

# Asbestos Control Program

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OCCUPATIONAL HEALTH & SAFETY

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## GLOSSARY

### **ACM**

means material that contains 0.5 per cent or more asbestos by dry weight.

### **Acoustical Insulation**

The general application or use of asbestos for the control sound due to its lack reverberant surfaces.

### **Acoustical Tile**

A finishing material in a building usually found in the ceiling or walls for the purpose of noise control.

### **Amosite**

An Asbestiform mineral of the amphibole group containing approximately 50% Silicon and 40% Iron (II) Oxide, and made up of straight, brittle fibers, light grey to pale brown in colour.

### **Asbestos**

A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos included the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; and actinolite.

### **Asbestos Control**

Minimizing the generation of airborne asbestos fibers until a permanent solution is developed.

### **Asbestosis**

A non-malignant, progressive, irreversible lung disease caused by the inhalation of asbestos dust and characterized by diffuse fibrosis.

### **Cancer**

A cellular tumour which normally leads to premature death of its host unless controlled.

### **Chrysotile (White Asbestos)**

The only asbestiform mineral of the serpentine group which contains approximately 40% each of Silica and Magnesium Oxide. It is the most common form of asbestos used in buildings.

### **Dust Mask**

Single use or disposable dust respirator with a low protection factor.

### **Fireproofing**

Spray-or-trowel-applied fire resistant materials applied to building components.

### **Friable Asbestos**

Any materials that contain more than 1% asbestos by weight and can be crumbled, pulverized or reduced to powder by hand pressure.

### **Half Mask – High Efficiency**

A respirator which covers one half of the wearer's face and is equipped with filters capable of screening out 99.7% of all particles larger than 0.3 microns.

### **HEPA**

High Efficiency Particulate Aerosol filter

### **HEPA Filtered**

A high efficiency particulate air (HEPA) filtered vacuum

### **Mesothelioma**

A relatively rare form of cancer which develops in the lining of the pleura or peritoneum with no known

cure.

### **NIOSH**

The National Institute for Occupational Safety and Health, which was established by the Occupational Safety and Health Act of 1970.

### **Non-friable**

Manufactured products containing asbestos.

### **OSHA**

The Occupational Safety and Health Administration which was created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in the workplace environment.

### **PACM (Presumed Asbestos-Containing Materials)**

Building materials which have been identified by similar building material laboratory analysis as containing asbestos or as this material has been known to be manufactured containing asbestos.

### **Phase Contrast Microscopy (PCM)**

Analytical method used in the determination of airborne fiber concentrations. Note: Does not differentiate between asbestos and other fibers.

### **Polarized Light Microscopy (PLM)**

Analytical method with the use of dispersion staining which can identify asbestos type and content in bulk samples.

### **Polyethylene**

Plastic sheeting which is often used to seal off an area in which asbestos removal is taking place for the purpose of preventing contamination of other areas.

### **Pore Size**

On air cassettes the mixed cellulose ester fibers have an average size for dusts, mists or fumes that may pass through. For PCM it is larger at 0.8  $\mu\text{m}$ .

### **Supplied Air**

Supplied air is fresh air either in tanks or pumped through hoses to the worker to provide a breathable air supply in asbestos work environments where the type of asbestos or the airborne asbestos concentrations make use of other respirators not sufficient to provide proper protection.

### **S.C.B.A.**

Self Contained Breathing Apparatus is a supplied air system generally used in tanks carried by the worker to provide breathable air. Limitation of the volume of air a worker can carry and the rate at which they use the air supply.

### **Transmission Electron Microscopy (TEM)**

Analytical methods used of the identification of asbestos fibers in air samples and in bulk samples. This method is better for asbestos type and concentration determination. However, the cost is substantially greater per sample than PCM or PLM analysis.

### **Treated Cellulose**

An insulation material made of paper or wood products with fire-retarding treatment added.

### **Vermiculite**

A micaceous mineral that is sometimes used as a substitute for asbestos which is lightweight and highly water-absorbent.

**Wet Cleaning**

The process of eliminating asbestos contamination from surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water.

**Wetting Agents**

Materials that are added to water which is used for wetting the asbestos-containing material in order for the water to penetrate more effectively.

## PURPOSE

The purpose of the Algonquin College Asbestos Control Program is the prevention of worker exposure to airborne asbestos and subsequent occupational illness arising from exposure to airborne asbestos. The program outlines the required procedural controls, personal protective equipment requirements, specific work procedures and training requirements for College staff and contractors in the management of asbestos at the College. Asbestos is a designated substance under the Occupational Health & Safety Act of Ontario and the program ensure College compliance with O.Reg 837 and O.Reg 278/05.

## SCOPE

The word "asbestos" is derived from a Greek adjective meaning inextinguishable. The miracle mineral as the Greeks referred it to, was admired for its soft and pliant properties, as well as its strength and its ability to withstand heat. Asbestos is a naturally occurring mineral. From a mineralogical point of view Asbestos can be divided into two groups: serpentine and amphibole. The important and distinguishing property of asbestos, compared with non-asbestiform minerals, is the presence of long, thin fibres that can be easily separated. Although, according to some definitions, there are as many as 30 varieties of asbestos, only six are of commercial importance. These six are listed in the asbestos definition in section 1 of the Ontario Regulation: actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.

**Serpentine fibres**, are flexible and elastic in nature. Chrysotile is the only asbestiform member of the serpentine group of minerals. Although commonly termed "white asbestos", chrysotile fibres may also be green, grey, amber or pink in colour. The finely fibrous variety of Chrysotile is the primary source for industrial asbestos because its fibres have high tensile strength, high resistance to alkalis, high flexibility and good spinnability. Chrysotile produces approximately 95 percent of all asbestos world-wide. This is due to the fact that Chrysotile is not affected by fire and is a poor heat conductor. Chrysotile is used for fire retardant devices and heat protection, Its former use, which has been outlawed in most areas, was as an insulator, but has been banned because of its notorious nature of causing cancer and other long term illnesses. The other 5 percent is amphibole asbestos, such as Tremolite and Actinolite).

