-5B <small>141004615-0014</small>	entrance of the basement pipe chase	Black Fibrous Homogeneous	50%	Cellulose	50% Non-fibrous (other) <b>None Detected</b>

Initial report from 08/29/2010 17:50:25

Analyst(s)  

---

*Rachel Giese (13)*

---

Rhonda McGee, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. 490 Rowley Road, Depew NY NVLAP Lab Code 200056-0, NYS ELAP 11606



**EMSL Analytical, Inc.**

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Fax: (905) 278-0090 Phone: (905) 278-7000  
Project: **13216-052**

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
13216-052-5C <i>141004615-0015</i>	entrance of the basement pipe chase	Black Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (other)	<b>None Detected</b>

Initial report from 08/29/2010 17:50:25

Analyst(s)  

---

*Rachel Giese (13)*

*Rhonda McGee*  

---

Rhonda McGee, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. 490 Rowley Road, Depew NY NVLAP Lab Code 200056-0, NYS ELAP 11606

**Copy of Ontario Regulation 278/05**

**Occupational Health and Safety Act  
Loi sur la santé et la sécurité au travail**

**ONTARIO REGULATION 278/05**

*No Amendments*

**DESIGNATED SUBSTANCE — ASBESTOS ON CONSTRUCTION  
PROJECTS AND IN BUILDINGS AND REPAIR OPERATIONS**

*This Regulation is made in English only.*

**CONTENTS**

<u>1.</u>	Definitions
<u>2.</u>	Application
<u>3.</u>	Adoption of standard
<u>4.</u>	Restrictions re sprayed material, insulation, sealants
<u>5.</u>	Information for workers
<u>6.</u>	Demolition
<u>7.</u>	Ongoing asbestos management in buildings, two-year transitional period
<u>8.</u>	Ongoing asbestos management in buildings after transitional period
<u>9.</u>	Responsibility of employer other than owner
<u>10.</u>	Owner's responsibilities before requesting tender or arranging work
<u>11.</u>	Advance notice re Type 3 operations and certain Type 2 operations
<u>12.</u>	Type 1, Type 2 and Type 3 operations
<u>13.</u>	Respirators
<u>14.</u>	Measures and procedures, Type 1 operations
<u>15.</u>	Measures and procedures, Type 2 and Type 3 operations
<u>16.</u>	Additional measures and procedures, Type 2 operations
<u>17.</u>	Additional measures and procedures, glove bag operations
<u>18.</u>	Additional measures and procedures, Type 3 operations
<u>19.</u>	Instruction and training
<u>20.</u>	Asbestos abatement training programs
<u>21.</u>	Asbestos work report
<u>22.</u>	Asbestos Workers Register
<u>23.</u>	Use of equivalent measure or procedure
<u>24.</u>	Notice to inspector
<u>Table 1</u>	Bulk material samples
<u>Table 2</u>	Respirators
<u>Table 3</u>	Air samples

**Definitions**

**1. (1)** In this Regulation,

“asbestos” means any of the fibrous silicates listed in subsection (2);

“asbestos-containing material” means material that contains 0.5 per cent or more asbestos by dry weight;

“building” means any structure, vault, chamber or tunnel including, without limitation, the electrical, plumbing, heating and air handling equipment (including rigid duct work) of the structure, vault, chamber or tunnel;

“competent worker”, in relation to specific work, means a worker who,

- (a) is qualified because of knowledge, training and experience to perform the work,
- (b) is familiar with the Act and with the provisions of the regulations that apply to the work, and
- (c) has knowledge of all potential or actual danger to health or safety in the work;

“demolition” includes dismantling and breaking up;

“examine”, when used with reference to material, means to carry out procedures in accordance with section 3 to establish its asbestos content and to establish the type of asbestos, and “examination” has a corresponding meaning;

“friable material” means material that,

- (a) when dry, can be crumbled, pulverized or powdered by hand pressure, or
- (b) is crumbled, pulverized or powdered;

“HEPA filter” means a high efficiency particulate aerosol filter that is at least 99.97 per cent efficient in collecting a 0.3 micrometre aerosol;

“homogeneous material” means material that is uniform in colour and texture;

“joint health and safety committee” means,

- (a) a joint health and safety committee established under section 9 of the Act,
- (b) a similar committee described in subsection 9 (4) of the Act, or
- (c) the workers or their representatives who participate in an arrangement, program or system described in subsection 9 (4) of the Act;

“occupier” has the same meaning as in the *Occupiers’ Liability Act*;

“Type 1 operation” means an operation described in subsection 12 (2);

“Type 2 operation” means an operation described in subsection 12 (3);

“Type 3 operation” means an operation described in subsection 12 (4). O. Reg. 278/05, s. 1 (1).

(2) The fibrous silicates referred to in the definition of “asbestos” in subsection (1) are:



1. Actinolite.
2. Amosite.
3. Anthophyllite.
4. Chrysotile.
5. Crocidolite.
6. Tremolite. O. Reg. 278/05, s. 1 (2).

## **Application**

2. (1) This Regulation applies to,
- (a) every project, its owner, and every constructor, employer and worker engaged in or on the project;
  - (b) the repair, alteration or maintenance of a building, the owner of the building, and every employer and worker engaged in the repair, alteration or maintenance;
  - (c) every building in which material that may be asbestos-containing material has been used, and the owner of the building;
  - (d) the demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles, and every employer and worker engaged in the demolition; and
  - (e) subject to subsection (3),
    - (i) work described in subsection (2) in which asbestos-containing material is likely to be handled, dealt with, disturbed or removed, and
    - (ii) every employer and worker engaged in the work.
- O. Reg. 278/05, s. 2 (1).

- (2) Clause (1) (e) applies to,
- (a) the repair, alteration or maintenance of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles; and
  - (b) work on a building that is necessarily incidental to the repair, alteration or maintenance of machinery or equipment. O. Reg. 278/05, s. 2 (2).

(3) This Regulation does not apply to an employer to whom Regulation 837 of the Revised Regulations of Ontario, 1990 (Designated Substance — Asbestos) applies in respect of those workers employed by the employer and engaged in the activities described in clause (1) (e) if the employer has on or before December 16, 1985 put into effect and maintained measures and procedures

to control the exposure of workers to asbestos and has incorporated the same in an asbestos control program in accordance with Regulation 837 of the Revised Regulations of Ontario, 1990. O. Reg. 278/05, s. 2 (3).

(4) This Regulation does not apply to an owner of a private residence occupied by the owner or the owner's family or to an owner of a residential building that contains not more than four dwelling units, one of which is occupied by the registered owner or family of the registered owner. O. Reg. 278/05, s. 2 (4).

### **Adoption of standard**

**3.** (1) For the purposes of this Regulation, the method and procedures for establishing whether material is asbestos-containing material and for establishing its asbestos content and the type of asbestos shall be in accordance with the following standard:

1. U.S. Environmental Protection Agency. Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials. June 1993. O. Reg. 278/05, s. 3 (1).

