



UNIVERSITY  
OF MANITOBA

*ENVIRONMENTAL HEALTH AND SAFETY OFFICE*

# **ASBESTOS MANAGEMENT PROGRAM**

**for Properties Under the  
Control, Occupancy or Administration  
of the University of Manitoba**

**June 2005**

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# ASBESTOS MANAGEMENT PROGRAM

## INTRODUCTION & OBJECTIVES

### Introduction

The University of Manitoba commissioned Pinchin Environmental Ltd. to assist in the development of the Asbestos Management Program (AMP) document in consultation with its Safety & Health Committee so as to ensure a safe workplace is maintained for all employees, students, the visiting public, maintenance or renovation workers.

A special AMP Review Committee was established to aid in the development of this document, including representatives of the Environmental Health and Safety Office, Physical Plant, Information Services & Technology, CAW, UMFA, AESES and CUPE. The AMP was reviewed and adopted in November 2002 by the University Workplace Health and Safety Advisory Committee. It is considered to be a 'living document' that will be modified and improved as is required to maintain a safe and healthy working environment at the University.

This document provides information, procedures and work practices relevant to the management and control of asbestos-containing building materials known to be present throughout various buildings, which fall under the control, occupancy or administration of the University of Manitoba. It has been developed in part, to fulfil the University's obligations under Manitoba Regulation 53/88 and to provide the means from which future exposures to asbestos may be prevented through the combined efforts of all parties (i.e. management, faculty, administrative staff, students, maintenance or custodial workers, outside contractors, etc.).

The AMP document is designed to be a dynamic document, one that will require occasional updating as conditions within the building or regulatory requirement change. It takes into consideration all existing regulations and guidelines pursuant to the removal or management of asbestos in effect as of December 2002. It further takes into consideration any of the University's current policy or practices in effect as of this date.

It includes work procedures for the completion of Type 1, 2 or Glove Bag remedial work (Low to Moderate Risk) as performed by the University's own employees and/or any outside contractors. With this in mind, the document has been prepared to allow individual sections, appropriate to various tasks, to be separated and provided to the worker or contractor performing the work.

This document excludes any procedures related to Type 3 (major or large scale work) asbestos removal whether brought about by deterioration or by planned renovations or capital maintenance work. Such projects are very site specific and will require documentation prepared for the specific scope, phasing and operational requirements of each project.

### Health and Safety Policy #512

**The University of Manitoba adopted Policy #512 on Health and Safety (January 1, 2003) stating that "The University shall, so far as is reasonably practicable, provide a safe and healthy**

environment in which to carry on the University's affairs. All reasonable measures shall be taken to prevent and eliminate accidental injuries and illnesses.”

Any interpretation of the application of the provisions of the AMP shall be consistent with the duties and responsibilities identified in Policy #512.

### **Program Objectives**

In order that a uniformed approach to the control and management of asbestos-containing materials (ACM) throughout all University of Manitoba owned or occupied facilities may be developed, the following program objectives have been established:

1. The program shall clearly establish management’s intent to control any known or suspect asbestos-containing materials and shall be written so as to satisfy the requirements for the creation of a “Prevention Plan” as required by the Workplace Health Hazard Regulation (Mb. Reg. 53/88).
2. The program shall provide the criteria in which all asbestos-containing materials are to be identified and evaluated and shall establish the means in which this information is to be passed on to all affected parties (i.e. management, planning staff, maintenance or custodial workers, outside contractors or building tenants, etc.).
3. The program shall establish the need and procedure in which the necessary training and education of all staff, maintenance or custodial workers, or outside contractors shall be handled.
4. The program shall contain the necessary work practices and procedures to effect low to moderate risk asbestos work (i.e. Type 1, 2 or Glove Bag Removal) in a safe manner.
5. Initiate the implementation of an Operations & Maintenance Program to address the following:
  - a) Repair or removal (as required) of any ACM identified as being in disrepair.
  - b) Maintain all remaining ACM in good condition.
  - c) Minimize future fibre releases by controlling activities that may disturb asbestos.
  - d) Inspection and monitoring of all scheduled asbestos disturbances.

## DEFINITIONS

Airlock: Temporary chamber constructed at the perimeter of an Asbestos Work Area to permits the ingress or egress of workers, materials and equipment without permitting air movement through to non-contaminated areas.

Amended Water: Water with wetting agent added for the purpose of reducing surface tension to allow thorough wetting of asbestos-containing material.

Asbestos: From the Greek adjective meaning inextinguishable – is the general name given to a fibrous form of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals including, but not limited to chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite.

Asbestos Abatement: The process of reducing or eliminating the presence or exposure to asbestos through an act of its removal, encapsulation, repair or enclosure.

Asbestos-Containing Materials (ACM): Any material or substance found to contain 0.1% or greater content of asbestos as determined by Polarized Light Microscopy following codes or method specified by authority having jurisdiction.

Asbestosis: A chronic, restrictive lung disease due to the inhalation of asbestos fibres.

Asbestos Work Area: Any area where work takes place that will, or may, disturb asbestos.

Curtained Doorway: Doorway consisting of two overlapping flaps of rip-proof polyethylene arranged to permit ingress and egress from one room to another while permitting minimal air movement between rooms.

Decontaminate: To remove all asbestos-containing materials using approved removal methods, leaving the work area clean and free of visible and/or airborne asbestos fibres.

DOP Test: A testing method used to determine the integrity of the Negative Pressure unit or vacuum using dioctyl phthalate (DOP) HEPA filter leak test.

Encapsulate: Method of controlling the release of asbestos fibres by application of a liquid sealant over the asbestos-containing material.

Enclosure: An airtight, impermeable, permanent barrier around ACM installed to reduce or prevent the release of asbestos fibres into the air.

Fitting: Individual segments or pieces of a mechanical service line which may include but is not limited to the hangers, tees, elbows, joints, valves, unions, etc..

Friable Material: Any material that when dry can be crumbled, pulverized or powdered by hand or moderate pressure. Includes materials that are already in a state of being crumbled, pulverized or powdered.

Glove Bag: Prefabricated bag which provides a completely sealed envelope surrounding a given section of piping to permit the removal of asbestos-containing insulation from within the bag while maintaining the integrity of the bag and preventing the spread of airborne asbestos fibres.

HEPA Filter: High Efficiency Particulate Absolute air filters capable of collecting and retaining fibres greater than 0.3 microns in length at 99.97% efficiency. Utilized for vacuum equipment, respiratory protection, and localized air exhaust systems.

Mesothelioma: A rare but malignant form of cancer affecting the lining of the chest or abdominal cavity.

NIOSH: "National Institute for Occupational Safety and Health".

Negative Pressure: A reduced pressure within the Asbestos Work Area ( $\geq 0.04$  in.) established by extracting air directly from Asbestos Work Area and discharging it to the exterior of building. Volume of air extracted must be sufficient to ensure that at all times, air movement flows into the Asbestos Work Area as determined by visual or smoke testing to the satisfaction of the Asbestos Program Officer.

Non-Friable Material: Any material that when dry can not be crumbled, pulverized or powdered by hand or moderate pressure. Including but not limited to the following ACM; vinyl tiles, asbestos cement tiles, gaskets, seals, select packings, friction products, drywall joint compound and asbestos cement products. Exclude from the above categorization any material that is or may become crumbled, pulverized or powdered by handling as described herein.

Operations and Maintenance Program (O & M Program): A program of work practices and procedures implemented to maintain known asbestos-containing materials in good condition, ensure the clean-up of asbestos fibres previously released and prevent further release by minimizing and controlling the disturbance of any asbestos materials subject to disturbance or damage.

Pipewrap: Any thermal or vapour covering present on straight runs and/or fittings of mechanical services. Include with the above, metal or other rigid jacketing associated straps, ties, fastenings, etc..

Sealant (Encapsulant): A liquid which can be applied over asbestos-containing material to control the release of asbestos fibres.

Transite: A cementitious asbestos-containing board that is normally flat or corrugated.



## 1. BACKGROUND ON ASBESTOS

### 1.1 Occurrence and Types of Asbestos

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

### 1.2 Health Effects of Asbestos

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

**Asbestosis:** Asbestosis is characterized by a fibrosis (scarring) of the lung tissue, which makes breathing difficult. The most prominent symptom is breathlessness. 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 illnesses. Asbestosis will develop only with chronic exposure to high levels of airborne asbestos.

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

**Lung Cancer:** Unlike asbestosis and mesothelioma, lung cancer is not associated only with asbestos exposure. Furthermore, there is no basic difference between lung cancer caused by asbestos and that due to other causes. In general, the risk of getting lung cancer increases with the extent of asbestos exposure, in terms of both intensity and duration. This risk is also greatly enhanced by smoking; most asbestos workers who develop lung cancer are smokers.