**Amphibole asbestos fibres** differ from the flexible, curly chrysotile fibres in that they are straight and needle-like. These fibre characteristics appear to give amphibole asbestos a greater tendency to become airborne, which is important to the control of exposure. Two type of amphibole asbestos have been widely used: crocidolite or "blue asbestos" and amosite or "brown asbestos". Anthophyllite, tremolite and actinolite asbestos have rarely been used commercially.

## WHY ASBESTOS WAS USED

Asbestos was widely used in a number of applications due to its ability to withstand high heat temperatures, its strength, its resistance to many corrosive chemicals and its other properties. As many as 3,000 separate uses have been identified. The biggest user and consumer of asbestos continue to be the construction industry. Due to numerous linked ailments and diseases and worker education the use of asbestos has dropped dramatically in recent years. However widespread use of Asbestos has left a potentially dangerous legacy. The thousands of tons of asbestos installed over the past fifty years can pose a serious risk to workers in the renovation, maintenance, repair and demolition sectors of the construction industry.

The largest single use of asbestos is as a reinforcing agent in cement products. Asbestos-cement products include flat and corrugated sheets, pipes and shingles. Another major use is friction materials, including linings for drum and disc brakes and clutch facings. Other asbestos-containing products are vinyl asbestos flooring, gaskets and packing, textile products such as welding blankets and theatre curtains, roofing felts, coatings and mastic, and asbestos paper products.

One use of asbestos of special note is its use as an insulating material. Asbestos is an effective insulator against heat, cold, electricity and noise. In the late 1960's and early 1970's insulation was the largest use of asbestos. Crocidolite was widely used in sprayed insulation and as fireproofing for steel structures. In some cases the insulation was exposed to provide a decorative architectural finish. Elsewhere, it doubled as acoustical insulation. Asbestos pipe and boiler insulation was used on heating systems in buildings, including homes, and in industrial processes.

### **HEALTH HAZARDS ASSOCIATED WITH ASBESTOS**

Several diseases have been linked to the exposure of asbestos, these include but are not limited to: asbestosis, mesothelioma (cancer of the lining of the chest and or abdomen), lung cancer, there is also evidence of an increased risk of cancer of the stomach, rectum and larynx. These are serious, debilitating diseases that often result in death.

To cause disease, asbestos fibres must be inhaled into the lungs. The lung is a system of branching airways that end in tiny air sacs, called alveoli. There are about 300 million of these tiny air sacs in the lungs. It is these tiny air sacs that allow oxygen that has been inhaled to enter the bloodstream. This is where fibres below 2.5 microns (approximately one ten-thousandth of an inch) can gain access to the lung alveoli. This is where inhaled asbestos fibres do their damage. It is thought that the fibres somehow attach themselves to the alveoli and act as a coated blanket. This in turn affects the diffusion of oxygen into the bloodstream.

Fibres with a diameter greater than three microns (one ten-thousandth of an inch) are too large to enter the alveoli and therefore only impact the upper branches of the respiratory system. Fibres that can enter the lung and cause disease are too small to be visible to the naked eye.

It is not clear how asbestos fibres cause disease after they enter the lung. For each disease there is a period of latency, usually more than ten years, between first exposure to asbestos and the appearance of the disease. It is this characteristic that makes asbestos disease so insidious; exposure can continue for many years without any outward evidence of harm while disease develops silently within.

**Asbestosis:** Asbestosis is a disease of the lungs caused by fibrosis (scarring) of the lung tissue, forming around very small asbestos fibers deposited deep into the alveoli of the lungs. As the amount of scar tissue increases, the ability of the lungs to expand and contract decreases, causing shortness of breath and a heavier workload on the heart.. Early detection of asbestosis is possible by X-ray examination and lung function testing. However, the disease is irreversible and will continue to progress even after exposure is stopped. Rarely a cause of death itself, asbestosis results in an appreciable reduction in life expectancy due to deaths from related illness.

**Mesothelioma:** Mesothelioma is a rare form of cancer that most often occurs in the thin membrane lining of the lungs, chest, abdomen, and (rarely) heart. About 200 cases are diagnosed each year in the United States. Virtually all cases of mesothelioma are linked with asbestos exposure. Approximately 2 percent of all miners and textile workers who work with asbestos, and 10 percent of all workers who were involved in the manufacture of asbestos-containing gas masks, contract mesothelioma.

People, who work in asbestos mines, asbestos mills, factories, and shipyards that use asbestos, as well as people who manufacture and install asbestos insulation, have an increased risk of mesothelioma. So do people who live with asbestos workers, near asbestos mining areas, near asbestos product factories or near shipyards where use of asbestos has produced large quantities of airborne asbestos fibers.

**Lung Cancer:** Lung cancer causes the largest number of deaths related to asbestos exposure. The incidence of lung cancer in people who are directly involved in the mining, milling, manufacturing and use of asbestos and its products is much higher than in the general population. The most common

symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anemia.

People who have been exposed to asbestos and are also exposed to some other carcinogen -- such as cigarette smoke -- have a significantly greater risk of developing lung cancer than people who have only been exposed to asbestos. One study found that asbestos workers who smoke are about 90 times more likely to develop lung cancer than people who neither smoke nor have been exposed to asbestos.

**Other Asbestos-Related Cancers:** The relationship between asbestos exposure and asbestosis, mesothelioma and lung cancer has been clearly established and is beyond argument. Several other cancers should be noted. They are: gastrointestinal cancer affecting all sites in the gastrointestinal tract (esophagus, stomach, colon and rectum) and cancer of the larynx.