(2) The procedures required by subsection (1) shall be carried out on bulk material samples that are randomly collected by a competent worker and are representative of each area of homogeneous material. O. Reg. 278/05, s. 3 (2).

(3) The minimum number of bulk material samples to be collected from an area of homogeneous material is set out in Table 1. O. Reg. 278/05, s. 3 (3).

(4) If analysis establishes that a bulk material sample contains 0.5 per cent or more asbestos by dry weight,

(a) it is not necessary to analyze other bulk material samples taken from the same area of homogeneous material; and

(b) the entire area of homogeneous material from which the bulk material sample was taken is deemed to be asbestos-containing material. O. Reg. 278/05, s. 3 (4).

### **Restrictions re sprayed material, insulation, sealants**

**4.** (1) No person shall apply or install or cause to be applied or installed, by spraying, material containing 0.1 per cent or more asbestos by dry weight that can become friable. O. Reg. 278/05, s. 4 (1).

(2) No person shall apply or install or cause to be applied or installed, as thermal insulation, material containing 0.1 per cent or more asbestos by dry weight that can become friable. O. Reg. 278/05, s. 4 (2).

(3) A liquid sealant shall not be applied to friable asbestos-containing material if,

- (a) the material has visibly deteriorated; or
- (b) the material's strength and its adhesion to the underlying materials and surfaces are insufficient to support its weight and the weight of the sealant. O. Reg. 278/05, s. 4 (3).

### **Information for workers**

5. (1) This section applies whenever a worker is to do work that,
- (a) involves material that,
    - (i) is asbestos-containing material,
    - (ii) is being treated as if it were asbestos-containing material,
    - (iii) is the subject of advice under section 9 or a notice under subsection 10 (8); or
  - (b) is to be carried on in close proximity to material described in clause (a) and may disturb it. O. Reg. 278/05, s. 5 (1).

(2) The constructor or employer shall advise the worker and provide him or her with the following information:

1. The location of all material described in clause (1) (a).
2. For each location, whether the material is friable or non-friable.
3. In the case of sprayed-on friable material, for each location,
  - i. if the material is known to be asbestos-containing material, the type of asbestos, if known, or
  - ii. in any other case, a statement that the material will be treated as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 5 (2).

### **Demolition**

6. (1) The demolition of all or part of machinery, equipment, a building, aircraft, locomotive, railway car, vehicle or ship shall be carried out or continued only when any asbestos-containing material that may be disturbed during the work has been removed to the extent practicable. O. Reg. 278/05, s. 6 (1).

(2) Subsection (1) does not apply so as to prevent work necessary to gain access to the asbestos-containing material that is to be removed, if the workers doing the work are protected from the hazard. O. Reg. 278/05, s. 6 (2).

### **Ongoing asbestos management in buildings, two-year transitional period**

7. (1) This section does not apply on or after November 1, 2007.

O. Reg. 278/05, s. 7 (1).

(2) Subsection (3) applies if,

(a) the owner of a building treats friable material that has been used in the building for any purpose related to it, including insulation and fireproofing, as if it were asbestos-containing material;

(b) the owner of a building has been advised under section 9 of the discovery of friable material that may be asbestos-containing material;

(c) the owner of a building knows or ought reasonably to know that friable asbestos-containing material has been used in a building for any purpose related to the building, including insulation, and fireproofing;

(d) an examination under subsection (8) or section 10 establishes, or would have established if carried out as required, that friable asbestos-containing material has been used in a building for any purpose related to the building, including insulation and fireproofing; or

(e) a constructor or employer notifies the owner of a building, in accordance with subsection 10 (8), of the discovery of friable material that may be asbestos-containing material and that was not referred to in a report prepared under subsection 10 (4). O. Reg. 278/05, s. 7 (2).

(3) If this subsection applies, the owner shall,

(a) prepare and keep on the premises a record containing the information set out in subsection (4);

(b) give any other person who is an occupier of the building written notice of any information in the record that relates to the area occupied by the person;

(c) give any employer with whom the owner arranges or contracts for work that is not described in clause 10 (1) (a) written notice of the information in the record, if the work,

(i) may involve material mentioned in the record, or

(ii) may be carried on in close proximity to such material and may disturb it;

(d) advise the workers employed by the owner who work in the building of the information in the record, if the workers may do work that,

(i) involves material mentioned in the record, or

(ii) is to be carried on in close proximity to such material and may disturb it;

(e) establish and maintain, for the training and instruction of every worker employed by the owner who works in the building and may do work described in clause (d), a program dealing with,

- (i) the hazards of asbestos exposure,
- (ii) the use, care and disposal of protective equipment and clothing to be used and worn when doing the work,
- (iii) personal hygiene to be observed when doing the work, and
- (iv) the measures and procedures prescribed by this Regulation; and

(f) inspect the material mentioned in the record at reasonable intervals in order to determine its condition. O. Reg. 278/05, s. 7 (3).

(4) The record shall contain the following information:

- 1. The location of all material described in clauses (2) (a), (b), (c), (d) and (e).
- 2. In the case of sprayed-on material, for each location,
  - i. if the material is known to be asbestos-containing material, the type of asbestos, if known, or
  - ii. in any other case, a statement that the material will be treated as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 7 (4).

(5) The owner shall update the record described in clause (3) (a),

- (a) at least once in each 12-month period; and
- (b) whenever the owner becomes aware of new information relating to the matters the record deals with. O. Reg. 278/05, s. 7 (5).

(6) If updating under subsection (5) results in any change to the record, clauses (3) (b), (c) and (d) apply with necessary modifications. O. Reg. 278/05, s. 7 (6).

(7) An occupier who receives a notice under clause (3) (b) is responsible for performing the duties set out in clauses (3) (d) and (e) with respect to the occupier's own workers. O. Reg. 278/05, s. 7 (7).

(8) If it is readily apparent that friable material used in a building as fireproofing or acoustical or thermal insulation has fallen and is being disturbed so that exposure to the material is likely to occur,

- (a) the owner shall cause the material to be examined to establish whether it is asbestos-containing material; and

(b) until it has been established whether the material is asbestos-containing material, no further work involving the material shall be done. O. Reg. 278/05, s. 7 (8).

(9) Subsection (8) does not apply if the work is carried out in accordance with this Regulation as though the material were asbestos-containing material and, in the case of sprayed-on material, as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 7 (9).

(10) If the examination mentioned in subsection (8) establishes that the material is asbestos-containing material, or if the material is treated as though it were asbestos-containing material as described in subsection (9),

(a) the owner shall cause the fallen material to be cleaned up and removed; and

(b) if it is readily apparent that material will continue to fall because of the deterioration of the fireproofing or insulation, the owner shall repair, seal, remove or permanently enclose the fireproofing or insulation. O. Reg. 278/05, s. 7 (10).

(11) Subsection (10) does not apply if the fallen material is confined to an area that is,

(a) above a closed false ceiling; and

(b) not part of a return air plenum. O. Reg. 278/05, s. 7 (11).