**Other Asbestos-Related Cancers:** The relationship between asbestos exposure and asbestosis, mesothelioma and lung cancer has been clearly established and is beyond argument. Several other cancers have also been associated with the inhalation of asbestos. Although the evidence is not as good as for the diseases discussed above, these cancers should be noted. They are: gastrointestinal cancer affecting all sites in the gastrointestinal tract (oesophagus, stomach, colon and rectum) and cancer of the larynx.

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

### **1.3 Uses of Asbestos in Buildings**

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

#### **1.3.1 Non-Friable Asbestos Materials**

##### **Asbestos-cement (A/C) Products**

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

Asbestos-cement sheeting is produced that comes in four basic forms: flat sheets, corrugated sheets, siding shingles or roofing shingles. The main use of A/C sheeting is for roofing and for cladding the exterior of buildings.

Other uses are decorative panelling, electrical insulation and laboratory tabletops. Asbestos-cement piping is used for water supply, sewage, irrigation, drainage applications, the transport of corrosive chemical fluids, and electric and telephone conduits. Asbestos cement products are still in use and production today.

### **Gaskets and Packings**

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

### **Coatings and Sealants**

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

### **Paper Products**

Asbestos paper products are used in a wide variety of applications. Among the most important in construction are roofing felts, gaskets, pipeline wrap, millboard and electrical insulation. Some of these applications are discussed under the headings "Insulation" and "Gaskets and Packings". Some uses (particularly where impregnated with tar or asphalt for roofing and pipeline wrap) are still in production today.

### **Plastics**

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

### **Friction Materials**

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

### **Asbestos Textiles**

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

## **1.3.2 Friable Asbestos Materials**

These products are the main concern of the public and most asbestos management programs due to the ease of fibre release. None of the products are still in production.

### **Spray or Trowel Applied Fireproofing or Sprayed Insulation**

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

### **Sprayed or Trowel Applied Texture or Acoustic Plasters**

The use of asbestos was widespread in trowel applied or sprayed texture coats, stipple coats or acoustic plasters commencing in the 1950's through to the late 1970's (at least as late as 1977). These products always contained less than 25% chrysotile. Some of these products may be considered non-friable in place and only become friable when disturbed by construction or demolition. Other products in this group can be very soft and extremely friable.

### **Mechanical System Insulation**

This is the most widespread use of friable asbestos in buildings. Their use dates from the late 1800's to the late 1970's. The material can have a number of appearances and asbestos contents.

- ❑ white, brown, pink or grey block
- ❑ white or grey corrugated paper
- ❑ white, grey or brown layered paper
- ❑ grey trowel or hand applied material (with the appearance of hard grey dry mud)

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

## **1.4 Hazard of Asbestos in Buildings**

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

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

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

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

The general conclusions of the Royal Commission have been supported by independent testing by independent researchers, the Ontario Ministry of Labour, and authorities in other jurisdictions. Air sampling has shown that the airborne asbestos levels in buildings with sprayed asbestos are no higher than outdoor levels, unless the friable asbestos or asbestos debris is being disturbed at the time. Airborne levels in buildings are not elevated even when the ceiling space containing the sprayed asbestos or asbestos mechanical insulation functions as an air plenum. The following Asbestos Management Program document has therefore been modelled to be in line with the conclusions of the Royal Commission and applicable provincial regulations which have been adopted based on a review on this model.

\*\*\*\*\*

**END OF SECTION**

## **2. ELEMENTS OF THE ASBESTOS MANAGEMENT PROGRAM**

The maintenance of a safe work environment for all University employees, the visiting public, maintenance or renovation workers, depends on the establishment of an effective management program. Such a program shall incorporate the following measures to ensure the safe and proper control of all suspect or confirmed ACM.

1. The development of a **WRITTEN PLAN**.
2. Provide for the **APPOINTMENT OF AN ASBESTOS PROGRAM OFFICER(S)** whose responsibilities shall include the implementation and management of the program and ensuring that department and administrative units are made aware of their responsibilities to comply with the Asbestos Management Program.
3. Establish **PARAMETERS FOR THE EVALUATION** of all suspect or confirmed ACM.
4. Create or otherwise establish an **INVENTORY** of all suspect or confirmed ACM.
5. Establish procedures for the **NOTIFICATION** of all workers, custodial or maintenance staff, outside contractors, building tenants (if applicable), etc. whose work will or may result in the disturbance of any suspect or confirmed ACM.
6. Provide policy pertaining to the on-site **IDENTIFICATION** (labelling) of ACM.
7. Establish **TRAINING** protocol for all employees of the University and any other personnel (i.e. outside contractors, maintenance or renovation workers) required to work on or near any ACM or whose activities in the building may result in the disturbance of asbestos.
8. Establish policy pursuant to the periodic **SURVEILLANCE** and re-evaluation of all materials known to contain asbestos.
9. Develop **SPECIAL WORK PROCEDURES** for the repair, clean-up or removal of minor amounts of ACM during routine maintenance, minor renovations or demolition.
10. Give special consideration to the **PRO-ACTIVE REMOVAL** of asbestos during any renovation or demolition work performed on or near any known or suspect ACM. Such activities are normally performed by an outside contracting firm who specializes in asbestos work and will require the preparation of site-specific contract documents.
11. Initiate the **REMOVAL AND/OR REPAIR** of any asbestos-containing material which have been damaged and/or are otherwise in disrepair.

12. **MINIMIZE FUTURE FIBRE RELEASES** by ensuring that department and administrative units are made aware of their responsibilities to control activities that may disturb asbestos and ensuring all affected ACM is removed prior to any major renovations, maintenance or demolition work.
13. Provide for the **SCHEDULED RE-ASSESSMENT & UPDATING** of the AMP document itself to ensure it remains a current and viable document.
14. Establish policy to ensure the **INDEPENDENT INSPECTION AND MONITORING** of all asbestos-related disturbances (whether undertaken internally or through the assistance of an outside contractor) to ensure compliance with the requirements of the AMP document and governing authorities.

Each of the above elements are discussed at length under the following sections and/or appendices and have been formulated so as to meet or exceed the requirements of current regulations and guidelines specific to asbestos control and management.

\*\*\*\*\*  
**END OF SECTION**



### **3. RESPONSIBILITIES UNDER THE AMP**

The following sections are intended to provide the reader with insight into the internal workings and responsibilities assigned to various entities under the University's Asbestos Management Program. As the primary entity responsible for health & safety issues at all University owned or occupied premises, the University's Environmental Health & Safety Office, and its duly appointed officers, shall have final authority over all matters pertaining to the control and management of asbestos or suspect asbestos-containing materials throughout the University at large. **NOTE:** Any interpretation of the application of the provisions of the AMP shall be consistent with the duties and responsibilities identified in the University Health and Safety Policy #512.

#### **3.1 Environmental Health & Safety**

##### **3.1.1 Senior Management**

The following tasks and/or duties shall be assigned to the Manager of the University's Environmental Health & Safety Office.

1. Assume the role of "Senior Asbestos Programs Officer" (SAPO) and as such, be responsible for the overall administration, maintenance and application of the University's Asbestos Management Program (AMP).
2. Oversee the appointment of an Asbestos Programs Officer (APO) or Officers as required to meet the individual responsibilities assigned to him/her under Paragraph 3.2 below and the collective needs of the University at large.
3. Coordinate the efforts of each APO to ensure a unified approach to the control and management of asbestos is both achieved and maintained throughout the University at large.
4. Oversee all training programs. Where practical, such training sessions may be coordinated through an outside asbestos consulting firm to ensure a uniform approach to the control and management of asbestos is maintained.
5. Commission or otherwise undertake a self-examination of the Asbestos Management Program, once every second year, to measure the effectiveness of the program, the need for additional training, and/or any modifications to the program itself.

##### **3.1.2 Non-specific Duties & Responsibilities**

The following tasks and/or duties shall be assigned to the general office of the University's Environmental Health & Safety Office.