**Asbestos-Related Conditions:** A number of less serious effects have been associated with asbestos exposure: pleural plaques, asbestos bodies and warts. Pleural plaques are areas of scarring of the pleural surfaces. In general, they are not associated with any functional abnormality and are merely an indicator of asbestos exposure. Occasionally, they can become so widespread that they restrict lung function. Asbestos bodies, also termed "ferruginous bodies", result when asbestos fibres become coated with a substance containing protein and iron. These asbestos bodies are not harmful, and like pleural plaques, serve as evidence of asbestos exposure. Asbestos warts are harmless skin growths that occur when asbestos fibres penetrate the skin.

## RESPONSIBILITIES

### General Asbestos Work Procedures

The following general procedures apply to all staff and contractors at Algonquin College and are to be followed in all cases of asbestos related work: Prior to commencing ANY, demolition, alteration, construction, renovation and/or development of College facilities and building systems, the project manager, supervisor, worker or contractor will do the following:

- Coordinate all work through the Physical Resources Dept.
- Will review the Asbestos Survey and provide to all workers involved.
- If the survey is not completed for that area, Physical resources will hire outside contractors to perform an asbestos survey of the area where the work is to be done, 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.
- The cost of the survey will be implemented into the project budget and will be charged back to the department who initiates this work.
- If the area where the work is to be performed contains Asbestos (refer to ACM definition), the asbestos must be removed by a licensed and properly insured Asbestos Abatement Firm. Only after all the Asbestos has been removed and all air sampling concludes that there is no evidence of asbestos in the work environment, will the remainder of the work be completed.
- All staff / contractors are required to identify any work that may involve potential asbestos exposure to their supervisor and or College supervisor responsible for the contract work.
- The project manager for the work shall ensure that a work permit form is completed and forwarded to OHS. The work permit form includes the proposed method of work to be performed, procedures to follow, details regarding locations, work to be done, quantity, dates, etc. (See work permit for asbestos related work).
- No work shall proceed until the permit has been reviewed and approved by OHS.
- Upon approval, the work permit will be returned to the project manager for their records and a copy shall be retained by OHS.
- Upon commencement of any work, the appropriate checklist for the type of work being carried out will be utilized. Following completion of the job the checklist will be completed and

a copy will be forwarded to OHS. (see attached checklists)The supervisor shall maintain the original completed checklist in their records.

- Upon commencement of any work, the project manager shall ensure that appropriate notifications of all occupants of the work area are made, that the area is blocked off and that appropriate signage is posted.
- ANY changes or substitutions to the original job, must be approved and documented on the work permit by the supervisor.

### **Information for Workers and Contractors**

Whenever a worker is to do work that, involves material that, is asbestos containing material, is being treated as if it were asbestos-containing material, or the work is to be carried on in close proximity to material that is asbestos containing material, and/or is being treated as if it were asbestos-containing material. The constructor or employer shall advise the worker and provide him or her with the following information:

- The location of all material that is or is being treated as asbestos containing material.
- For each location, whether the material is friable or non-friable.
- In the case of sprayed-on friable material, for each location,
  1. if the material is known to be asbestos-containing material, the type of asbestos, if known, or
  2. in any other case, a statement that the material will be treated as though it contained a type of asbestos other than chrysotile.

### **Information to Area Occupants**

Due to the nature of the work, all asbestos (Type 1, 2 & 3) abatement MUST be communicated ahead of time to area occupants in conjunction with Physical Resources. The purpose of this communication is to mitigate staff concerns and answer any relevant questions staff may have. This should be discussed with OHS department prior to.

### **Types of Asbestos Work & Work Procedures**

#### **Type I Asbestos Work**

The following are examples of Type I asbestos work procedures:

*(OHS should be contacted for questions surrounding the classification of asbestos work. Also, work procedures associated with the next highest type classification will be applied in all cases where there is any doubt regarding the type of work.)*

- Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area less than 7.5 square metres and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,



1. the material is wetted to control the spread of dust or fibres,
  2. and the work is done only by means of non-powered hand-held tools.
- Removing less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used

*The Ontario Ministry of Labour (Construction Safety Branch) has defined installing cable above false ceilings where a significant quantity of friable material containing asbestos is likely to be lying as a Type II operation. Where there is no friable material containing asbestos lying on the ceiling tile, no asbestos procedures are required.*

### **Type I Work Procedures**

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 where there is removal of less than one square metre of drywall in which joint-filling compounds that are ACM, 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 that is impervious to dust (refer to sentence 5 of Type II & III procedures).
  - ii. drop sheets shall be wetted and placed in a container, (refer to sentence 5 of Type II & III procedures) 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 sentence 5 of Type II & III procedures, as soon as practicable after sentence 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 sentences 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 the Respirator table (refer to back), 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 sentence 5 of Type II & III procedures. 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 sentence 5 of Type II & III procedures.
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.

**Compressed air must not be used during asbestos removal operations.**

**Equipment:**

- 6 mil polyethylene drop sheet
- 6 mil disposal bag identified as “**Caution Asbestos**”
- a second 6 mil disposal bag
- Damp cloth or mop and a HEPA vacuum
- A sprayer containing water and a wetting agent (Liquid Soap).
- Bucket of water
- Scrub pad

**Optional**

- Goggles
- Disposable gloves
- Disposable coveralls with hood, elasticized wrists and cuffs
- ½ - face respirator with HEPA filter cartridges

**How to deal with Asbestos Flooring**

**Stripping Operations:**

When stripping floors becomes necessary, the machine used for stripping the finish should be equipped with the least abrasive pad as possible (black pads are usually the most abrasive and the white pads the least abrasive). Consult with your floor tile and floor finish product manufacturer for recommendations on which pad to use on a particular floor covering. Incorporate the manufacturer's recommendations into your floor maintenance work procedures.

The machine used to remove the wax or finish coat should be run at a low rate of speed (i.e., ranging between 175-300 rpm) during the stripping operation. There is a direct correlation between machine speeds and the release of asbestos fibers from asbestos containing floor coverings. The higher the machine speed the greater the probability of asbestos fiber release.

Never perform dry stripping. Always strip floors while wet. Do not operate a floor machine with an abrasive pad on unwaxed or unfinished floor containing-asbestos materials.