### **Ongoing asbestos management in buildings after transitional period**

**8.** (1) This section applies on and after November 1, 2007. O. Reg. 278/05, s. 8 (1).

(2) Subsection (3) applies if,

(a) the owner of a building treats material that has been used in the building for any purpose related to it, including insulation, fireproofing and ceiling tiles, as if it were asbestos-containing material;

(b) the owner of a building has been advised under section 9 of the discovery of material that may be asbestos-containing material;

(c) the owner of a building knows or ought reasonably to know that asbestos-containing material has been used in a building for any purpose related to the building, including insulation, fireproofing and ceiling tiles;

(d) an examination under subsection (8) or section 10 establishes, or would have established if carried out as required, that asbestos-containing material has been used in a building for any purpose related to the building, including insulation, fireproofing and ceiling tiles; or

(e) a constructor or employer advises the owner of a building, in accordance with subsection 10 (8), of the discovery of material that may be asbestos-containing material and that was not referred to in a report prepared under subsection 10 (4). O. Reg. 278/05, s. 8 (2).

(3) If this subsection applies, the owner shall,

(a) prepare and keep on the premises a record containing the information set out in subsection (4);

(b) give any other person who is an occupier of the building written notice of any information in the record that relates to the area occupied by the person;

(c) give any employer with whom the owner arranges or contracts for work that is not described in clause 10 (1) (a) written notice of the information in the record, if the work,

(i) may involve material mentioned in the record, or

(ii) may be carried on in close proximity to such material and may disturb it;

(d) advise the workers employed by the owner who work in the building of the information in the record, if the workers may do work that,

(i) involves material mentioned in the record, or

(ii) is to be carried on in close proximity to such material and may disturb it;

(e) establish and maintain, for the training and instruction of every worker employed by the owner who works in the building and may do work described in clause (d), a program dealing with,

(i) the hazards of asbestos exposure,

(ii) the use, care and disposal of protective equipment and clothing to be used and worn when doing the work,

(iii) personal hygiene to be observed when doing the work, and

(iv) the measures and procedures prescribed by this Regulation; and

(f) inspect the material mentioned in the record at reasonable intervals in order to determine its condition. O. Reg. 278/05, s. 8 (3).

(4) The record shall contain the following information:

1. The location of all material described in clauses (2) (a), (b), (c), (d) and (e).
2. For each location, whether the material is friable or non-friable.
3. In the case of friable sprayed-on material, for each location,
  - i. if the material is known to be asbestos-containing material, the type of asbestos, if known, or
  - ii. in any other case, a statement that the material will be treated as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 8 (4).
- (5) The owner shall update the record described in clause (3) (a),
  - (a) at least once in each 12-month period; and
  - (b) whenever the owner becomes aware of new information relating to the matters the record deals with. O. Reg. 278/05, s. 8 (5).
- (6) If updating under subsection (5) results in any change to the record, clauses (3) (b), (c) and (d) apply with necessary modifications. O. Reg. 278/05, s. 8 (6).
- (7) An occupier who receives a notice under clause (3) (b) is responsible for performing the duties set out in clauses (3) (d) and (e) with respect to the occupier's own workers. O. Reg. 278/05, s. 8 (7).
- (8) If it is readily apparent that friable material used in a building as fireproofing or acoustical or thermal insulation has fallen and is being disturbed so that exposure to the material is likely to occur,
  - (a) the owner shall cause the material to be examined to establish whether it is asbestos-containing material; and
  - (b) until it has been established whether the material is asbestos-containing material, no further work involving the material shall be done. O. Reg. 278/05, s. 8 (8).
- (9) Subsection (8) does not apply if the work is carried out in accordance with this Regulation as though the material were asbestos-containing material and, in the case of friable sprayed-on material, as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 8 (9).
- (10) If the examination mentioned in subsection (8) establishes that the material is asbestos-containing material, or if the material is treated as though it were asbestos-containing material as described in subsection (9),
  - (a) the owner shall cause the fallen material to be cleaned up and removed; and



(b) if it is readily apparent that material will continue to fall because of the deterioration of the fireproofing or insulation, the owner shall repair, seal, remove or permanently enclose the fireproofing or insulation. O. Reg. 278/05, s. 8 (10).

(11) Subsection (10) does not apply if the fallen material is confined to an area that is,

- (a) above a closed false ceiling; and
- (b) not part of a return air plenum. O. Reg. 278/05, s. 8 (11).

### **Responsibility of employer other than owner**

**9.** An employer whose workers work in a building of which the employer is not the owner shall advise the owner if the workers discover material that may be asbestos-containing material in the building. O. Reg. 278/05, s. 9.

### **Owner's responsibilities before requesting tender or arranging work**

**10.** (1) An owner shall comply with subsections (2), (3), (4), (5) and (6) before,

- (a) requesting tenders for the demolition, alteration or repair of all or part of machinery, equipment, or a building, aircraft, locomotive, railway car, vehicle or ship; or
- (b) arranging or contracting for any work described in clause (a), if no tenders are requested. O. Reg. 278/05, s. 10 (1).

(2) Unless clause (3) (a) or (b) applies, the owner shall have an examination carried out in accordance with section 3 to establish whether any material that is likely to be handled, dealt with, disturbed or removed, whether friable or non-friable, is asbestos-containing material. O. Reg. 278/05, s. 10 (2).

(3) An examination under subsection (2) is not required if,

- (a) the owner,
  - (i) already knows that the material is not asbestos-containing material, or
  - (ii) already knows that the material is asbestos-containing material and, in the case of sprayed-on friable material, knows the type of asbestos; or

(b) the work is being arranged or contracted for in accordance with this Regulation as though the material were asbestos-containing material and, in the case of sprayed-on friable material, as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 10 (3).

(4) Whether an examination is required under subsection (2) or not, the owner shall have a report prepared,

(a) stating whether,

(i) the material is or is not asbestos-containing material, or

(ii) the work is to be performed in accordance with this Regulation as though the material were asbestos-containing material and, in the case of sprayed-on friable material, as though it contained a type of asbestos other than chrysotile;

(b) describing the condition of the material and stating whether it is friable or non-friable; and

(c) containing drawings, plans and specifications, as appropriate, to show the location of the material identified under clause (a). O. Reg. 278/05, s. 10 (4).

(5) An owner shall give any prospective constructor a copy of the complete report prepared under subsection (4). O. Reg. 278/05, s. 10 (5).

(6) Subsection (5) applies, with necessary modifications, with respect to,

(a) a constructor and a prospective contractor; and

(b) a contractor and a prospective subcontractor. O. Reg. 278/05, s. 10 (6).

(7) Subsections (8), (9) and (10) apply if, during work described in clause (1) (a), material is discovered that,

(a) was not referred to in the report prepared under subsection (4); and

(b) may be asbestos-containing material. O. Reg. 278/05, s. 10 (7).