1. Provide each APO with the necessary technical support and resources necessary to effectively manage and execute his/her duties assigned under the University's AMP.
2. Maintain a centralized record of all documentation required by the AMP and all other relevant information pertaining to the control and administration of asbestos throughout the University at large. Exclude from the above archive, information pertaining to the daily administration of any asbestos activities undertaken from time-to-time and all other items already designated as being kept on file by each APO.
3. In addition to the above referenced originals or hard copies, an electronic copy of the University's AMP document shall be accessible for viewing via the University's Intranet.
4. Engage, as required from time-to-time, the services of an outside asbestos consulting firm to assist each APO with the following duties:
  - a) Respond to any report of asbestos debris, damage or disturbance. Evaluate conditions encountered and initiate the necessary clean-up, removal or repair as appropriate;
  - b) Assist in the review of all maintenance, renovation or construction activities that will or may result in the disturbance of any known or suspect asbestos-containing materials;
  - c) Assist in the identification and evaluation of any suspect asbestos-containing materials rendered accessible as a result of both scheduled and unscheduled maintenance, renovations or construction activities; and
  - d) The provision of random site inspection and air monitoring services to be performed as part of any scheduled asbestos disturbances undertaken internally by the University's own maintenance staff.
  - e) The provision of awareness and/or procedural training for all University staff whose job requires them to work on or near known or suspect asbestos-containing materials.
  - f) The completion of a detailed and comprehensive Asbestos Inventory of all buildings suspect of containing asbestos-containing building materials. Include within the above scope any future acquisitions.
  - g) The labelling of all known or suspect asbestos-containing materials in a manner consistent with the requirements set out in Appendix U.
  - h) The regular review and evaluation of all remaining asbestos-containing materials once every second year or more frequently as circumstances warrant.

Only those firms having an establish reputation for excellence in the field of asbestos consulting and management shall be considered for work at any property under the control,

occupancy, or administration of the University of Manitoba. In addition, such firms must also be able to demonstrate compliance with the quality control and assurance standards set out in Appendix W.

5. Commission or otherwise conduct respirator training and fit-testing for all staff that may have occasion to make use of a respirator during the completion of any asbestos abatement activities. The frequency and content of such a screening program shall be consistent with current University practice and procedure.

### **3.1.3 Medical Surveillance Program**

The following duties shall be assigned to office of the University's Occupational Health Coordinator.

1. Be responsible for the initial implementation and on-going administration of the medical screening program detailed below.
2. Develop, in consultation with each APO, a list of employees who have requested and/or are required to participate in the following medical screening program. Ensure this list is updated on an annual basis.

Under existing regulation (i.e. Manitoba Reg. 100/88R), medical examinations are not a mandatory requirement for "casual" work involving minor repair or removal (i.e. Type 1 or Type 2 Work). "Casual" being defined by the regulation as any worker or employee who is expected to be exposed to an airborne concentration of asbestos in excess of 0.1 f/ml of air for less than 100 hours per year.

Notwithstanding the above, any employee who is required to work with asbestos on a "casual" basis may at his/her own discretion or initiative, participate in the following medical screening program.

Where an employee is required to or has elected to participate in the following screening program, said examination shall include the following items along with any other test(s) deemed appropriate by the attending physician.

#### **Initial or Pre-placement Examination**

- screening chest radiograph
- lung function test (LFT)
- medical examination
- occupational exposure history
- health questionnaire

#### **Bi-Annual Follow-up Examinations**

- screening chest radiograph
- lung function test (LFT)
- occupational exposure history
- health questionnaire

Any employee determined to have 100 cumulative hours exposure or more, in any one year, shall be enrolled and must participate in the above screening process. Bi-annual follow-up examinations shall be scheduled once every two years.

### **3.2 Asbestos Programs Officer (APO)**

The following tasks and/or duties shall be assigned to each Asbestos Programs Officer. Such responsibilities are necessarily limited in scope to the specific building or buildings for which he/she has been assigned.

1. Be responsible for the day-to-day administration, maintenance and management of the University's Asbestos Management Program. This includes advising workers and supervisors of the requirement to stop activities and take corrective action to remedy unsafe conditions.
2. Maintain a centralized record of all documentation required by the AMP and all other relevant information pertaining to the control and administration of asbestos.
3. Respond to any report of asbestos debris, damage or disturbance. Evaluate conditions encountered and initiate the necessary clean-up, removal or repair as appropriate.
4. Assist individual designers, managers or project coordinators with the evaluation of any maintenance, renovation or construction activities that will, or may result in the disturbance of any suspect or confirmed asbestos-containing building materials.
5. Assist individual designers, managers or project coordinators with the identification and evaluation of any suspect asbestos-containing materials rendered accessible as a result of both scheduled and unscheduled maintenance, renovations or construction activities.
6. Review all "Asbestos Work Requisitions/Permits" to ensure the individual manager or project coordinator in charge of the work has assigned the appropriate risk classification (ie. Low, Moderate or High).
7. Provide final approval of all "Asbestos Work Requisitions/Permits" forwarded to his/her attention by the individual manager or project coordinator assigned to the work.
8. Conduct and/or otherwise allocate to an outside asbestos consulting firm (i.e. Designated Inspection Agency) the task of providing random site inspections and air monitoring services during all scheduled asbestos disturbances undertaken internally by the University's own maintenance staff. Such services shall be provided at a frequency to ensure compliance with existing regulations and corporate policy as set forth under Section 8 of the AMP document.
9. Ensure a copy of all site inspection reports and corresponding air monitoring data is forwarded to the individual manager or project coordinator assigned to the work on a next day basis.

10. Evaluate on an annual basis or more frequently as required, and in consultation with all managers and/or department heads, the need to hold refresher training for any recently employed workers or staff whose job requires them to work on or near known or suspect asbestos-containing materials.
11. Commission or otherwise undertake to provide awareness and/or procedural training for all University staff whose job requires them to work on or near known or suspect asbestos-containing materials.
12. Commission or otherwise complete a detailed and comprehensive Asbestos Inventory of all buildings suspect of containing asbestos-containing building materials. Include within the above scope any future acquisitions.
13. Arrange for an original or hard copy of all initial Asbestos Screening Reports and any subsequent Asbestos Surveys or Updates to be held on file at the following locations:
  - ❑ General office of the Physical Plant at each of the University's primary campuses;
  - ❑ At the office of the University's Senior Asbestos Programs Officer; and
  - ❑ With each of the University's Asbestos Programs Officers.
14. In addition to the above referenced originals or hard copies, each of the University's initial Asbestos Screening Reports and any subsequent Asbestos Surveys or Updates shall be accessible for viewing via the University's Intranet.
15. Commission or otherwise complete a regular review and evaluation of all remaining asbestos-containing materials once every second year or more frequently as circumstances warrant.
16. Commission or otherwise undertake, as assisted by the Physical Plant, a program of labelling to identify the presence of all known or suspect asbestos-containing materials in a manner consistent with the requirements set out in Appendix U.

### **3.3 Physical Plant**

#### **3.3.1 Administrative Services**

The following tasks and/or duties shall be assigned to the office of the Senior Physical Plant Management in charge at each of the University's primary campuses.

1. Establish, while in consultation with EHSO, a centralized database of all known or suspect asbestos-containing materials.

2. Update, while in consultation with EHSO, the asbestos inventory for each building as conditions change or as individual “Asbestos Work Reports” are received from the various managers or project coordinators in charge of scheduled maintenance, renovations or construction activities.
3. Ensure, that within the Physical Plant, that all managers, department heads, trade supervisors, maintenance and custodial staff, etc., are informed of the current location of all known or suspect asbestos-containing materials, within the scope of the work area or building for which they are assigned, and are updated as conditions change or as these materials are removed.
4. Ensure all known or suspect asbestos-containing materials are maintained in good condition.
5. Commission or otherwise coordinate the removal or repair of any asbestos-containing materials that have been damaged or are otherwise found to be in a state of disrepair and/or are subject to disturbance as part of any maintenance, renovations or construction activities.
6. Evaluate on an annual basis or more frequently if required, and in consultation with each of the University’s Asbestos Programs Officers, the need to hold awareness and/or procedural training and respirator fit-testing for any recently employed workers or staff whose job requires them to work on or near known or suspect asbestos-containing materials.
7. Engage as required, the services of an outside asbestos consulting firm to assist individual managers or project coordinators with the following duties and responsibilities:
  - a) Assist in the review of all maintenance, renovation or construction activities that will or may result in the disturbance of any known or suspect asbestos-containing materials.
  - b) Assist in the identification and evaluation of any suspect asbestos-containing materials rendered accessible as a result of both scheduled and unscheduled maintenance, renovations or construction activities.
  - c) The provision of daily site inspection and air monitoring services to be performed as part of any scheduled asbestos disturbances. Such services are to be provided at a frequency to ensure compliance with existing regulations and corporate policy as set out under Section 8 of the AMP document.
  - d) Assist in the design, coordination, inspection and air monitoring of all Type 3 (Large Scale or High Risk) asbestos abatement activities.

Only those firms having an establish reputation for excellence in the field of asbestos consulting and management shall be considered for work at any property under the control, occupancy or administration of the University of Manitoba. In addition, such firms must also be able to demonstrate compliance with the quality control and assurance standards set out in Appendix W.