Consult with floor tile and floor finish product manufacturers concerning specific or unique problem(s) on the maintenance of your floors

**After Stripping:**

After stripping and before application of a high solids floor finish, the floor should be thoroughly cleaned, while wet, preferably with a Wet-Vac HEPA filtration vacuum system.

### **Finishing of Vinyl Asbestos Floor Coverings**

#### **Use of Sealer and Solids Finish:**

Prior to applying a finish coat to a vinyl asbestos floor covering, apply 2 to 3 coats of sealer. Continue to finish the floor with a high percentage solids finish.

It is an industry recommendation to apply several thin coats of a high percentage solid finish to obtain a good sealing of the floor's surface, thereby minimizing the release of asbestos fibers during finishing work.

#### **Spray-Buffering Floors:**

When spray-buffering floors, always operate the floor machine at the lowest rates of speed possible and equip the floor machine with the least abrasive pad as possible. A recent EPA study indicated that spray-buffering with high-speed floor machines resulted in significantly higher airborne asbestos fiber concentrations than spray-buffering with low speed machines.

#### **Burnishing Floors:**

When dry-burnishing floors, always operate the floor machine at the lowest rate of speed possible to accomplish the task (i.e., 1200-1750 rpms), and equip the floor machine with the least abrasive pad as possible.

#### **Cleaning After Stripping & Sealing Floors:**

After stripping a floor and applying a new coat of sealer and finish, use a wet mop for routine cleaning whenever possible. When dry mopping, a petroleum-based mop treatment is not recommended for use.

## Type II Asbestos Work

The following are examples of Type II asbestos work:

*(OHS should be contacted for questions surrounding the classification of asbestos work. Also, work procedures associated with the next highest type classification will be applied in all cases where there is any doubt regarding the type of work.)*

1. Prior to abatement Physical Resources staff or project manager will communicate to area occupants that asbestos removal will be happening on such date.
2. 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.
3. 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.
4. Enclosing friable asbestos-containing material.
5. Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.
6. 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.
7. 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.
8. Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.
9. 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.
10. Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag. **\* the removal of one square metre or more of insulation that is asbestos containing material, will be treated as a Type III operation. The MOL shall be notified prior to any removal or disturbance.**
11. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.
12. An operation that,
  - i. is not mentioned in any of sentences 1 to 10,
  - ii. may expose a worker to asbestos, and
  - iii. is not classified as a Type 1 or Type 3 operation.

## Type II Work & Type III Procedures

**ALL TYPE II AND TYPE III MUST BE CONTRACTED OUT TO AN EXTERNAL FIRM WHO SPECIALIZES IN ASBESTOS ABATEMENT. NO COLLEGE STAFF ARE TO ENGAGE IN SUCH WORK.**

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 sentence 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 sentence 5, and
  - ii. drop sheets shall be wetted and placed in a container as described in sentence 5, as soon as dust and waste has been cleaned up.
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 sentence 5 as soon as practicable after sentence 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 sentences 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 the Respirator table (refer to back) 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.

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

In addition to the measures and procedures for Type II and Type III operations, the following measures and procedures apply to Type 2 operations:

1. If the operation is one that involves removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling, the 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. 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 involving 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 **OR** involves the removal or disturbance of one square meter or less of friable ACM 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 previously described.
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.

### **Notification of Type II Work**

Prior to the work the following shall be notified of the project:

1. Occupants of the building via Faculty/building administration.
2. OHS.

**\* the removal of one square metre or more of insulation that is asbestos containing material, will be treated as a Type III operation. The MOL shall be notified prior to any removal or disturbance. Please complete and submit to MOL an "Asbestos Work Report".**

## **Equipment**

The following equipment must be available:

1. Asbestos warning placards.
2. 6 mil polyethylene drop sheet
3. 6 mil disposal bag identified as "**Caution Asbestos**"
4. a second 6 mil disposal bag
5. Damp cloth or mop
6. A sprayer containing water and a wetting agent (Liquid Soap).
7. Bucket of water
8. Scrub pad
9. HEPA Vacuum.
10. Personal Protective Equipment:
  - a. A ½ - face cartridge respirator with a HEPA filter cartridge is to be worn
  - b. Tyvek suit with hood elasticized wrists and cuffs
  - c. Rubber gloves
  - d. Goggles
11. Facilities for the washing of hands and face.

## **Approvals**

Obtain approval for removal from Physical Resources.

Obtain approval from Physical Resources and Department to block access to room and/or corridor.

## **Glove Bag Removal Procedures**

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, 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, and
    - iv. the work area shall be cleaned by damp wiping or by cleaning with a vacuum equipped with a HEPA filter.

## **Work Procedures for Ceiling Spaces Containing Asbestos (Type II)**

### **Equipment:**

The following equipment must be available:

1. Asbestos warning signs.
2. HEPA Vacuum.
3. Trigger spray bottle
4. Damp cloths and mop
5. Personal Protective Equipment:
  - A half mask cartridge respirator with a HEPA filter cartridge (approved for asbestos work) is to be worn
    - i. ½ - face respirator is adequate for chrysotile asbestos, wet removal.
    - ii. Powered Air Purifying Respirator (PAPR) for other forms of asbestos wet removal.
  - Tyvek suit (or equivalent) with hood
  - Goggles
  - Rubber gloves
6. Facilities for washing of hands and face shall be made available to a worker and shall be used by every worker when leaving the work area.

### **Approvals**

1. Obtain approval for ceiling entry and work from Physical Resources.
2. Obtain approval from Physical Resources and Department to block access to room and/or corridor.