(8) The constructor or employer shall immediately notify, orally and in writing,

(a) an inspector at the office of the Ministry of Labour nearest the workplace;

(b) the owner;

(c) the contractor; and

(d) the joint health and safety committee or the health and safety representative, if any, for the workplace. O. Reg. 278/05, s. 10 (8).

(9) The written notice referred to in subsection (8) shall include the information referred to in clauses 11 (3) (a) to (f). O. Reg. 278/05, s. 10 (9).

(10) No work that is likely to involve handling, dealing with, disturbing or removing the material referred to in subsection (7) shall be done unless,

- (a) it has been determined under section 3 whether the material is asbestos-containing material; or
- (b) the work is performed in accordance with this Regulation as though the material were asbestos-containing material and, in the case of sprayed-on friable material, as though it contained a type of asbestos other than chrysotile. O. Reg. 278/05, s. 10 (10).

(11) Subsection (10) does not prohibit handling, dealing with, disturbing or removing material for the sole purpose of determining whether it is asbestos-containing material. O. Reg. 278/05, s. 10 (11).

### **Advance notice re Type 3 operations and certain Type 2 operations**

**11.** (1) Before commencing a Type 3 operation, the constructor, in the case of a project, and the employer, in any other case, shall notify, orally and in writing, an inspector at the office of the Ministry of Labour nearest the workplace of the operation. O. Reg. 278/05, s. 11 (1).

(2) Subsection (1) also applies with respect to a Type 2 operation described in paragraph 9 of subsection 12 (3) in which one square metre or more of insulation is to be removed. O. Reg. 278/05, s. 11 (2).

- (3) The written notice required by subsection (1) shall set out,
  - (a) the name and address of the person giving the notice;
  - (b) the name and address of the owner of the place where the work will be carried out;
  - (c) the municipal address or other description of the place where the work will be carried out sufficient to permit the inspector to locate the place, including the location with respect to the nearest public highway;
  - (d) a description of the work that will be carried out;
  - (e) the starting date and expected duration of the work; and
  - (f) the name and address of the supervisor in charge of the work.O. Reg. 278/05, s. 11 (3).

### **Type 1, Type 2 and Type 3 operations**

**12.** (1) For the purposes of this Regulation, operations that may expose a worker to asbestos are classified as Type 1, Type 2 and Type 3 operations. O. Reg. 278/05, s. 12 (1).

- (2) The following are Type 1 operations:

1. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area less than 7.5 square metres and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
2. Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
3. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - i. the material is wetted to control the spread of dust or fibres, and
  - ii. the work is done only by means of non-powered hand-held tools.
4. Removing less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used. O. Reg. 278/05, s. 12 (2).

(3) The following are Type 2 operations:

1. Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.
2. The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.
3. Enclosing friable asbestos-containing material.
4. Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.
5. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
6. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - i. the material is not wetted to control the spread of dust or fibres, and
  - ii. the work is done only by means of non-powered hand-held tools.

7. Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.

8. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.

9. Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.

10. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.

11. An operation that,

i. is not mentioned in any of paragraphs 1 to 10,

ii. may expose a worker to asbestos, and

iii. is not classified as a Type 1 or Type 3 operation. O. Reg. 278/05, s. 12 (3).

(4) The following are Type 3 operations:

1. The removal or disturbance of more than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of a building, aircraft, ship, locomotive, railway car or vehicle or any machinery or equipment.

2. The spray application of a sealant to friable asbestos-containing material.

3. Cleaning or removing air handling equipment, including rigid ducting but not including filters, in a building that has sprayed fireproofing that is asbestos-containing material.

4. Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos-containing materials.

5. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.

6. Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986. O. Reg. 278/05, s. 12 (4).

(5) Work on ceiling tiles, drywall or friable asbestos-containing material is classified according to the total area on which work is done consecutively in a room or enclosed area, even if the work is divided into smaller jobs. O. Reg. 278/05, s. 12 (5).

(6) The following provisions apply if a dispute arises as to the classification of an operation under this section:

1. A party to the dispute may notify an inspector at the office of the Ministry of Labour nearest the workplace of the dispute.

2. The party who notifies the inspector shall promptly inform the other parties that the inspector has been notified.

3. Work on the operation shall cease until the inspector has given a decision under paragraph 4.

4. The inspector shall, as soon as possible, investigate the matter and give the parties a decision in writing. O. Reg. 278/05, s. 12 (6).

(7) Nothing in subsection (6) affects an inspector's power to issue an order for a contravention of this Regulation. O. Reg. 278/05, s. 12 (7).

## **Respirators**

**13.** (1) A respirator provided by an employer and used by a worker in a Type 1, Type 2 or Type 3 operation,

(a) shall be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet;

(b) shall be assigned to a worker for his or her exclusive use, if practicable;

(c) shall be used and maintained in accordance with written procedures that are established by the employer and are consistent with the manufacturer's specifications;

(d) shall be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker;

(e) shall have damaged or deteriorated parts replaced prior to being used by a worker; and

(f) when not in use, shall be stored in a convenient, clean and sanitary location. O. Reg. 278/05, s. 13 (1).

(2) The following additional requirements apply to a respirator of the supplied air type:

1. The compressed air used for breathing shall meet the standards set out in Table 1 of CSA Standard Z180.1-00, Compressed Breathing Air and Systems (March, 2000).

2. If an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor equipped with an alarm shall be provided.

3. If an ambient breathing air system is used, the air intake shall be located in accordance with Appendix B of the standard referred to in paragraph 1. O. Reg. 278/05, s. 13 (2).

(3) If respirators are used in the workplace,

(a) the employer shall establish written procedures regarding the selection, use and care of respirators; and

(b) a copy of the procedures shall be provided to and reviewed with each worker who is required to wear a respirator. O. Reg. 278/05, s. 13 (3).

(4) A worker shall not be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator. O. Reg. 278/05, s. 13 (4).

### **Measures and procedures, Type 1 operations**

**14.** The following measures and procedures apply to Type 1 operations:

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

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

3. In the case of an operation mentioned in paragraph 4 of subsection 12 (2), the material shall be wetted before and kept wet during the work to control the spread of dust or fibres, unless wetting would create a hazard or cause damage.

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

5. Frequently and at regular intervals during the doing of the work and immediately on completion of the work,

i. dust and waste shall be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container as described in paragraph 5 of section 15, and

ii. drop sheets shall be wetted and placed in a container as described in paragraph 5 of section 15, as soon as practicable after subparagraph i has been complied with.

6. Drop sheets shall not be reused.

7. After the work is completed, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused, but shall be wetted and placed in a container as described in paragraph 5 of section 15 as soon as practicable after paragraph 5 of this section has been complied with.

8. After the work is completed, barriers and portable enclosures that will be reused shall be cleaned, by using a vacuum equipped with a HEPA filter or by damp wiping, as soon as practicable after paragraphs 5 and 7 have been complied with.

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

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

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

12. If a worker requests that the employer provide a respirator to be used by the worker, the employer shall provide the worker with a NIOSH approved respirator in accordance with Table 2, and the worker shall wear and use the respirator.