8. Arrange for the scheduled cleaning and servicing of the designated “Asbestos Vacuum” made reference to under Appendix V or as otherwise assigned for use by the various Trade Shops or Custodial Services which, when combined, form part of the Physical Plant.
9. Arrange for the disposal of any asbestos-containing waste that may be generated from time-to-time as a result of any asbestos abatement activities undertaken internally by the University’s own maintenance forces.

### **3.3.2 Project Designers**

The following tasks and/or duties shall be the responsibility of the head designer assigned to the project by or on behalf of the University.

1. Undertake a detailed review of all projects to establish the potential for asbestos disturbance. In most instances, this will require the engagement of an external consultant to assist in the evaluation process and to perform the required pre-renovation/demolition asbestos survey. This is required to satisfy the University’s regulatory responsibilities and to fully assess the impact any known or suspect asbestos-containing materials may have on the scheduled work.
2. Notwithstanding the above requirement, and for work of a MINOR nature only, the above evaluation process may be completed through the assistance of the APO assigned to the building in which the work is scheduled.
3. Should the above survey identify the need to incorporate as part of the final design, specific asbestos abatement activities; then the services of an external consultant must be retained to assist in the design and preparation of the required asbestos abatement specification sections. Ensure the final Tender Package contains sufficient information to allow contractors to compile an accurate and inclusive bid.
4. Notwithstanding any asbestos removal undertaken to satisfy the project minimum requirements, consideration must also be given to a policy of “Pro-active Removal” of any additional asbestos rendered accessible as part of the work, should the project budget permit.

5. Only those firms having an establish reputation for excellence in the field of asbestos consulting and management shall be considered for work at any property under the control, occupancy or administration of the University of Manitoba. In addition, such firms must also be able to demonstrate compliance with the quality control and assurance standards set out in Appendix W.

### **3.3.3 Project Coordinator or Manager**

The following tasks and/or duties shall be the responsibility of the individual manager or project coordinator assigned to the work by or on behalf of the University.

1. Undertake a review of all maintenance, renovation or construction activities to assess their potential for asbestos disturbance provided the Project Designer and/or others have not already performed such a review. Ensure the appropriate risk classification is assigned to any work that may or will result in the disturbance of any known or suspect asbestos-containing materials (Low, Moderate or High).
2. Notify all outside contractors or external service personnel (i.e. plumbers, custodial or maintenance firms, telephone service personnel, etc.) whose work has the potential of disturbing known or suspect asbestos-containing materials of their presence and approximate location.
3. Ensure all outside contractors or external service personnel (ie. plumbing, custodial or maintenance firms, telephone service personnel, etc.) are provided with and complete a Contractor's Notification & Acknowledgement form as contained in Appendix I where appropriate. Provide a copy of the above documentation to the APO having jurisdiction over the building in which the work is scheduled to be performed.
4. Ensure the APO having jurisdiction is kept informed (in advance) of all major maintenance, renovation or construction activities in sufficient time to assist the individual manager or project coordinator assigned to the work with his/her assessment of the work and any potential for asbestos disturbance.
5. Ensure an Asbestos Work Requisition/Permit is filed with the APO having jurisdiction thereby requesting his/her authorization to proceed with the specified asbestos abatement activities described by the above document. Ensure a signed and duly executed copy of the aforementioned Asbestos Work Requisition/Permits is first obtained from the APO having jurisdiction prior to authorizing the start of any work that will or may result in the disturbance of any known or suspect asbestos-containing materials.



6. Ensure those individuals, offices or departments as listed under Section 10.0 herein, are notified in advance of any scheduled asbestos disturbance.
7. Prior to the commencement of any asbestos-related work, visit the specific office(s) or work area(s) directly impacted by the work and complete the following:
  - a) Provide the individual tenant(s) or staff, who normally occupy these areas, with a brief outline or sketch of the upcoming work and steps being taken to ensure a safe work environment is maintained at all times.
  - b) Determine what, if any, concerns and/or specific needs such individuals may have.
  - c) Determine which, if any, of the above tenant(s) or staff may wish to receive a copy of any asbestos related correspondence (i.e. site inspection reports, air monitoring data, etc.).
8. Commission or otherwise coordinate the removal or repair of any asbestos-containing materials deemed necessary to facilitate the work at hand. In doing so, the individual manager or project coordinator in charge of the work shall keep in mind the University's policy of "Pro-active Removal" of any asbestos-containing building materials rendered accessible during scheduled maintenance, renovations or construction when and if the project budget permits.
9. If the above work is to be completed internally using the University's own maintenance staff, ensure the APO responsible for the work is informed in sufficient time to permit him/her to coordinate the necessary inspection and air monitoring services.
10. If the above work is to be completed externally by forces other than the University's own maintenance staff, then the services of an outside asbestos consulting firm (i.e. Designated Inspection Agency) shall be retained to provide site inspection and air monitoring services during all scheduled asbestos disturbances. Such services are to be provided at a frequency to ensure compliance with existing regulations and corporate policy as set forth under Section 8 of the AMP document.

Only those firms having an establish reputation for excellence in the field of asbestos inspection and monitoring shall be considered for work at any property under the control, occupancy or administration of the University of Manitoba. In addition, such firms must also be able to demonstrate compliance with the quality control and assurance standards set out in Appendix W.

11. Ensure a copy of all site inspection reports and any corresponding air monitoring data is forwarded to the APO, assigned to the building in which the work is being performed, and within twenty-four (24) hours of the inspection having been performed.
12. In addition, ensure a copy of the above information is also provided to the following individuals when, or if, requested.
  - a) The Dean, Director, Department Head or Manager responsible for the building or work area in which the work is being performed.
  - b) The individual tenant(s) or staff member in charge of any office(s) or work area(s) directly impacted by the proposed asbestos work.
13. Notwithstanding the above requirements, a summary of each day's air sampling results shall be posted on the University's own internal web page or intranet system as soon as possible.
14. For projects involving two (2) or more days of asbestos-related work, an additional hard copy of all air monitoring data shall be posted on the nearest public notification board on a same-shift basis, and in all instances, within twenty-four (24) hours following sample collection. Signage, confirming that the above referenced test results are available for viewing at the nearest public notification board, complete with directions, shall be posted at varying points along the perimeter of the established work area and immediately adjacent to the main entranceway or decontamination facility.
15. Existing policy requires that all Type 3 (Large Scale or High Risk) asbestos abatement work be contracted-out to an experienced asbestos abatement contractor. Accordingly, no employee of the University shall knowingly be directed to undertake such work.
16. Engage, through the normal tendering process, an outside contractor specialized in asbestos abatement work to assist the University with any low to moderate risk asbestos work that may be required from time-to-time and all Type 3 or high risk removal projects. Ensure adequate information is contained in the Tender Package to satisfy regulatory requirements. Refer to Appendix J for a list of pre-qualified contractors.
17. To the extent in which any previously undiscovered asbestos-containing materials are exposed during scheduled maintenance, renovations or construction activities; the individual manager or project coordinator assigned to the work shall commission or otherwise undertake to label the newly exposed asbestos in a manner consistent with the requirements set out in Appendix U.

18. Oversee all asbestos abatement activities associated with work under his/her control whether undertaken internally or through an outside contractor to the extent necessary to ensure its safe and proper execution.
19. Ensure the individual worker or supervisor in charge of the work files an “Asbestos Work Report” (see Appendix R) with the following individuals:
  - a) The office of the APO assigned to the building in which the work was performed.
  - b) The office of the Physical Plant at each of the University’s primary campuses.

### **3.4 Deans, Directors, Department Heads and Managers**

The following tasks and/or duties shall be assigned to the Dean, Director, Department Head or Manager in charge of each individual departments or faculties.

1. Ensure all staff, under his/her administration, are informed of the current location of known or suspect asbestos-containing materials for which they could reasonably disturb, within the scope of the work area or building in which they are assigned. Ensure such individuals are updated on a regular basis as conditions change or as these materials are removed.
2. Evaluate on an annual basis or more frequently if required, and in consultation with the University’s Senior Asbestos Programs Officer, the following items:
  - a) The need to hold awareness and/or procedural training and respirator fit-testing for any workers or staff whose job requires them to work on or near known or suspect asbestos-containing materials.
  - b) The need and/or acquisition of any specialty equipment or supplies necessitated by the presence of a confirmed or suspect asbestos-containing material that will or may reasonably have an impact on any individual person or persons under his/her care or supervision.
3. Ensure all staff, under his/her administration, comply with the requirements set out under Sections 3.3.2 and 3.3.3 above, whenever an outside contractor or external service personnel (i.e. plumbers, custodial or maintenance firms, telephone service personnel, etc.) are engaged independent of the Universities Physical Plant.