## Procedures

1. Prevent authorized access to the area. Lock doors and place asbestos warning placards at either end of the corridor or the entrances to the room where the work is taking place.
2. Only persons wearing protective clothing and equipment shall enter a work area where there is an asbestos dust hazard.
3. Cover furniture and carpet with 4.0-mil poly sheeting.
4. Remove first ceiling tile without spilling any loose material, place on sheet of 4.0 mil poly and vacuum off surface using HEPA vacuum cleaner. If large quantities of asbestos are present, **STOP WORK**, inform your supervisor and call OHS.
5. Vacuum ceiling tiles adjacent to entry and remove if necessary.
6. Complete work without disturbing asbestos in ceiling space above.
7. Reinstall ceiling tiles.

## Decontamination

1. Clean area below work area with soap and water or a HEPA vacuum.
2. Clean Tyvek suit with HEPA vacuum or damp cloth and place in plastic bag with gloves for disposal.
3. Remove respirator, clean and wash hands.

## TYPE III Asbestos Work

Type III asbestos work is considered as the removal of friable asbestos in an amount that is not considered minor. The following are examples of Type III asbestos work procedures: *(OHS should be contacted for questions surrounding the classification of asbestos work. Also, work procedures associated with the next highest type classification will be applied in all cases where there is any doubt regarding the type of work.)*

- 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.
- Spray applications of sealant to friable asbestos containing material.
- Cleaning or removal of air-handling equipment in a building that has sprayed fireproofing containing asbestos.
- Repair, alteration or demolition of a kiln or furnace made in part, of asbestos-containing refractory materials.
- Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.
- Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986.

## Type III Work Procedures

### Notification of Type III and certain Type II Work

Prior to commencing **ANY** Type III work the following shall be notified of the project:

1. The local Ministry of Labour office.
2. Occupants of the immediate area.
3. OHS for submission to the Joint Health and Safety Committee.
4. After removal a copy of the air monitoring report shall be forwarded to OHS for submission to the Joint Health and Safety Committee.

## **Work Procedures**

1. No type III work will be conducted by College staff.
2. In all cases of type III removals the work will be carried out by outside professional asbestos removal firms and monitored through the OHS office and the supervisor responsible for the work area.
3. Clearance air testing shall be conducted by a competent worker in accordance with the OH&S Act O. REG 278/05 Designated Substance — Asbestos on Construction Projects and in Building and Repair Operations, 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.

## **UNEXPECTED DISCOVERY OF ASBESTOS**

As per Regulation 838 (Regulation respecting Asbestos on Construction Projects and in Buildings and Repair operations), sec.7 (5), for any unexpected discovery of friable material during any work, the employer or constructor shall forthwith report the discovery, orally and in writing to the MOL inspector nearest the workplace.

## **Reporting Procedure**

1. Worker/contractor reports discovery to immediate supervisor. Supervisor then reports it to OHS immediately.
2. OHS will make arrangements for bulk samples and send them for lab analysis.
3. If there is risk of exposure, the area will be blocked off until lab analysis has been received.
4. If there is an immediate need to use the area or proceed with work in the area, OHS will ensure that the appropriate procedures for the apparent type of removal are followed.
5. Any discovery of friable Material, must be tested and if confirmed asbestos, the college must verbally and in writing notify immediately:
  - The JOHSC
  - Employees in the area
  - MOL inspector

## **ASBESTOS CLEAN-UP & DISPOSAL**

### **Area Clean Up:**

- Prompt clean up must be conducted at the completion of asbestos related work, or in cases where there is fallen/disturbed asbestos containing material.
- The clean up procedure includes:

While still wearing the protective equipment prescribed for the type of work being performed,

1. HEPA vacuum inside of enclosure, where applicable
2. HEPA vacuum or wet wipes for footwear, clothing, ladder etc. before leaving the enclosure or work area.
3. Wet clean (e.g. by damp mopping or water mist spraying) inside of enclosure and contaminated area.
4. OHS will ensure that appropriate air sampling is conducted to assure airborne levels of asbestos are below hazardous exposure levels.

### **Personnel Clean Up:**

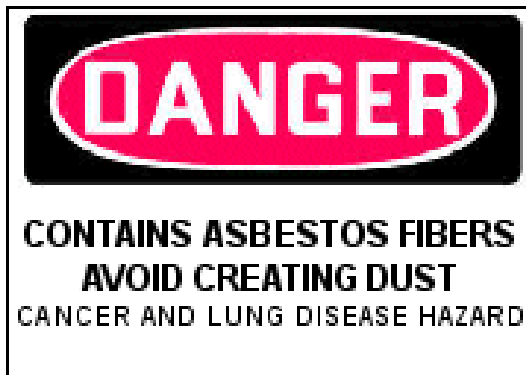
1. Hands and face to be wiped with wet toweling. Dispose of used towel as asbestos waste.
2. Remove protective clothing and dispose of the clothing as asbestos waste.
3. Respirator must be washed, wiped dry and inspected after each use.

### **Asbestos Waste Disposal Procedure:**

1. All Asbestos containing materials, or suspected materials must be placed into a 6 ml Polyethylene yellow asbestos waste bag
2. Bags are to be sealed with duct tape or other approved fastening device
3. Clean outside of the disposal bag. Insert into second asbestos waste bag
4. Bags are already labeled Asbestos waste
5. Notify OHS who will ensure the waste is disposed of in accordance with appropriate hazardous waste guidelines.

### **LOCATIONS OF ASBESTOS**

1. Physical Resources maintains a list of all locations where friable asbestos has been identified, as part of the College asbestos inventory, conducted by Bovar-Concord Environmental Ltd.
2. Every entrance to locations containing friable asbestos shall be posted with readily visible warning sign stating:



***Notice: Asbestos is present in this area. When working in this area, follow all applicable work procedures and regulations.***

### **Notification to Workers**

1. Signs posted at the entrances to locations containing friable asbestos.
2. Supervisors are responsible for notifying workers to the presence of friable asbestos when the work puts workers in close proximity to friable asbestos.

### **Notification to Contractors/Sub-Contractors**

1. Departments who hire a contractor/sub-contractor must inform them of the presence of friable asbestos in the area in which the work is to be done.
2. The department contracting the work is responsible for ensuring that the contractor follows applicable work procedures outlined in the Asbestos Control Program and that alternate procedures afford equivalent or greater worker protection than those outlined in the Asbestos Control Program.