13. If a worker requests that the employer provide protective clothing to be used by the worker, the employer shall provide the worker with protective clothing as described in paragraph 12 of section 15, and the worker shall wear the protective clothing.

14. A worker who is provided with protective clothing shall, before leaving the work area,

i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,

ii. if the protective clothing will not be reused, place it in a container as described in paragraph 5 of section 15.



15. Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area. O. Reg. 278/05, s. 14.

### **Measures and procedures, Type 2 and Type 3 operations**

**15.** The following measures and procedures apply to Type 2 operations and to Type 3 operations:

1. The work area shall be identified by clearly visible signs warning of an asbestos dust hazard.
2. Signs required by paragraph 1 shall be posted in sufficient numbers to warn of the hazard and shall state in large clearly visible letters that,
  - i. there is an asbestos dust hazard, and
  - ii. access to the work area is restricted to persons wearing protective clothing and equipment.
3. A wetting agent shall be added to water that is to be used to control the spread of dust and fibres.
4. Eating, drinking, chewing or smoking shall not be permitted in the work area.
5. Containers for dust and waste shall be,
  - i. dust tight,
  - ii. suitable for the type of waste,
  - iii. impervious to asbestos,
  - iv. identified as asbestos waste,
  - v. cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before being removed from the work area, and
  - vi. removed from the workplace frequently and at regular intervals.
6. Frequently and at regular intervals during the doing of the work and immediately on completion of the work,
  - i. dust and waste shall be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a container as described in paragraph 5, and

ii. drop sheets shall be wetted and placed in a container as described in paragraph 5, as soon as practicable after subparagraph i has been complied with.

7. Drop sheets shall not be reused.

8. After the work is completed, polyethylene sheeting and similar materials used for barriers and enclosures shall not be reused, but shall be wetted and placed in a container as described in paragraph 5 as soon as practicable after paragraph 6 has been complied with.

9. After the work is completed, barriers and portable enclosures that will be reused shall be cleaned, by using a vacuum equipped with a HEPA filter or by damp wiping, as soon as practicable after paragraphs 6 and 8 have been complied with.

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

11. The employer shall provide every worker who will enter the work area with a NIOSH approved respirator in accordance with Table 2 and the worker shall wear and use the respirator.

12. Protective clothing shall be provided by the employer and worn by every worker who enters the work area, and the protective clothing,

i. shall be made of a material that does not readily retain nor permit penetration of asbestos fibres,

ii. shall consist of head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing,

iii. shall include suitable footwear, and

iv. shall be repaired or replaced if torn.

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

14. Only persons wearing protective clothing and equipment shall enter a work area where there is an asbestos dust hazard. O. Reg. 278/05, s. 15.

### **Additional measures and procedures, Type 2 operations**

**16.** In addition to the measures and procedures prescribed by section 15, the following measures and procedures apply to Type 2 operations:

1. If the operation is one mentioned in paragraph 1 of subsection 12 (3), the friable material that is likely to be disturbed shall be cleaned up and removed by using a vacuum equipped with a HEPA filter when access to the work area is obtained.

2. Before commencing work that is likely to disturb friable asbestos-containing material that is crumbled, pulverized or powdered and that is lying on any surface, the friable material shall be cleaned up and removed by damp wiping or by using a vacuum equipped with a HEPA filter.

3. Friable asbestos-containing material that is not crumbled, pulverized or powdered and that may be disturbed or removed during the work shall be thoroughly wetted before the work and kept wet during the work, unless wetting would create a hazard or cause damage.

4. Subject to paragraph 5, the spread of dust from a work area shall be controlled by measures appropriate to the work to be done, including the use of drop sheets of polyethylene or other suitable material that is impervious to asbestos.

5. If the operation is one mentioned in paragraph 1 or 2 of subsection 12 (3) and is carried on indoors, the spread of dust from the work area shall be prevented, if practicable, by,

i. using an enclosure of polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls,

ii. disabling the mechanical ventilation system serving the work area, and

iii. sealing the ventilation ducts to and from the work area.

6. Before leaving the work area, a worker shall,

i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, and

ii. if the protective clothing will not be reused, place it in a container as described in paragraph 5 of section 15.

7. Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area. O. Reg. 278/05, s. 16.

## **Additional measures and procedures, glove bag operations**

**17.** In addition to the measures and procedures prescribed by sections 15 and 16, the following measures and procedures apply to Type 2 operations referred to in paragraph 9 of subsection 12 (3):

1. The work area shall be separated from the rest of the workplace by walls, barricades, fencing or other suitable means.
2. The spread of asbestos-containing material from the work area shall be prevented by disabling the mechanical ventilation system serving the work area and sealing all openings or voids, including ventilation ducts to and from the working area.
3. Surfaces below the work area shall be covered with drop sheets of polyethylene or other suitable material that is impervious to asbestos.
4. The glove bag shall be made of material that is impervious to asbestos and sufficiently strong to support the weight of material the bag will hold.
5. The glove bag shall be equipped with,
  - i. sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period,
  - ii. valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure,
  - iii. a tool pouch with a drain,
  - iv. a seamless bottom and a means of sealing off the lower portion of the bag, and
  - v. a high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.
6. A glove bag shall not be used to remove insulation from a pipe, duct or similar structure if,
  - i. it may not be possible to maintain a proper seal for any reason including, without limitation,
    - A. the condition of the insulation, or
    - B. the temperature of the pipe, duct or similar structure, or

ii. the bag could become damaged for any reason including, without limitation,

A. the type of jacketing, or

B. the temperature of the pipe, duct or similar structure.

7. Immediately before the glove bag is attached, the insulation jacketing or coating shall be inspected for damage or defects, and if any damage or defect is present, it shall be repaired.

8. The glove bag shall be inspected for damage or defects,

i. immediately before it is attached to the pipe, duct or other similar structure, and

ii. at regular intervals during its use.

9. If damage or defects are observed when the glove bag is inspected under subparagraph 8 i, the glove bag shall not be used and shall be disposed of.

10. If damage or defects are observed when the glove bag is inspected under subparagraph 8 ii or at any other time,

i. the use of the glove bag shall be discontinued,

ii. the inner surface of the glove bag and the contents, if any, shall be thoroughly wetted,

iii. the glove bag and the contents, if any, shall be removed and placed in a container as described in paragraph 5 of section 15, and

iv. the work area shall be cleaned by vacuuming with a vacuum equipped with a HEPA filter before removal work is resumed.

11. When the removal work is completed,

i. the inner surface of the glove bag and the waste inside shall be thoroughly wetted and the air inside the bag shall be removed through an elasticized valve, by means of a vacuum equipped with a HEPA filter,

ii. the pipe, duct or similar structure shall be wiped down and sealed with a suitable encapsulant,

iii. the glove bag, with the waste inside, shall be placed in a container as described in paragraph 5 of section 15, and

- iv. the work area shall be cleaned by damp wiping or by cleaning with a vacuum equipped with a HEPA filter. O. Reg. 278/05, s. 17.