### **3.5 Leasing Department**

(As yet to be developed)

### **3.6 Employees**

The following responsibilities shall fall to any individual employed by the University and are in addition to those rights and responsibilities assigned to such individuals under the Workplace Safety & Health Act.

1. Be familiar with all duties and responsibilities assigned to him/her under the terms of the University's Asbestos Management Program.
2. Be familiar with the location of any asbestos-containing materials known to be present within the specific work area or building for which he or she is assigned and would reasonably be expected to encounter or disturb (whether intentional or not) during the normal execution of their duties.
3. Upon discovery of any unidentified asbestos-containing materials or products suspect of containing asbestos, secure the area, suspend all activities that may disturb such materials and immediately notify his/her supervisor. Do not proceed with work in the area until it has been determined if the material in question contains asbestos and authorization to proceed has been granted by his/her supervisor.
4. Should a worker be exposed to, or encounter, a spill of asbestos or a suspect asbestos-containing material, he/she shall respond to the incident as detailed in Appendix O.
5. Report any damage to existing asbestos-containing materials to his/her own supervisor. Refer to the form provided for this purpose in Appendix Y for additional information and instruction.
6. Existing policy requires that all Type 3 (Large Scale or High Risk) asbestos abatement work be contracted-out to an experienced asbestos abatement contractor. Accordingly, no employee of the University shall undertake such work.
7. Execute all work in compliance with the University's Asbestos Management Program.

### **3.7 Workplace Health & Safety Advisory Committee**

The following responsibilities shall be assigned to the corresponding Workplace Health & Safety Advisory Committee and are in addition to those rights and responsibilities assigned under the Workplace Safety & Health Act.

1. Participate in a review of the Asbestos Management Program, which is to take place once every second year.
2. May take part in or participate in any hazard investigations or assessments undertaken from time-to-time including, but not limited to, any regularly scheduled asbestos survey updates.
3. Ensure any future or existing work practices or procedures developed in consultation with the Workplace Health & Safety Advisory Committee meet or exceed the minimum requirements set out in the following AMP document.

### **3.8 Contractors**

The following responsibilities fall upon any contractor whose work will or may result in the disturbance of any asbestos-containing or contaminated materials or surfaces.

1. Be familiar with all duties and responsibilities assigned to his/her firm under the terms of the University's Asbestos Management Program.
2. Execute all work in compliance with the University's Asbestos Management Program.
3. Before commencing work, ensure all employees and supervisory staff, under his/her control, have been informed of the presence and approximate location of all known or suspect asbestos-containing materials that are subject to disturbance (whether intentional or not).
4. Upon discovery of any unidentified asbestos or suspect asbestos-containing materials, secure the area, suspend all activities that may disturb such materials and immediately notify the Project Coordinator or Manager assigned to the work by the University. Do not proceed with work in the area until it has been determined if the material in question contains asbestos and written authorization to proceed has been obtained from the Project Coordinator or Manager.
5. File with the Project Coordinator or Manager, a signed and duly executed copy of the Contractor's Notification & Acknowledgement form provided under Appendix I.
6. Perform work in such a manner as to avoid the disturbance of any asbestos-containing materials other than those materials specifically contracted to remove, repair, encapsulate or enclose.

7. Prior to proceeding with any asbestos disturbance (i.e. removal, clean-up or repair) ensure a signed and duly executed Asbestos Work Requisition/Permit (see Appendix Q) is obtained from the Project Coordinator or Manager.
8. Ensure all work that may disturb any asbestos-containing or contaminated surfaces is completed in accordance with current regulatory requirements and while following prescribed asbestos procedures as detailed under Appendix K-N as attached to the end of this document.
9. Provide the Project Coordinator or Manager with a copy of all executed Asbestos Waste Transportation Manifests verifying the safe and proper disposal of all asbestos waste generated. Refer to the form provided in Appendix T at the end of this document for additional information and requirements.
10. Ensure the individual worker or supervisor in charge of the work files an “Asbestos Work Report” (see Appendix R) with the Project Coordinator or Manager.

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**END OF SECTION**

#### **4. REGULATORY REQUIREMENTS**

The University of Manitoba has varying responsibilities assigned to them as a building owner and employer under the following acts, regulations and guidelines:

1. Workplace Safety and Health Act, Chapter W210 of the Continuing Consolidation of the Statutes of Manitoba.
2. Workplace Hazardous Materials Information System (WHMIS), Manitoba Reg. 52/88.
3. Workplace Health Hazard Regulation, Manitoba Reg. 53/88.
4. Fibrosis & Silicosis Regulation, Manitoba Reg. 100/88R.
5. Asbestos Operations and Maintenance Program, being a guideline as issued by the Manitoba Department of Labour, Workplace Safety and Health Branch.
6. Guidelines For Working With Asbestos, being a guideline as issued by the Manitoba Department of Labour, Workplace Safety and Health Branch.

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**END OF SECTION**

## **5. ASBESTOS ASSESSMENT & MONITORING**

### **5.1 Survey Methodology**

One of the fundamental components of any Asbestos Management Program is the establishment of a detailed and accurate survey or inventory of all known or suspect asbestos-containing building materials. Existing regulation further requires that such an assessment be carried out in all workplaces throughout the province wherever the presence of asbestos has been confirmed or can reasonably be suspected as being present given the age of the facility.

To satisfy the above obligation, the University has commissioned Pinchin Environmental Ltd. to undertake an initial screening report for all buildings suspect of containing asbestos. This process is expected to be complete on or about June 30, 2002 and is intended to provide the University with a preliminary report on the general location and overall composition of what, if any, asbestos-containing materials may be present in each of the subject buildings. It is not intended to be of sufficient detail to satisfy neither the University's long-term objectives nor its regulatory obligations concerning the creation of a detailed and comprehensive inventory. Instead, such obligations will be satisfied by the commissioning of a second and more comprehensive inventory based on a prioritization of the information gathered during the initial screening reports and the methodology set out below.

To ensure this second round of surveys meets the University's end objective and needs, the Asbestos Programs Officer responsible for each of the University's primary campuses shall commission or otherwise complete a comprehensive asbestos inventory based on the following minimum requirements:

1. The survey shall be conducted in accordance with current regulations and guidelines;
2. The survey and subsequent report shall be performed on a room-by-room basis and shall include estimated quantities ( $\pm 15\%$ ) and must also include comments concerning the current condition of such materials based on their accessibility;
3. The information gathered over the course of the survey and subsequent report shall be entered onto an electronic database compatible with the University's end use and web browser.
4. The survey shall check for and include an evaluation of all suspect or confirmed asbestos building materials (both friable and non-friable) described under Section 1.3 of the AMP document; and
5. All materials found to contain 0.1% or greater asbestos shall be included in the investigation and shall be identified in the report as asbestos.



## **5.2 Bulk Sample Collection & Analysis**

To establish the presence of asbestos in any suspect building materials it is necessary to submit for analysis a limited number of bulk samples for asbestos analysis.

Sampling of such materials shall be conducted in accordance with the procedures set forth under Appendix F and must only be performed by properly trained individuals.

## **5.3 Assessment of Materials during the Survey**

The evaluation of all asbestos or suspect asbestos-containing materials shall be performed in accordance with those requirements as set forth under Appendix A.

Recommendations concerning any remedial actions deemed necessary shall be formulated in accordance with the protocol as set forth under Appendix B.

## **5.4 Documentation and Notification of Results**

Once the field survey and analysis are completed, the results (whether positive or negative) must be reported, and in a fashion readily accessible to building maintenance or custodial staff, supervisors or outside contractors. To obtain this objective, the report shall contain the following information:

- ❑ A listing (c/w photos) of all materials found to contain or be contaminated with asbestos.
- ❑ A listing (c/w photos) of all suspect asbestos-containing materials.
- ❑ Room-by-room data sheets detailing the estimated quantity, access and current condition of all suspect or confirmed asbestos-containing materials and on a system-by-system basis.
- ❑ Copy of all bulk sample analysis or test data.
- ❑ A photo index of all materials sampled.
- ❑ A drawing or schedule providing the approximate location of all bulk samples collected.
- ❑ A drawing showing the approximate location of all asbestos-containing sprayed fireproofing, thermal insulation or texture coats, ceiling tiles or flooring products.
- ❑ An adequate description (i.e. by room number) as to the location of all asbestos-containing mechanical insulation and any other non-friable materials detected.
- ❑ A summary of materials requiring remedial action (i.e. repair, removal, clean-up, etc.) including estimated quantities and location.
- ❑ A listing of all materials tested that do not contain asbestos so as to avoid future re-testing.