## Worker Registration

1. OHS is to be notified of all Algonquin College workers involved in a Type II or III asbestos removal project.

## Training

1. Supervisors are responsible to ensure that all workers who may work in close proximity or may disturb friable asbestos receive training and that such training is documented.
2. The training shall include the following topics:
  - Hazards of Asbestos
  - Asbestos Identification
  - Location of Asbestos
  - Classification of Asbestos Work
  - Work Procedures
  - Personal Protective Equipment
  - Respirator Use and Fit Testing
  - Medical Surveillance
  - Asbestos Sampling
3. OHS will coordinate appropriate training as required.

## Inspection

1. Physical Resources will inspect areas containing friable asbestos at least every 5 years for the following conditions:
  - a. Dislodged asbestos
  - b. Large cracks
  - c. Water damage
2. Physical Resources will replace any damaged or missing asbestos warning signs
3. Areas containing friable asbestos will be inspected immediately if conditions are noted that may affect the stability of the asbestos (i.e. water leaks, extensive renovations, etc.)
4. The inspection report will be maintained with the inventory records. A copy of the inspection report will be forwarded to OHS for submission to the JOHSC

## Corrective Action

1. Deteriorated asbestos shall be repaired or removed as soon as possible.
2. A report of corrective actions will be forwarded to OHS for submission to the JOHSC

## EXPOSURE MONITORING

### Personal Air Samples for College Personnel

OHS or a contractor shall monitor and secure personal air samples for all asbestos related work performed by college personnel. These samples shall be used to ensure that the permissible eight (8) hour time weighted average (TWA) exposure and the excursion limit established by OH&S Act (O.Reg. 838 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations) is not exceeded. **The time weighted average exposure value (TWAEV) for Asbestos in Ontario is 0.1 fibers per cubic centimeter (f/cc).**

The cost for the analysis of these samples shall be borne by the department conducting the work. Exposure monitoring samples must be analyzed by Phase Contrast Microscopy (PCM). PCM methods accurately assess fiber exposure levels, but PCM cannot differentiate between asbestos and non-asbestos fibers. Transmission Electron Microscopy (TEM) methods can be used to identify fibers, but may not be used to quantify air concentrations for occupational exposure. Bulk sample analysis

should be done by Polarized Light Microscopy (PLM). Bulk analysis results will likely apply to OH&S Act, OSHA and EPA regulations.

### **Sampling Methodology**

Sampling methodology and analysis shall conform to the requirements of: NIOSH Manual of Analytical Methods (NMAM) 4th Ed. NIOSH (1994, August), 1 page. This document includes asbestos methods 7400 and 7402. Method 7400 is a PCM procedure, equivalent to the OSHA methods. Method 7402 uses TEM to identify fibers (OH&S Act and OSHA will accept this TEM procedure, as it uses PCM to determine exposure).

- NIOSH 7400, Asbestos and other fibers by PCM, (1994, August), 137 KB PDF, 15 pages.
- NIOSH 7402, Asbestos fibers by TEM, (1994, August), 40 KB PDF, 7 pages.

Bulk sample analysis should be done by Polarized Light Microscopy (PLM).

Asbestos (Bulks) – Polarized Light Microscopy of Asbestos. OSHA Analytical Method ID-191 (1992). This method describes the collection and analysis of asbestos bulk materials by light microscopy techniques including phase-polar illumination and central-stop dispersion microscopy.

A copy of personal air sampling results shall be submitted to the employee, the JOHSC and posted in a conspicuous location for a period of fifteen days.

### **Personal Air Sampling for Non-College Personnel**

Asbestos abatement contractors shall be responsible for securing air samples for their own personnel to meet the requirements of OH&S Act (O.Reg. 838 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations)

### **Air Sampling During and After Asbestos Type 2 & 3 Projects**

It is the responsibility of anyone managing a project/renovation on the college's behalf to follow the prescribed procedures set out in the Asbestos Control Program. It is also the project manager's responsibility to alert OHS staff immediately, if he/she suspects that the project/renovation will involve the disturbance or removal of asbestos. The project manager shall hire a contractor who is certified to conduct the asbestos sampling. The project manager shall ensure baseline (e.g. background) air samples before the start of the project, if necessary, and shall secure air samples outside of the work area during the project. The project monitor will, in addition, perform a final visual inspection and will secure final clearance air samples using air sampling techniques (if required) as outlined under OSHA, EPA and NIOSH Methodology.

The work area will be considered safe for re-occupancy if all final clearance air samples are less than 0.01 fibers per cubic centimeter (f/cc) of air sampled as determined by Phase Contrast Microscopy (PCM). The time weighted average exposure value (TWAEV) for Asbestos in Ontario is 0.1 fibers per cubic centimeter (f/cc).

The cost for analysis of air samples associated with asbestos projects shall be borne by the department initiating the work.

## **MEDICAL EXAMS**

According to Section 17 R.R.O. 1990, Reg. 838, s. 17 (1); O. Reg. 510/92, All workers who are exposed to Asbestos, shall at the expense of the College, undergo medical evaluations and clinical tests. The Provincial Physician, Ministry of Labour shall establish and maintain an Asbestos Workers Register (refer to Asbestos Work Report) consisting of the names of those workers for whom an asbestos work record form is submitted by an employer. A worker who is listed in the Asbestos Workers Register shall, at the expense of the employer, undergo examinations as may be required by the Provincial Physician, Ministry of Labour from time to time consisting of,

- (a) a medical questionnaire; and
- (b) clinical tests including chest x-rays and pulmonary function tests.

The examinations required by subsection (2) shall take place in a Ministry of Labour Chest Clinic.

## **RECORDS**

Any worker who is exposed to Asbestos must alert OHS immediately. The worker must also fill out an "Asbestos Work Report". All Asbestos Work reports will be copied, one copy will be sent to the Provincial Physician, Ministry of Labour and the photocopy will be inserted into employees file in Human Resources.