### **Additional measures and procedures, Type 3 operations**

**18.** (1) In addition to the measures and procedures prescribed by section 15, the following measures and procedures apply to Type 3 operations:

1. The work area shall be separated from the rest of the workplace by walls, the placing of barricades or fencing or other suitable means.
2. Subsection (2) applies to an operation mentioned in paragraph 5 of subsection 12 (4).
3. Subsection (3) applies to an operation mentioned in paragraph 1, 2, 3 or 4 of subsection 12 (4) that is carried on outdoors.
4. Subsection (4) applies to an operation mentioned in paragraph 1, 2, 3, 4 or 6 of subsection 12 (4) that is carried on indoors. O. Reg. 278/05, s. 18 (1).

(2) In the case of an operation mentioned in paragraph 5 of subsection 12 (4), the following measures and procedures also apply:

1. The spread of dust from the work area shall be prevented by,
  - i. using enclosures of polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls, and
  - ii. using curtains of polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.
2. Unless the operation is carried on outdoors, or inside a building that is to be demolished and will not be entered by any person except the workers involved in the operation and the workers involved in the demolition, the spread of dust from the work area shall also be prevented by,
  - i. creating and maintaining within the enclosed area, by installing a ventilation system equipped with a HEPA filtered exhaust unit, a negative air pressure of 0.02 inches of water, relative to the area outside the enclosed area,

ii. ensuring that replacement air is taken from outside the enclosed area and is free from contamination with any hazardous dust, vapour, smoke, fume, mist or gas, and

iii. using a device, at regular intervals, to measure the difference in air pressure between the enclosed area and the area outside it.

3. The ventilation system referred to in subparagraph 2 i shall be inspected and maintained by a competent worker before each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it shall be replaced before the ventilation system is used.

4. Before leaving the work area, a worker shall,

i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, and

ii. if the protective clothing will not be reused, place it in a container as described in paragraph 5 of section 15.

5. Facilities for the washing of hands and face shall be made available to workers and shall be used by every worker when leaving the work area. O. Reg. 278/05, s. 18 (2).

(3) In the case of an operation mentioned in paragraph 1, 2, 3 or 4 of subsection 12 (4) that is carried on outdoors, the following measures and procedures also apply:

1. If practicable, any asbestos-containing material to be removed shall be thoroughly wetted before and during removal, unless wetting would create a hazard or cause damage.

2. Dust and waste shall not be permitted to fall freely from one work level to another.

3. If practicable, the work area shall be washed down with water after completion of the clean-up and removal described in paragraph 6 of section 15.

4. Temporary electrical power distribution systems for tools and equipment involved in wet removal operations shall be equipped with ground fault circuit interrupters.

5. A decontamination facility shall be located as close as practicable to the work area and shall consist of,

- i. a room suitable for changing into protective clothing and for storing contaminated protective clothing and equipment,
- ii. a shower room as described in paragraph 7 of subsection (4), and
- iii. a room suitable for changing into street clothes and for storing clean clothing and equipment.

6. The rooms described in subparagraphs 5 i, ii and iii shall be arranged in sequence and constructed so that any person entering or leaving the work area must pass through each room.

7. When leaving the work area, a worker shall enter the decontamination facility and shall, in the following order,

- i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,
- ii. if the protective clothing will not be reused, place it in a container as described in paragraph 5 of section 15,
- iii. shower, and
- iv. remove and clean the respirator. O. Reg. 278/05, s. 18 (3).

(4) In the case of an operation mentioned in paragraph 1, 2, 3, 4 or 6 of subsection 12 (4) that is carried on indoors, the following measures and procedures also apply:

1. Friable asbestos-containing material that is crumbled, pulverized or powdered and that is lying on any surface in the work area shall be cleaned up and removed using a vacuum equipped with a HEPA filter or by damp wiping and everything shall be removed from the work area or covered with polyethylene sheeting or other suitable material that is impervious to asbestos.

2. The spread of dust from the work area shall be prevented by an enclosure of polyethylene or other suitable material that is impervious to asbestos, if the work area is not enclosed by walls, and by a decontamination facility consisting of a series of interconnecting rooms including,

- i. a room suitable for changing into protective clothing and for storing contaminated protective clothing and equipment,
- ii. a shower room as described in paragraph 7,



iii. a room suitable for changing into street clothes and for storing clean clothing and equipment, and

iv. curtains of polyethylene sheeting or other suitable material that is impervious to asbestos, fitted to each side of the entrance or exit to each room.

3. The rooms described in subparagraphs 2 i, ii and iii shall be arranged in sequence and constructed so that any person entering or leaving the work area must pass through each room.

4. The mechanical ventilation system serving the work area shall be disabled and all openings or voids, including ventilation ducts to or from the work area, shall be sealed by tape or other appropriate means.

5. Unless the operation is carried on inside a building that is to be demolished and will not be entered by any person except the workers involved in the operation and the workers involved in the demolition, the spread of dust from the work area shall also be prevented by,

i. creating and maintaining within the enclosed area, by installing a ventilation system equipped with a HEPA filtered exhaust unit, a negative air pressure of 0.02 inches of water, relative to the area outside the enclosed area,

ii. ensuring that replacement air is taken from outside the enclosed area and is free from contamination with any hazardous dust, vapour, smoke, fume, mist or gas, and

iii. using a device, at regular intervals, to measure the difference in air pressure between the enclosed area and the area outside it.

6. The ventilation system referred to in subparagraph 5 i shall be inspected and maintained by a competent worker before each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it shall be replaced before the ventilation system is used.

7. The shower room in the decontamination facility shall,

i. be provided with hot and cold water or water of a constant temperature that is not less than 40° Celsius or more than 50° Celsius,

ii. have individual controls inside the room to regulate water flow and, if there is hot and cold water, individual controls inside the room to regulate temperature,

- iii. be capable of providing adequate supplies of hot water to maintain a water temperature of at least 40° Celsius, and
  - iv. be provided with clean towels.
- 8. When leaving the work area, a worker shall enter the decontamination facility and shall, in the following order,
  - i. decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing,
  - ii. if the protective clothing will not be reused, place it in a container as described in paragraph 5 of section 15,
  - iii. shower, and
  - iv. remove and clean the respirator.
- 9. If practicable, existing electrical power distribution systems that are not water-tight shall be de-energized and locked out where wet removal operations are to be carried out.
- 10. Temporary electrical power distribution systems for tools and equipment involved in wet removal operations shall be equipped with ground fault circuit interrupters.
- 11. Friable asbestos-containing material shall be thoroughly wetted before and during removal, unless wetting would create a hazard or cause damage.
- 12. The work area shall be inspected by a competent worker for defects in the enclosure, barriers and decontamination facility,
  - i. at the beginning of each shift,
  - ii. at the end of a shift if there is no shift that begins immediately after the first-named shift, and
  - iii. at least once each day on days when there are no shifts.
- 13. Defects observed during an inspection under paragraph 12 shall be repaired immediately and no other work shall be carried out in the work area until the repair work is completed.
- 14. If practicable, dust and waste shall be kept wet.
- 15. On completion of the work,
  - i. negative air pressure shall be maintained if required by subparagraph 5 i,

ii. the inner surface of the enclosure and the work area inside the enclosure shall be cleaned by a thorough washing or by vacuuming with a vacuum equipped with a HEPA filter,

iii. equipment, tools and other items used in the work shall be cleaned with a damp cloth or by vacuuming with a vacuum equipped with a HEPA filter or they shall be placed in a container as described in paragraph 5 of section 15 before being removed from the enclosure, and

iv. a visual inspection shall be conducted by a competent worker to ensure that the enclosure and the work area inside the enclosure are free from visible dust, debris or residue that may contain asbestos.