Once completed, a copy of the final report shall be maintained on file and must also be forwarded to those individual or departments listed under Section 3.2.13 above.

## **5.5 Visual Re-evaluation & Assessment**

To ensure regulatory compliance, the Asbestos Programs Office(s) assigned to each of the University's primary campuses shall commission and/or otherwise complete a regular review and evaluation of all remaining asbestos-containing materials once every second year or more frequently as circumstances warrant.

Wherever practical, the re-evaluation shall be performed by the same individual or firm who completed the initial survey to maintain as uniform an evaluation as possible.

In most instances, the re-evaluation process will not require the collection of additional bulks. It must however, take into consideration all of the factors originally considered during the initial survey and shall concentrate on any signs of deterioration, delimitation or disturbance.

## **5.6 Air Monitoring**

### **5.6.1 General Discussion of Air Sampling for Asbestos by TEM vs. PCM Analysis**

In order to interpret the benefits or the results of any air monitoring performed by either Transmission Electron Microscopy (TEM) or Phase Contrast Microscopy (PCM), it is first necessary to discuss the general meaning and use of air sampling. Given the absence of any published guidelines or standards specific to TEM sampling by either Health and Welfare Canada or any other Canadian provinces, the following discussion makes reference to various Ontario and United States guidelines and standards. In addition, some published research information is used for comparison.

For control of airborne asbestos fibre concentrations in workplaces where asbestos is in use, Manitoba Labour currently applies a time-weighted average exposure limit of 0.1 fibre/mL (fibres longer than 5 µm) for all asbestos types. The specified measurement technique made use of in the enforcement of this standard is phase contrast microscopy (PCM). In this technique, all particles are reported which are visible in phase contrast illumination at a magnification of 450, are longer than 5 µm, are less than 3 µm in width, and which have a length to width (aspect) ratio equal to or greater than 3 to 1. There is no provision for identification of specific mineral particles using this test method. All fibres, whether asbestos, cellulose, fibreglass, etc., are included in the results. Under the conditions of this examination, the instrumental resolution is inadequate to allow detection of fibres having widths less than about 0.25 µm; particles longer than 5 µm will be included only if their diameters are greater than this width. The detection limit varies with the sampling volume. However, the practical lower limit of quantitation is 0.01-0.03 fibres per millilitre (f/mL), due to the common presence of other fibrous dusts at these levels.

Given the above limitations, this measurement technique is generally applied only where most airborne fibres are likely to be asbestos, such as in the asbestos industry or inside or immediately adjacent to asbestos abatement operations.

In Manitoba, all existing legislation and environmental guidelines concerning permissible airborne asbestos fibre concentrations are expressed in terms of those fibres having lengths exceeding 5 µm. There is a general, although not universal, agreement that shorter fibres pose a lower hazard to health than long fibres. As stated by the Ontario Royal Commission on Asbestos<sup>1</sup> (Page 8 Chapter 1, Section B; Health Effects of Asbestos):

- “3. The asbestos fibres which are most likely to cause adverse health effects when inhaled are long and thin. “Length” and “diameter” are, of course, relative phenomena: fibres are measured in microns, one micron being one-millionth of a metre. The hazardous asbestos fibres are those which would be longer than 5, perhaps longer than 8 microns, and thinner than 1.5 or perhaps 0.25 microns.”

In the general environment, when airborne asbestos fibres are present, they are usually too small in diameter to be detected by phase contrast microscopy. In addition, in areas where asbestos is not the principal source of airborne dust, the concentration of airborne asbestos fibres is not necessarily correlated with the total fibre concentration. Particles or aggregates of particles can appear to be fibres when viewed under the conditions of the PCM examination. Conversely, features which appear in PCM to be non-fibrous particles, may actually be closely associated groups of fibres. In these circumstances it is not possible to predict the airborne asbestos level from the result of a measurement made by PCM.

For measurements of asbestos fibre concentrations in the outside atmosphere, to which the general public may be exposed continuously, the Ontario Ministry of the Environment (MOE) suggested a “guideline” of 0.04 fibre/mL (fibres longer than 5 µm) as measured by TEM in the 1980’s. Therefore, only asbestos fibres are reported. In addition, the instrumental resolution is adequate to allow detection of even the very fine asbestos fibres. The origin or justification of this level has not been published for peer review. Although this guideline has never been withdrawn, more recent testing indicates that it is significantly higher than actually measured in ambient (outdoor) air.

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<sup>1</sup> Report of the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario, Queens Printer for Ontario, Toronto 1984.

Guidelines specific to asbestos air quality in general occupancy buildings have not yet been established. There have however, been several studies where TEM air monitoring was performed in buildings known to contain asbestos. The most thorough of these was published in 1991 by the Health Effects Institute<sup>2</sup>. Based on the results of monitoring of 198 buildings containing ACM, their report stated that the concentration of airborne asbestos fibres (longer than 5 µm) ranged from 0.00004 to 0.00243 f/mL with a mean concentration of 0.00027 f/mL and a 95% percentile of 0.0014 f/mL. Based on this, it is clear that the existence of airborne fibres longer than 5 µm, even in a building with ACM, is relatively uncommon. It should be noted however, that low levels of short (<5 µm) chrysotile fibres are commonly found in both ambient air and in buildings with and without ACM. Although no study has provided an average for short fibres (as was provided by the HEI for fibres >5µm) it is quite common to detect up to 3 fibres of chrysotile asbestos in the TEM counting area of a typical air sample (with a volume collected in the order of 2000-2400 litres). Amosite or crocidolite asbestos are not normally detected in ambient (outdoor) or building air.

In October 1987, the U.S. Environmental Protection Agency published Asbestos-Containing Materials in Schools; Final Rule and Notice. This rule is a result of the Asbestos Hazard Emergency Response Act (AHERA). Included in this rule is the requirement for post asbestos-removal (clearance) air monitoring using aggressive air sampling, and analysis of the air samples by TEM for the presence of asbestos. Asbestos is identified using morphology, SAED and EDXA, and asbestos, which is longer than 0.5 µm and has an aspect ratio of 5:1 or greater is included in the results. If the average airborne asbestos concentration based on 5 samples inside the work area is higher than the equivalent of 0.02 f/mL, the inside airborne asbestos level must be shown to be less than the outside value. If the indoor air is shown to have a higher fibre concentration than the outside, the area is considered unacceptable for re-occupancy. Since asbestos fibres of all lengths are included, the airborne asbestos concentration of 0.02 f/mL is considerably more stringent than that suggested in Ontario by the MOE. It must be stressed that the AHERA method has been designed only for the clearance of asbestos removal sites where the presence of airborne asbestos is an indication of the lack of acceptable cleaning.

Based on all of the above studies and guidelines, it is reasonable to conclude that the asbestos content of air in a building should be considered to be elevated only when:

- ❑ The average concentration of fibres >5µm exceeds 0.0014 f/mL (the 95th percentile of the HEI reported result); or
- ❑ More than 3 fibres (all lengths) are detected in the 10 fields analysed of a TEM sample (2000-2400 L); or
- ❑ Asbestos fibres other than chrysotile are detected in the sample.

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<sup>2</sup> Asbestos in Public and Commercial Buildings: A Literature Review and Synthesis of Current Knowledge, Health Effects Institute-Asbestos Research, Cambridge, MA, 1991.

As a general rule, the above criteria shall be used to assist in the evaluation of any future air samples collected at the University. It should be noted however, that even if concentrations exceed the above criteria, they do not automatically imply an actual health risk to occupants – merely an elevated level of airborne asbestos at the time of sampling.

### **5.6.2 Air Sampling for the Assessment of Known Asbestos-containing Materials (ACM)**

The technique of air monitoring is sometimes suggested to determine whether or not a particular area poses a potential health problem. At the present time, no authority recommends air sampling for hazard identification in the absence of any known disturbance (ie. maintenance, renovation or construction activities, etc.). Instead, such authorities recommend that all asbestos-containing materials be evaluated based on a number of factors including their current state of friability and overall accessibility. Based on this understanding, air sampling, in the absence of any known disturbance, should not routinely be used to assess the potential health risk or need to take remedial action in a building known to contain asbestos.

Notwithstanding the above, should circumstances arise whereby the attending Asbestos Programs Officer feels it may be beneficial to conduct such a program of monitoring, while in the absence of any reported disturbances, it is important to ensure adherence to an approved TEM test method. In addition, such a program of monitoring must only be undertaken with the informed consent of the University's Senior Asbestos Programs Officer.