Algonquin College shall keep records of any medical evaluations conducted on employees that may have been exposed to Asbestos, for a period of Forty years.

All Asbestos sampling will be kept on file for a period of seven years. Any copy of personal air sampling results shall be submitted to Human Resources and put in employee's personal file.

## Asbestos (Type 1) Work Procedure Checklist

Date of Work: \_\_\_\_\_ Start Time: \_\_\_\_\_ Permit #: \_\_\_\_\_

Location of Job: \_\_\_\_\_

Name of Workers/Contractor: \_\_\_\_\_

### PREPARATION OF THE WORK AREA

**Y      N/AP**

- |                                                                                              |                          |                          |
|----------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 1. Clean visible dust which may be disturbed (HEPA vacuum or wet).                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Control the spread of dust (i.e. drop sheets).                                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The area to be worked on is to be wetted to control dust unless wetting creates a hazard. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. No eating, drinking, smoking or chewing in the area.                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Provide non-powered respirator if requested by worker                                     | <input type="checkbox"/> | <input type="checkbox"/> |

### AT THE COMPLETION OF WORK PROCEDURE

- |                                                                  |                          |                          |
|------------------------------------------------------------------|--------------------------|--------------------------|
| 1. Clean area using HEPA vacuum or wet.                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Drop sheets:                                                  |                          |                          |
| - To be reused: vacuumed or damp wiped.                          | <input type="checkbox"/> | <input type="checkbox"/> |
| - To be disposed: wetted and folded to contain dust.             | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Waste Disposal of dust and waste containing asbestos:         |                          |                          |
| - the disposal bag is identified as Asbestos Waste.              | <input type="checkbox"/> | <input type="checkbox"/> |
| - Call OHS and alert them to the ASBESTOS WASTE.                 | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Hands and face are to be wiped with wet towel before leaving. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Clean visible contamination off clothing with HEPA vacuum.    | <input type="checkbox"/> | <input type="checkbox"/> |

Completed by: \_\_\_\_\_ Supervisor: \_\_\_\_\_

## Asbestos (Type 2) Work Procedure Checklist

Date of Work: \_\_\_\_\_ Start Time: \_\_\_\_\_ Permit #: \_\_\_\_\_

Location of Job: \_\_\_\_\_

Name of Workers/Contractor: \_\_\_\_\_

### PREPARATION OF THE WORK AREA

	Y	N/AP
1. Work Permit obtained from OHS.	<input type="checkbox"/>	<input type="checkbox"/>
2. Manager in work area notified of pending work (date and time frame)	<input type="checkbox"/>	<input type="checkbox"/>
3. Warning signs posted.	<input type="checkbox"/>	<input type="checkbox"/>
4. Ventilation system serving the area disabled.	<input type="checkbox"/>	<input type="checkbox"/>
5. Ventilation ducts sealed off.	<input type="checkbox"/>	<input type="checkbox"/>
6. Enclosure:		
- Work area enclosed by walls or polyethylene.	<input type="checkbox"/>	<input type="checkbox"/>
- Floor covered and taped beyond enclosure (6 ml)	<input type="checkbox"/>	<input type="checkbox"/>
- Overlap door constructed.	<input type="checkbox"/>	<input type="checkbox"/>
7. Take water spray device into enclosure.	<input type="checkbox"/>	<input type="checkbox"/>
8. Vacuuming:		
- HEPA vacuum used.	<input type="checkbox"/>	<input type="checkbox"/>
- One or two vacuum hoses inside of enclosure, depending on the size of the enclosure.	<input type="checkbox"/>	<input type="checkbox"/>
- Friable material removed by vacuuming.	<input type="checkbox"/>	<input type="checkbox"/>
9. Personal Protective Equipment:		
- Respirator fit checked.	<input type="checkbox"/>	<input type="checkbox"/>
- Tyvek suit with hood worn.	<input type="checkbox"/>	<input type="checkbox"/>
- Proper gloves.	<input type="checkbox"/>	<input type="checkbox"/>
- Protective footwear (optional)	<input type="checkbox"/>	<input type="checkbox"/>
10. Wet all asbestos to be disturbed.	<input type="checkbox"/>	<input type="checkbox"/>
11. Absolutely NO eating, drinking, smoking or chewing gum allowed in area.	<input type="checkbox"/>	<input type="checkbox"/>

### AT THE COMPLETION OF WORK PROCEDURE

\* Coordinate air sampling with OHS

1. Vacuum inside of enclosure (where applicable)	<input type="checkbox"/>	<input type="checkbox"/>
2. Vacuum footwear, clothing, ladder, etc., before leaving enclosure and work area	<input type="checkbox"/>	<input type="checkbox"/>
3. Wet clean (e.g. by damp mopping, or water mist spraying) inside enclosure and work area.	<input type="checkbox"/>	<input type="checkbox"/>
4. Waste Disposal:		
- Dispose of all single use items as Asbestos Waste in specially labeled garbage bags. Seal bags with duct tape.	<input type="checkbox"/>	<input type="checkbox"/>
- Clean outside of disposal bags. Insert into a second bag or Cardboard Box. Seal and label outer bag/box "ASBESTOS WASTE".	<input type="checkbox"/>	<input type="checkbox"/>
- Call OHS immediately for prompt removal, Asbestos is NOT to be left in work areas.	<input type="checkbox"/>	<input type="checkbox"/>
5. Hands and face are wiped with a wet towel before leaving.	<input type="checkbox"/>	<input type="checkbox"/>
6. Warning signs are removed	<input type="checkbox"/>	<input type="checkbox"/>
7. Respirator is to be washed, wiped dry and inspected after each use.	<input type="checkbox"/>	<input type="checkbox"/>