16. Once the work area inside the enclosure is dry after the steps set out in subparagraphs 15 ii, iii and iv have been completed, clearance air testing shall be conducted by a competent worker in accordance with subsection (5), unless the operation is carried on inside a building that is to be demolished and will not be entered by any person except the workers involved in the operation and the workers involved in the demolition.

17. The barriers, enclosure and decontamination facility shall not be removed or dismantled until,

i. cleaning has been done as described in paragraph 15, and

ii. if clearance air testing is required, it has been completed and the work area inside the enclosure has passed the clearance air test. O. Reg. 278/05, s. 18 (4).

(5) The following rules apply to clearance air testing:

1. Sample collection and analysis shall be done,

i. using the phase contrast microscopy method, in accordance with subsection (6), or

ii. using the transmission electron microscopy method, in accordance with subsection (7).

2. If the work area inside the enclosure fails the clearance air test, the steps set out in subparagraphs 15 ii, iii and iv of subsection (4) shall be repeated and the work area shall be allowed to dry before a further test is carried out, unless paragraph 6 of subsection (6) applies. O. Reg. 278/05, s. 18 (5).

(6) Clearance air testing using the phase contrast microscopy method shall be carried out in accordance with U.S. National Institute of Occupational Safety and Health Manual of Analytical Methods, Method 7400, Issue 2: Asbestos and other Fibres by PCM (August 15, 1994), using the asbestos fibre counting rules, and shall comply with the following requirements:

1. Testing shall be based on samples taken inside the enclosure.
2. Forced air shall be used, both before and during the sampling process, to ensure that fibres are dislodged from all surfaces inside the enclosure before sampling begins and are kept airborne throughout the sampling process.
3. At least 2,400 litres of air shall be drawn through each sample filter, even though the standard mentioned above provides for a different amount.
4. The number of air samples to be collected shall be in accordance with Table 3.
5. The work area inside the enclosure passes the clearance air test only if every air sample collected has a concentration of fibres that does not exceed 0.01 fibres per cubic centimetres of air.
6. If the work area inside the enclosure fails a first test that is done using the phase contrast microscopy method, the samples may be subjected to a second analysis using transmission electron microscopy in accordance with the standard mentioned in subsection (7).
7. When a second analysis is done as described in paragraph 6, the work area inside the enclosure passes the clearance air test only if every air sample collected has a concentration of asbestos fibres that does not exceed 0.01 fibres per cubic centimetre of air. O. Reg. 278/05, s. 18 (6).

(7) Clearance air testing using the transmission electron microscopy method shall be carried out in accordance with U.S. National Institute of Occupational Safety and Health Manual of Analytical Methods, Method 7402, Issue 2: Asbestos by TEM (August 15, 1994), and shall comply with the following requirements:

1. Testing shall be based on samples taken inside the enclosure and samples taken outside the enclosure but inside the building.
2. Forced air shall be used inside the enclosure, both before and during the sampling process, to ensure that fibres are dislodged from all surfaces before sampling begins and are kept airborne throughout the sampling process.

3. At least 2,400 litres of air shall be drawn through each sample filter, even though the standard mentioned above provides for a different amount.

4. At least five air samples shall be taken inside each enclosure and at least five air samples shall be taken outside the enclosure but inside the building.

5. Sampling inside and outside the enclosure shall be conducted concurrently.

6. The work area inside the enclosure passes the clearance air test if the average concentration of asbestos fibres in the samples collected inside the enclosure is statistically less than the average concentration of asbestos fibres in the samples collected outside the enclosure, or if there is no statistical difference between the two average concentrations. O. Reg. 278/05, s. 18 (7).

(8) Within 24 hours after the clearance air testing results are received,

(a) 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

(b) a copy shall be provided to the joint health and safety committee or the health and safety representative, if any, for the workplace and for the building. O. Reg. 278/05, s. 18 (8).

(9) The owner of the building shall keep a copy of the clearance air testing results for at least one year after receiving them. O. Reg. 278/05, s. 18 (9).

### **Instruction and training**

**19.** (1) The employer shall ensure that instruction and training in the following subjects are provided by a competent person to every worker working in a Type 1, Type 2 or Type 3 operation:

1. The hazards of asbestos exposure.

2. Personal hygiene and work practices.

3. The use, cleaning and disposal of respirators and protective clothing. O. Reg. 278/05, s. 19 (1).

(2) The joint health and safety committee or the health and safety representative, if any, for the workplace shall be advised of the time and place

where the instruction and training prescribed by subsection (1) are to be carried out. O. Reg. 278/05, s. 19 (2).

(3) Without restricting the generality of paragraph 3 of subsection (1), the instruction and training related to respirators shall include instruction and training related to,

- (a) the limitations of the equipment;
- (b) inspection and maintenance of the equipment;
- (c) proper fitting of a respirator; and
- (d) respirator cleaning and disinfection. O. Reg. 278/05, s. 19 (3).

**Note: Section 20 comes into force on November 1, 2007. See: O. Reg. 278/05, s. 26 (2).**

### **Asbestos abatement training programs**

**20.** (1) The employer shall ensure that,

(a) every worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry of Training, Colleges and Universities; and

(b) every supervisor of a worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities. O. Reg. 278/05, s. 20 (1).

(2) The employer shall ensure that every worker and supervisor successfully completes the appropriate program required under subsection (1) before performing or supervising the work to which the program relates. O. Reg. 278/05, s. 20 (2).

(3) A document issued by the Ministry of Training, Colleges and Universities, showing that a worker has successfully completed a program mentioned in subsection (1), is conclusive proof, for the purposes of this section, of his or her successful completion of the program. O. Reg. 278/05, s. 20 (3).

(4) In accordance with the *Agreement on Internal Trade, 1995* and the *Protocols of Amendment*, a worker shall be deemed to hold a document showing successful completion referred to in subsection (3) if he or she has successfully completed equivalent training in another province or territory of Canada, as determined by the Director. O. Reg. 278/05, s. 20 (4).