In contrast with the above, air monitoring using an approved NIOSH Phase Contrast test method (PCM) shall form an integral part of the University's effort to control asbestos exposure during known asbestos disturbances, that may occur as part of routine maintenance, renovations or demolition activities, etc.. During such activities, the attending APO and/or the assigned project coordinator, or manager, shall arrange to monitor worker exposure both within and adjacent to each asbestos work site. Such a program of monitoring is required to demonstrate regulatory compliance and to obtain post-abatement clearances following the completion of the work.

Refer to Appendix F for additional information and instruction.

## **5.7 Dust Sampling**

As with air sampling, the collection of random dust samples is sometimes suggested as a way of establishing whether or not a particular area represents a health hazard; as a means of measuring the cumulative affect of any past asbestos disturbances; and as a way of measuring the potential for occupant exposures in the context of the building's day-to-day use or occupancy. The following paragraphs offer a discussion surrounding the possible limitations of random dust sampling as performed both in the absence or presence of known asbestos disturbances.

To start off the discussion one must first be aware of the fact that there is unfortunately, no published standards or guidelines that offer insight into what, if any, amount of asbestos may be present in settled dust, as measured in occupied areas. Nor is there good literature to establish when such concentrations would constitute a significant health risk or be considered elevated as compared to normal background levels as measured in buildings which are known to contain or be free of any asbestos-containing building materials.

To further complicate the issue, it is widely acknowledged that the collection of random dust samples is not the best way of assessing an area's potential health risk or extent of contamination. For example, unless an excessive number of dust samples are collected and analysed, the results may be misleading. In addition, large concentrations of very thin (<0.25 µm) asbestos fibres may be missed entirely if the samples are not analysed using an approved TEM test method.

With the above limitations in mind, the collection of random dust samples from surfaces concentrated throughout any occupied areas will have limited benefit and must only be undertaken with the informed consent of the University's Senior Asbestos Programs Officer. Nor shall it be common practice to collect dust samples in response to a clear failure to observe prescribed precautions; in the presence of any fallen or dislodged asbestos debris; or as a result of a visible breach in a containment system. Instead, access to such areas shall be restricted to authorized personnel until such time as the attending APO has had the opportunity to fully assess the area and the required clean-up has been completed.

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**END OF SECTION**

## **6. CLASSIFICATION OF WORK**

### **6.1 Procedures in the Event of a Suspect Asbestos Spill**

It is possible that University personnel may encounter a spill of asbestos or suspect asbestos material (debris) from time-to-time. In such cases, it is important that the exposure to the worker(s) and all other building occupants be minimized by isolating the material (debris) in question until it can be determined if it contains asbestos and the appropriate clean-up is completed.

Should such an incident arise, refer to Appendix O for additional information and procedures.

### **6.2 Procedures For Emergency Work**

The need to conduct asbestos removal on an emergency basis may arise from time-to-time. Examples of such unscheduled emergency work include:

- ❑ The clean-up of fallen or damaged asbestos-containing ceiling tiles as a result of a broken sprinkler line, etc..
- ❑ The emergency repair of any mechanical service lines (piping) or vessels currently insulated with asbestos.
- ❑ Entry into a ceiling space (air plenum) to complete emergency repairs in any building which contain sprayed asbestos.

In such instances, it is not always possible to strictly adhere to Type 2 precautions given the urgency of the situation. In such cases, the attending worker or the Asbestos Program Officer (if available) will have to exercise prudent judgement.

Should such an episode arise, the procedures outlined in Appendix P shall be adhered to. Principle consideration shall also be given to the protection of worker(s) performing the work while implementing additional precautions (i.e. additional wetting of the material prior to disturbance) so as to minimize the generation of airborne fibres.

Such emergency procedures would also prove to be acceptable in the event of a breach in containment during any Type 2, Type 3 or Glove Bag removal work.

In order to facilitate as speedy response as possible to any such emergency, the Senior Physical Plant Manager at each of the University's primary campuses shall ensure the materials and supplies as itemized under Appendix V are maintained on-hand ready for use.

### **6.3 Scheduled Asbestos Work**

Excluding work undertaken on an emergency basis or in response to a spill of asbestos or suspect asbestos materials, all asbestos-related work must only be completed at scheduled times as approved by the individual manager and/or project coordinator assigned to the work.

Before such work can proceed, the worker, supervisor or contractor in charge of the work must first obtain a signed and duly authorized “Asbestos Work Requisition/Permit” from the Asbestos Program Officer.

The Asbestos Program Officer, upon receipt of such a request, shall review the work at hand and classify it into one of the following categories:

- ❑ ***Type 1 or Low Risk Work:*** Activities that represent a low risk of exposure to airborne asbestos fibres and almost no health risk.
- ❑ ***Type 2 or Moderate Risk Work:*** Activities that represent a moderate risk of exposure to airborne asbestos fibres and some health risk.
- ❑ ***Type 3 or High Risk Work:*** Activities that present a high risk of exposure to airborne asbestos and a corresponding higher risk of health effects if handled improperly.

In evaluating the hazard a particular task or scope of work may represent, consideration must be given to the following two (2) overriding factors; (a) the extent at which airborne asbestos dust will be generated; and (b) the duration in which it will take to complete the work. Factors that affect the level of airborne asbestos dust include the nature of the asbestos material, how the work is to be performed and the availability of controls to limit exposure.

Consideration must also be given to the material’s friability. For example, non-friable materials when dry, can not easily be crumbled, pulverized or powdered by hand or moderate pressure and hence represent a lower risk of fibre release when disturbed. In contrast, friable asbestos materials readily release airborne fibres when disturbed and require a heightened level of precautions.

Once the work has been evaluated by the Asbestos Program Officer and the required work permit issued, workers may proceed with the work while adhering to the procedures and precautions assigned to the work.

For a more comprehensive listing of the work permissible under each of the above noted categories, and the required work procedures and precautions, refer to Section 8.0 below.

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**END OF SECTION**



## **7. WORK PRACTICES & PROCEDURES**

The following sections and corresponding appendices describe the minimum acceptable asbestos work practices for work undertaken at any University of Manitoba owned or occupied premises and are formulated to meet or exceed current regulatory requirements.

All work shall be performed in accordance with regulations in effect at the time the work is performed. In any case of conflict between the procedures specified herein and those set down by regulatory authorities, the more stringent requirement shall prevail.

### **7.1 General Procedures For Type 1, Type 2 & Glove Bag Work**

Many of the requirements and work practices set down for Type 1, Type 2 or even the removal of mechanical pipe insulation by Glove Bag Method are similar in nature. For ease of reference, such procedures have been summarized collectively under Appendix K and shall apply equally to all classifications of work.

### **7.2 Procedures For Type 1 or Low Risk Work**

The following is a list of activities that can normally be performed while adhering to Type 1 asbestos precautions as detailed in Appendix L.

- ❑ Handling, installation or removal of non-friable manufactured products known to contain asbestos provided no sanding, cutting or similar destructive operations are required. Such manufactured products include such items as vinyl composite floor tiles, gaskets, seals, asbestos-cement panels, siding and piping.
- ❑ Working in close proximity to friable asbestos-containing materials (excluding jacketed mechanical insulation rated as being in good condition) provided that such materials are not actively being disturbed.
- ❑ Using a mechanical or electrical power tool, fitted with a HEPA filtered dust collection shroud to cut, shape, drill or grind manufactured products containing asbestos.
- ❑ Using hand tools to cut, shape, drill, grind or remove manufactured products known to containing asbestos.
- ❑ Wearing or using protective equipment or clothing made of asbestos-containing textiles.
- ❑ Removing drywall where asbestos joint filling compounds have been used and left exposed.

### **7.3 Procedures For Type 2 or Moderate Risk Work**

The following is a list of activities that can normally be performed while adhering to Type 2 asbestos precautions as set down in Appendix M.

- ❑ Entry into any ceiling space above which friable asbestos-containing sprayed fireproofing or thermal insulation is known to be present.
- ❑ Entry into a crawlspace, mechanical chase, service area, etc. in which there is known to be loose and damaged asbestos-containing materials or debris.
- ❑ The clean-up, removal or encapsulation of minor amounts of friable asbestos-containing materials. Limitations as to the amount of material allowed to be removed or otherwise disturbed while adhering to Type 2 precautions shall be at the sole discretion of the Asbestos Program Officer or Designated Inspection Agency.
- ❑ Removal of asbestos-containing sheet flooring.
- ❑ Repair of asbestos-containing mechanical insulation materials.
- ❑ Removal of greater than ten (10) asbestos-containing ceiling tiles. The removal of less than ten (10) ceiling tiles can be classified as a Type 1 operation provided the approval of the Asbestos Program Officer or Designated Inspection Agency is obtained prior to the commencement of such work.