Time of Completion: \_\_\_\_\_ Completed By: \_\_\_\_\_





# Asbestos Work Permit

WORK PERMIT # \_\_\_\_\_ DATE OF APPLICATION: \_\_\_\_\_

<b>Work Location</b>	<b>Work To Be Completed By</b>		<b>Date Of Work:</b>	
Building:	College Staff	Contractor	Start:	Time:
Room #:			Completion:	Time:
<b>Project Co-coordinator / Supervisor:</b>				<b>Ext:</b>
Project No:	WO No:	<b>Asbestos Removal Type:</b> Type I    Type II    Type III		
<b>Names of Workers Conducting the Work</b>				
1.		2.		
3.		4.		
5.		6.		
Describe In Detail The Work To Be Completed:				
<b>Describe Personal Protective Equipment to be Used by Worker(s)</b>			<b>Describe Additional Controls (Ventilation, Wet Process, HEPA Vac)</b>	
<b>What Actions Will Be Taken To Alert Area Occupants?</b>				
OHS Notes				

\_\_\_\_\_  
Occupational Health & Safety

Date: \_\_\_\_\_

*1. White – Originator*

*2. Yellow – OHS*

*3. Pink – Central File*

# ASBESTOS WORK REPORT

## 1. Worker Identification

Surname: \_\_\_\_\_  
Given Names: \_\_\_\_\_  
Address: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Social Insurance Number: \_\_\_\_\_

## 2. Employer Identification

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

3. This report covers the period beginning \_\_\_\_\_ and ending \_\_\_\_\_.

4. Set out the number of hours of exposure during the reporting period for each category of exposure (see below):

Category of exposure	Hours
A	_____
B	_____
C	_____
D	_____
E	_____
F	_____
G	_____
H	_____
I	_____
Other – Explain: _____	
_____	
_____	

The Categories of Exposure are:

A. The removal of a false ceiling or part thereof to obtain access to a work area where a significant quantity of friable material containing asbestos is likely to be lying on the surface of the false ceiling.

B. The removal of friable material containing asbestos during the repair, alteration, maintenance or demolition of a building, aircraft, ship, locomotive, railway car, or vehicle or any machinery or equipment, or part thereof.

C. The enclosure of friable material containing asbestos.

D. The application of a sealant or other covering to pipe or boiler insulation containing asbestos.

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

F. The cleaning or removal of air-handling equipment including rigid ducting in a building that has sprayed fireproofing containing asbestos.

G. The repair, alteration or demolition of a kiln, metallurgical furnace or similar device made in part of refractory materials containing asbestos.

H. The use of power tools not equipped with a dust collection device equipped with a HEPA filter to grind, cut or abrade a manufactured product containing asbestos including vinyl or acoustic tiles, gaskets, seals, packings, friction products or asbestos cement products.

I. The repair, alteration or demolition of any building or part thereof, in which asbestos is or was used in the manufacture of a product, unless the asbestos was cleaned up and removed before this regulation came into force.

Other:                    Being work not described in categories A to I.

5. Name of worker's Physician: \_\_\_\_\_

Address: \_\_\_\_\_

6. Date: \_\_\_\_\_

\_\_\_\_\_  
Signature

To be completed by employer and returned to:

Provincial Physician  
Occupational Health and Safety Branch  
Ministry of Labour  
400 University Avenue  
Toronto, Ontario  
M7A 1T7

Copy to Worker



## Employee Exposure Monitoring Form

### Part 1

Employee Name	Name of person conducting monitoring:	Date of monitoring:
Site of activity monitored:	Description of activity involving exposure:	
Exposure agent monitored:	Indicate: <input type="checkbox"/> Personal Sample <input type="checkbox"/> Area Sample (Check one)	
Name of person monitored:	Social Security Number of person monitored:	
Assumed exposure level during activity monitored:	Pump calibration date:	
Types of personal protective devices/equipment worn during monitor:		
Pump flow rate:	Total volume of air sampled:	

### Part 2

Name and address of analytical laboratory:		
Duration of monitoring:	Sample result:	Date of analysis:
Sample and analytic method used:		

**Directions:** Prepare a form for each personal sample taken. Fill out Part 1 of the form at the time of monitoring. Fill out Part 2 of the form after analytical results are received. Make a copy of the form. Send the original to OHS. Keep the copy at the worksite until the project is completed. After the project is completed, give the copy to the employee monitored, (or make a second copy to be given to the employee if the first copy is to be kept with project records).

## Respirators Table

Column	Work Category	Required Respirator
<b>Type 1 Operations</b>		
<b>1</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>		
<b>2</b>	Whenever 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.	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>
<b>3</b>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.</li> <li>• Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.</li> <li>• An operation that, <ul style="list-style-type: none"> <li>• is not mentioned in any of sentences 1 to 10 of Type II operations (refer to pg.13)</li> <li>• may expose a worker to asbestos, and</li> <li>• is not classified as a Type 1 or Type 3 operation.</li> </ul> </li> </ul>	Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter
<b>4</b>	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.	Material is not wetted
<b>5</b>		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>
		Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter

Type 3 Operations			
6	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.	Material is not wetted	Pressure demand supplied air respirator equipped with a half mask
7		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>
8	<ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> <li>• 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.</li> </ul>	Material is not wetted	Pressure demand supplied air respirator equipped with a full facepiece.
9	Work with Friable material, as described in column 8 and that contains another asbestos other than chrysotile	Material was 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> </ul>
10	Work with friable material, as described in column 8, that contains only chrysotile asbestos.		Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)
11	Work with friable material that contains asbestos, , as described in column 8,	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> </ul>
			Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)

## References

1. O.Reg. 837 Designated Substance – Asbestos. Ontario Occupational Health and Safety Act.
2. O.Reg. 278 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations. Ontario Occupational Health and Safety Act.
3. NIOSH Manual of Analytical Methods (NMAM) 4th Ed. NIOSH (1994, August), 1 page. This document includes asbestos methods 7400 and 7402
4. York University - Asbestos Management Program
5. University of Waterloo - Asbestos Control Program
6. McMaster University - Asbestos Control Program