### **Asbestos work report**

**21.** (1) The employer of a worker working in a Type 2 operation or a Type 3 operation shall complete an asbestos work report in a form obtained from the Ministry for each such worker,

(a) at least once in each 12-month period; and

(b) immediately on the termination of the employment of the worker. O. Reg. 278/05, s. 21 (1).

(2) As soon as the asbestos work report is completed, the employer shall,

(a) forward it to the Provincial Physician, Ministry of Labour, and

(b) give a copy to the worker. O. Reg. 278/05, s. 21 (2).

(3) For the purposes of clause (2) (a), the employer may deliver the report to the Provincial Physician in person or send it by ordinary mail, by courier or by fax. O. Reg. 278/05, s. 21 (3).

### **Asbestos Workers Register**

**22.** (1) The Provincial Physician, Ministry of Labour, shall establish and maintain an Asbestos Workers Register listing the name of each worker for whom an employer submits an asbestos work report under section 21. O. Reg. 278/05, s. 22 (1).

(2) On the recommendation of the Provincial Physician, a worker who is listed in the Register may volunteer to undergo the prescribed medical examination described in paragraph 1 of subsection (4). O. Reg. 278/05, s. 22 (2).

(3) A worker who has undergone the prescribed medical examination described in paragraph 1 of subsection (4) may volunteer to undergo subsequent examinations of the same type if they are recommended by his or her physician. O. Reg. 278/05, s. 22 (3).

(4) The following medical examinations are prescribed for the purposes of subsection 26 (3) of the Act:

1. An examination consisting of a medical questionnaire, chest x-rays and pulmonary function tests.

2. A subsequent examination that consists of the components described in paragraph 1, is recommended by the worker's physician and takes place at least two years after the most recent examination. O. Reg. 278/05, s. 22 (4).

(5) A worker who is removed from exposure to asbestos because an examination discloses that he or she may have or has a condition resulting from exposure to asbestos and suffers a loss of earnings as a result of the removal from exposure to asbestos is entitled to compensation for the loss in the manner and to

the extent provided by the *Workplace Safety and Insurance Act, 1997*. O. Reg. 278/05, s. 22 (5).

### **Use of equivalent measure or procedure**

**23.** A constructor, in the case of a project, or the employer, in any other case, may vary a measure or procedure required by this Regulation if the following conditions are satisfied:

1. The measure or procedure, as varied, affords protection for the health and safety of workers that is at least equal to the protection that would be provided by complying with this Regulation.
2. The constructor or employer gives written notice of the varied measure or procedure, in advance, to the joint health and safety committee or the health and safety representative, if any, for the workplace. O. Reg. 278/05, s. 23.

### **Notice to inspector**

**24.** (1) When this Regulation requires written notice to an inspector at an office of the Ministry of Labour, the notice shall be given,

- (a) by delivering it to the office in person;
- (b) by sending it by ordinary mail, by courier or by fax, or
- (c) by sending the notice to the inspector by electronic means that are acceptable to the Ministry. O. Reg. 278/05, s. 24 (1).

(2) When this Regulation requires oral notice to an inspector at an office of the Ministry of Labour, the notice shall be given,

- (a) in person;
- (b) by telephoning the inspector; or
- (c) by sending the notice to the inspector by electronic means that are acceptable to the Ministry. O. Reg. 278/05, s. 24 (2).

**25.** Omitted (revokes other Regulations). O. Reg. 278/05, s. 25.

**26.** Omitted (provides for coming into force of provisions of this Regulation). O. Reg. 278/05, s. 26.

## TABLE 1 BULK MATERIAL SAMPLES

### *Subsection 3 (3)*



Item	Type of material	Size of area of homogeneous material	Minimum number of bulk material samples to be collected
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in item 3	any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	Other material	Any size	3

O. Reg. 278/05, Table 1.

**TABLE 2  
RESPIRATORS**

*Paragraph 12 of section 14 and paragraph 11 of section 15*

Column 1	Column 2
Work Category	Required respirator
<b>Type 1 Operations</b>	
Worker requests that the employer provide a respirator to be used by the worker, as described in paragraph 12 of section 14	Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter
<b>Type 2 Operations</b>	
Work described in paragraph 1 of subsection 12 (3)	One of the following: <ul style="list-style-type: none"> <li>- Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>- Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>- Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>- Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>
Work described in paragraphs 2 to 7 and 9 to 11 of subsection 12 (3)	Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter
Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable material containing asbestos by means of power tools, if the tool is attached to a dust collecting device equipped with a HEPA filter as described in paragraph 8 of subsection 12 (3)	Material is not wetted  One of the following: <ul style="list-style-type: none"> <li>- Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>- Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>- Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> </ul>

		- Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)
	Material is wetted to control spread of fibre	Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter
<b>Type 3 Operations</b>		
Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable material containing asbestos by means of power tools, if the tool is not attached to a dust collecting device equipped with a HEPA filter as described in paragraph 5 of subsection 12 (4)	Material is not wetted	Pressure demand supplied air respirator equipped with a half mask
	Material is wetted to control spread of fibre	One of the following: <ul style="list-style-type: none"> <li>- Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>- Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>- Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>- Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>
Work with friable material containing asbestos, as described in paragraphs 1 to 4 and 6 of subsection 12 (4)	Material is not wetted	Pressure demand supplied air respirator equipped with a full facepiece
Work with friable material, as described in paragraphs 1 to 4 and 6 of subsection 12 (4), that contains a type of asbestos other than chrysotile	Material was applied or installed by spraying, and is	Pressure demand supplied air respirator equipped with a half mask
Work with friable material, as described in paragraphs 1 to 4 and 6 of subsection 12 (4), that contains only chrysotile asbestos	wetted to control spread of fibre	One of the following: <ul style="list-style-type: none"> <li>- Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>- Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>- Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>- Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>
Work with friable material containing asbestos, as described in paragraphs 1 to 4 and 6 of subsection 12 (4)	Material was not applied or installed by spraying, and is wetted to control spread of fibre	One of the following: <ul style="list-style-type: none"> <li>- Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>- Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>- Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>- Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>

O. Reg. 278/05, Table 2.

TABLE 3  
AIR SAMPLES

*Paragraph 4 of subsection 18 (6)*

<b>Minimum number of air samples to be taken from each enclosure</b>	<b>Area of enclosure</b>
2	10 square metres or less
3	More than 10 but less than 500 square metres
5	500 square metres or more

O. Reg. 278/05, Table 3.

[Back to top](#)

**Site Photographs**



**Photograph 1:** View of Mountainside Recreation Centre located at 2205 Mount Forest Drive, Burlington, Ontario.



**Photograph 2:** View of asbestos-containing beige caulking between the gaps of the ceiling blocks on the 1<sup>st</sup> floor (OHE sample 13216-052-1A).



**Photograph 3:** View of asbestos-containing beige caulking between the gaps of the ceiling blocks in the basement (OHE sample 13462-1A).



**Photograph 4:** View of asbestos-containing white heat shield material behind a transformer in the basement electrical room (OHE sample 13462-2A).



**Photograph 5:** View of flexible duct joint in the men's change room that could not be sampled without damaging the seals on the unit.