

GUIDE

Guide for Asbestos Management



**SAFE
WORK**
MANITOBA™

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INTRODUCTION

What is asbestos?

Asbestos is a naturally occurring fibrous mineral once used widely in the construction industry. Its strength, flexibility, ability to withstand high temperatures and resist chemical degradation made it useful in hundreds of applications. Common asbestos found in materials include chrysotile (serpentine form), amosite, tremolite, actinolite (amphibole form) and less commonly found are crocidolite and anthophyllite (amphibole form). Asbestos is recognized as being carcinogenic to humans by the American Conference of Governmental Industrial Hygienists (ACGIH) and the IARC (International Agency on Research Council).

Where is asbestos found?

Asbestos and asbestos containing materials (ACMs) are commonly found in building materials used and installed in homes, workplaces, buildings and infrastructure between approximately 1930 and 1990. Asbestos and ACMs were largely used in interior finishes (walls, ceilings, floors), exterior finishes (roofing, stucco, siding) and mechanical heating and air handling systems, among other materials.

Any construction or renovation carried out between 1930 and 1990 is suspected to contain asbestos in some of the building materials or components. **These suspect materials must be handled as though they contain asbestos until it is shown through laboratory analysis that they are asbestos-free.**

Why is asbestos hazardous?

Exposure to asbestos fibres through inhalation can lead to chronic disease for some individuals. Some of these chronic diseases include mesothelioma (cancer of the lining of the abdominal or chest cavity), lung cancer and asbestosis (scarring of the lungs, making breathing difficult). An asbestos-related illness will often go undetected for about 15 to 20 years after an initial exposure. Some factors increasing the risk of disease development include the concentration of asbestos fibres in the inhaled air and the frequency and duration of a person's exposure. Smoking will also greatly increase the risk of developing an asbestos-related illness.

Asbestos fibres can become airborne (released into the air) as a result of poor asbestos maintenance practices, disturbance of asbestos or ACMs during renovations, repairs, and/or inadequate containment procedures during removal or work processes.

Who should read this?

This guideline provides general information and minimum requirements to building owners, employers, maintenance and custodial staff consultants, all contractors (including abatement contractors), workers, building occupants and others concerned with the presence of ACMs in workplaces, workplace locations, buildings and infrastructures.



Objectives

The objective of this guideline is to provide information:

- a) to prevent the release of airborne asbestos fibres, worker exposure and the known chronic health effects of asbestos
- b) for the minimum practices required to prevent the release of asbestos fibres for maintenance, repair and renovation activities where ACMs are present
- c) for working with and abating ACMs.

Application

For ease of reading, from now on, throughout this document “asbestos and ACMs” will be referred to as “ACMs.”

This guideline applies to all workplaces, workplace locations, buildings and structures:

- a) where ACMs are suspected to be present
- b) where ACMs are determined to be present
- c) where ACMs may be used, stored, handled, removed or otherwise disturbed
- d) where airborne asbestos fibres are produced, or
- e) where asbestos waste is produced, stored or disposed of, and may include:
 - custodial and service activities in buildings containing asbestos
 - maintenance, repair and renovation projects (e.g., ductwork/HVAC, pipe wrap, friable sprayed asbestos material, etc)
 - maintenance, repair or removal (abatement) of ACMs
 - demolition of a building or structure with ACMs
 - waste disposal facility practices
 - manufacture of materials or products containing ACMs
 - use or application of ACMs.



REGULATORY INFORMATION

All employers, owners and persons acting on behalf of owners (i.e., contractors, property managers, consultants) and workers have legal responsibilities under the *Manitoba Workplace Safety and Health Act and Regulation*.

General duties

Employers must inform prime contractors and subcontractors of safety and health hazards at the workplace. The employer must ensure that, as much as is practicable, all workers at the workplace, including those not under the employer's direct control, perform their work according to requirements of the *Manitoba Workplace Safety and Health Act and Regulation*. Contractors and subcontractors can also be considered employers. They are also responsible to inform their workers of hazards and to ensure they perform their work according to the *Manitoba Workplace Safety and Health Act and Regulation*.

Owners and persons acting on behalf of the owners must ensure that the land or premises used at a workplace that is under their control is provided and maintained in a manner that does not create a risk to the safety and health of any person. They must communicate the required information regarding potential hazards at the site.

Workers have responsibilities under the *Manitoba Workplace Safety and Health Act and Regulation*. They must follow the safe work procedures they have been trained to use, report unsafe work and inform management of any changes in work processes that may result in exposure to asbestos fibre.