### **7.4 Procedures For Type 3 or High Risk Work**

As a matter of corporate policy, no employee of the University shall be assigned to or undertake any Type 3 (or high risk) work. Instead, such work will only be performed through an outside contractor who specializes in such work and has a well-established reputation for quality workmanship in the field of asbestos control and remediation.

As Type 3 work represents a higher risk or potential for exposure to both the workers performing the removal as well as to all other building occupants, special consideration and planning must be given to such projects.

To achieve this goal, an outside Asbestos Consulting firm shall be engaged (either directly or as a sub-consultant to the Prime Consultant or Architect) to assist in the preparation of a site specific specification to effect the safe and proper removal of all ACM subject to disturbance. Wherever practical, these projects shall be designed to avoid the need for any University employees to enter the enclosure during the abatement process.

## **7.5 Procedures For Glove Bag Work**

As an alternative to completing the removal of pipewrap insulation from within a sealed Type 2 or Type 3 enclosure, workers may consider (where approved by the Asbestos Program Officer) completing such work by “Glove Bag Method” while adhering to the precautions set forth under Appendix N.

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**END OF SECTION**

## **8. INSPECTION & AIR MONITORING**

To ensure the highest standard of care and workmanship is maintained at all times, the Asbestos Program Officer shall conduct and/or otherwise allocate to an outside asbestos-consulting firm (i.e. Designated Inspection Agency) the task of providing regular site inspections and air monitoring services during all scheduled asbestos disturbances.

**Site inspections and air monitoring shall be conducted for all internal and external Type 2 and Type 3 asbestos work. Type 1 asbestos work may require air monitoring, based upon circumstances and the recommendations of an Asbestos Program Officer.**

The following sub-sections outline minimum standards for the completion of such site inspection and air monitoring services at any University of Manitoba owned or occupied premises to obtain compliance with existing regulation and current corporate policy.

### **8.1 Requirements For Project Inspection**

The Asbestos Program Officer, or appointed representative (i.e. Designated Inspection Agency), shall review each active asbestos work site a minimum of once per day as a means of ensuring worker compliance with the procedures and work practices established by the AMP document. This applies to work conducted by external contractors and internally by University staff.

In addition, the Asbestos Program Officer, or appointed representative (i.e. Designated Inspection Agency), shall re-visit each work site at the following times to provide the necessary approval before allowing the work to proceed:

- ❑ Following the completion of clean site preparations and set-up but prior to the commencement of any asbestos disturbance.
- ❑ Following the completion of all required work (i.e. clean-up, removal or repair) but prior to the dismantlement of any perimeter seals or barricades and the re-commissioning of the area.

As a means of documenting the safe and proper completion of the work, any difficulties encountered or the issuance of any site instructions, etc., a site inspection report shall be filed and maintained on record for each inspection performed. Such a report shall include any comments or observations made on the following items:

1. Air Monitoring
2. Site Isolation
3. Facilities & Equipment
4. Negative Air
5. Worker Protection
6. Dust Suppression
7. Waste Handling
8. Clean-up
9. Other

Copies of the above site inspection reports shall be passed onto and maintained on file by each of those individuals and/or departmental supervisors listed under Section 3.3.3 above.

## **8.2 Requirements For Air Monitoring**

Traditionally, air monitoring of active asbestos abatement projects has always been done while observing one of the following test methods:

- ❑ Phase Contrast Microscopy (PCM)
- ❑ Fibrous Aerosol Monitor (FAM)
- ❑ Transmission Electron Microscopy (TEM)

As a general rule, all monitoring of asbestos disturbances at any University of Manitoba owned or occupied premises shall be performed using the PCM test method while adhering to the requirements set out below and to those established under Appendix F.

Existing regulation states that an employer must measure for airborne asbestos in all workplaces where a risk of exposure to asbestos dust may exist. Such regulations and guidelines further state that such a program of air monitoring shall be undertaken in such a pattern and frequency as to:

1. Ensure the health of all workers (both inside and adjoining any asbestos work area) is effectively protected.
2. To aid in the proper selection and use of respiratory equipment appropriate to the work at hand.
3. To ensure levels of airborne dust as measured immediately outside or surrounding any asbestos work site does not exceed established Action Limits (i.e. 0.05 fib/mL).
4. Verify that any preventative actions or measures (i.e. work procedures) previously implemented or observed remain effective.
5. Establish worker exposure profiles for various work functions or tasks, and that such exposure levels remain consistent or are shown to be on the decline.
6. Ensure individual work exposures are maintained “as close to zero” as is reasonable practicable. Manitoba Labour, Workplace Safety & Health Branch has defined “as close to zero” as being 0.1 fib/mL of air as measured by PCM analysis.
7. Ensure any change in site conditions or in prescribed work procedures do not lead to an increase in individual worker exposures.
8. Ensure compliance with post-abatement clearances established by Manitoba Labour, & Immigration, Workplace Safety & Health Division and as listed under Appendix F.

To effect compliance with the above objectives, air sampling shall be performed on a daily basis both within and immediately adjacent to each active asbestos work area. Results obtained from all test monitoring shall be maintained on a permanent basis and must be provided to individual workers (past and present) upon request.

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**END OF SECTION**

## **9. WORKER TRAINING**

### **9.1 Training Requirements & Outline**

Existing regulations require that the employer provide training to all workers whose jobs require them to work on or near asbestos-containing materials or may have the occasion to respond to a spill or damage of asbestos.

To satisfy this requirement, the individual Dean, Director, Department Head or Manager in charge at each of the University's primary campuses, shall in cooperation with the Senior Asbestos Programs Officer, provide or arrange for awareness and procedural training for all staff who may have occasion to work with or be exposed to asbestos. In addition, comprehensive training must also be provided to any supervisory staff responsible for overseeing or co-ordinating such work.

In each case, the training shall be individually tailored to address the specific needs of each group being trained and shall be based on site conditions as they exist at the University of Manitoba.

The following is a sample curriculum designed to meet the requirements set forth by governing authorities for workers involved in Type 1, Type 2 or Glove Bag remedial work. In most instances, the duration of the above training programs shall extend to a full day's instruction.

1. Introduction & Use of Asbestos in the Workplace
2. Health Effects Associated with Asbestos Work
3. Regulatory Requirements
4. Introduction to the Asbestos Management Program (AMP)
5. Work Practices & Procedures
  - Type 1, Type 2 & Glove Bag Work
  - Emergency Procedures in the Event of a Suspect Asbestos Spill
  - Procedures for Emergency Work
6. Slides of Typical Type 1, Type 2 & Glove Bag Work
7. Respirator Use and Fit-testing
8. Use of Other Protective Gear & Equipment
9. Hands-on Training (Type 1, 2 & Glove Bag Work)

For those individual workers or supervisory staff who will not be working directly with asbestos, but require awareness training alone, attendance during the morning section is usually sufficient.



## **9.2 Documentation of Training and Refresher Courses**

Following attendance at the above training course, each individual employee will sign a “Worker Training Certificate & Acknowledgement” as provided in Appendix H. These certificates will be maintained on record by the Asbestos Program Officer and shall be used to record the date and level of training each individual worker received.

On an annual basis or more frequently as the need may arise, the Asbestos Program Officer in consultation with management at each of the University’s major campuses, shall assess the need to hold refresher training courses for any recently employed workers or staff who are engaged in active asbestos work on a more regular basis.

## **9.3 Equipment Requirements**

Refer to Appendix V for a list of typical equipment required for training purposes and/or any in-house asbestos remedial work.

## **9.4 Work Performed by Outside Contractors**

Whenever the services of an outside contractor is to be engaged to perform work that will or is likely to create an asbestos disturbance, the individual manager or project coordinator assigned to the work shall first obtain confirmation that the Contractor’s workforce has received the appropriate asbestos training. This can be done by obtaining a signed copy of the “Contractor’s Notification & Acknowledgement” form contained in Appendix I.

Only those Contractors that met or exceed the requirements set out in Appendix J shall be considered for work that will or may result in the disturbance of known or suspect asbestos-containing materials at any University of Manitoba owned, leased or otherwise occupied building, structure or property.

**10. PROJECT NOTIFICATION**

The Project coordinator or manager shall be responsible to ensure that the following parties are notified in advance of any scheduled asbestos disturbance.

- a) The APO assigned to the building in which the work is being performed.
- b) The Dean, Director, Department Head or Manager responsible for the building or work area in which the work is being performed.
- c) The specific office(s) or work area(s) directly impacted by the work.
- d) The Designated Inspection Agency responsible for the provision of site inspection and air monitoring services performed in association with all work undertaken externally by forces other than the University's own maintenance staff.
- e) The general public, students, and/or any other individuals or staff who may have cause to frequent the specific building, office or work area directly impacted by the work.

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**END OF SECTION**