Workplace Safety and Health regulatory requirements related to work with asbestos

The *Manitoba Workplace Safety and Health Act and Regulation* Parts 6, 33, 35, 36 & 37 contain provisions requiring owners, employers and contractors to take specific actions when a potential health risk of asbestos exposure is present in the workplace.

In reference to these parts of the regulation, this guideline outlines the minimum actions required when:

- asbestos is suspected to be present (in sites built or renovated between 1930 and 1990) and there is a requirement to prepare an asbestos inventory - Parts 37.2(1) and (2)
- asbestos is confirmed by laboratory analysis or assumed to be present and the following are required:
 - a written control plan – Part 37.5
 - general duties – Part 37.6(1) and 37.8(1)
 - labelling – Parts 37.4, 35.1(4), 35.10(1)
 - instruction and training – Part 37.6(2)
 - periodic inspection – Part 37.2(1)(c)
 - procedures for working with or abating ACMs; large repairs, removal, handling and decontamination – Part 37.7
 - notification to WSH for work involving the potential release of asbestos fibres; the notification form is accessible on the WSH website: www.manitoba.ca/labour/safety; if Internet access is not available, notification can be made by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba) – Part 37.8(2)
 - removal of ACMs prior to any demolition – Part 33.4(1)
 - personal protection – respirators and clothing – Parts 6.15 and 6.9
 - asbestos exposure air sampling – Part 36
 - waste disposal – Part 35.1(4)
 - medical surveillance for asbestos workers working with asbestos – Part 37.6(2) and the *Fibrogenic Dust Exposure Guideline*.

ASBESTOS MANAGEMENT

Asbestos management is required at all sites (workplaces, workplace locations, buildings or structures) where ACMs are present, or suspected to be present including:

- sites where ACMs are to remain in place and the ACM must be maintained in good condition to prevent a fibre release; this will be accomplished with an asbestos inventory and carefully developed **asbestos control plan**.
- sites where workers are caused to work with ACMs (after an accidental fibre release, when performing a large repair, demolishing a structure or removing ACMs); this will be accomplished by following the **procedures for working with asbestos**.

Effective asbestos management requires commitment from all levels of management.

Building owners and employers are responsible to determine if ACMs are present, or suspected to be present, at sites where work is to be carried out.

Contractors engaged to conduct work activities at sites where ACMs are suspected are responsible to assume that a site contains ACMs in the absence of any information.

Owners, employers and contractors are responsible to communicate findings respecting ACMs to anyone who could be affected by work activities at their site.

Key components to effective asbestos management include:

- the preparation of an asbestos inventory
- the development of an asbestos control plan
- the development of procedures for working with asbestos
- worker training.

In all asbestos management practices, for sites where ACMs are to remain in place and be maintained, or for projects involving working with asbestos (large release, large repair, demolition or removal), **the first step is to properly identify the presence, or suspected presence, of ACMs at the site by conducting an asbestos inventory.**



1. ASBESTOS INVENTORY

An asbestos inventory must be prepared for all workplaces, workplace locations and structures where ACMs are **known to be, and/or suspected to be, present**. Asbestos inventories are required **prior to any work** being carried out at a site.

Part 37 of the *Workplace Safety and Health Regulation*, section 37.1 (2), states that any material suspected of containing asbestos is considered to contain asbestos until it is proven to be asbestos-free.

Manufacturers of ACMs should make available any information they have that could result from the foreseeable use and misuse of their product.

The asbestos inventory must identify all materials in the building that may contain:

- more than 0.1 per cent of friable (can be crumbled with hand pressure) asbestos
- more than 1 per cent of non-friable (cannot be crumbled with hand pressure)
- vermiculite containing any asbestos fibres.

And for each different ACM identified, the inventory must also report the:

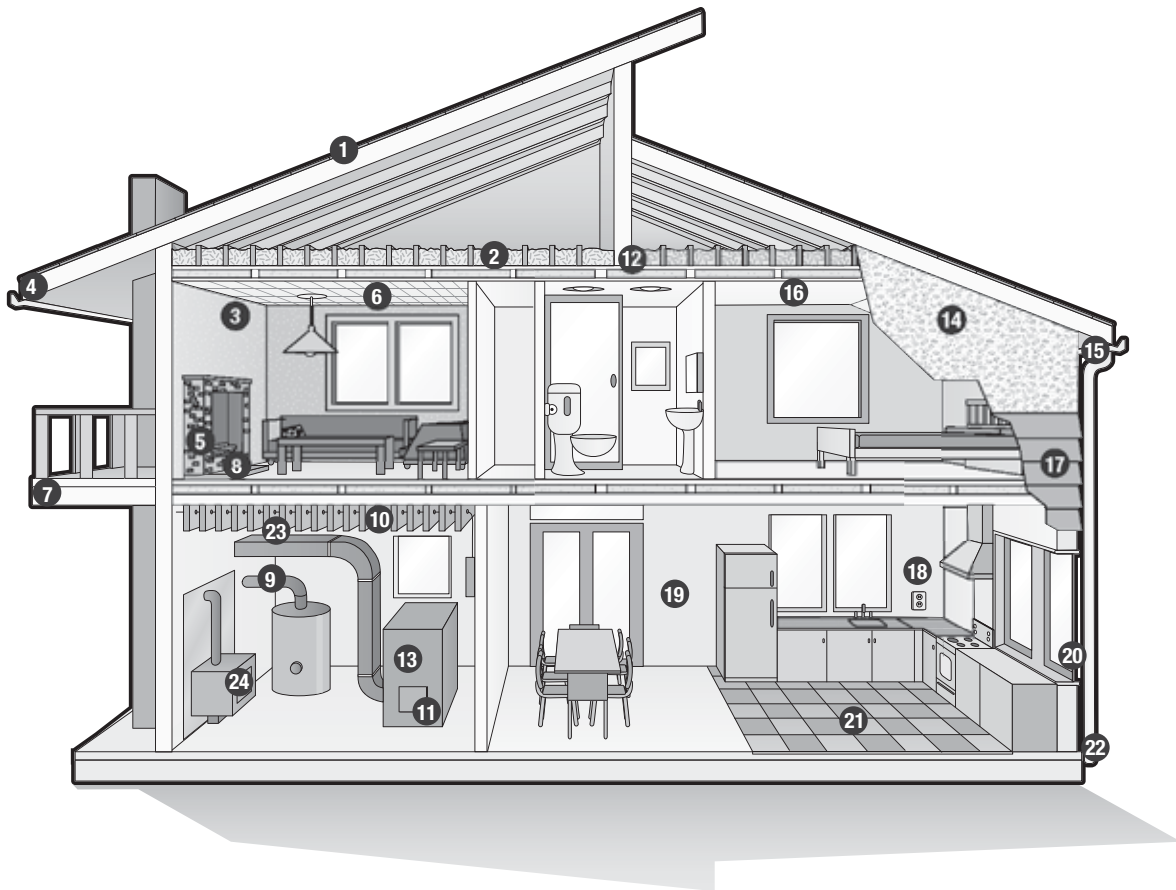
- location
- amount of ACMs (e.g., area, linear length)
- type (e.g., insulation, surfacing materials, floor tiles)
- percentage of asbestos present unless it is assumed to be asbestos (i.e., no laboratory sampling carried out)
- friability
- condition (good, fair, poor, debris present, contained, encapsulated, etc.)
- accessibility (can the workers reach it or make contact with it?).

Suspected ACMs

From 1930 to 1990, ACMs were widely used and installed during construction and/or renovations in residential, commercial and industrial applications. Therefore, these structures are suspected to contain ACMs. **All sites suspected of containing ACMs require an asbestos inventory.**

The site's history, date of construction and periodic renovations, and professionals competent in the practice of recognizing suspect ACMs, can assist responsible parties (owners, employers and contractors) to determine if ACMs are, or are suspected to be, present at their sites, visible or hidden, in the preparation of an asbestos inventory.

Wherever building materials are suspected to contain asbestos or ACMs they must be managed and handled as if they do contain ACMs until analytical laboratory testing confirms they are asbestos-free.



- | | | | |
|--|--|---|--|
| 1 Roof felt and shingles | 9 Pipe insulation | 15 Soffit boards can be made of asbestos cement or asbestos insulating board | 20 Window putty |
| 2 Loose, blown-in insulation, such as vermiculite | 10 Main panel and fuse box; each fuse wire has an individual asbestos flash guard | 16 Textured or stipple-coated walls and ceilings | 21 Flooring: vinyl tiles and linoleum sheet flooring; flooring adhesive |
| 3 Incandescent light fixture backing | 11 Door and gasket covers | 17 Asbestos cement (transite) board siding and undersheeting | 22 Downpipes can be made of asbestos cement |
| 4 Roof gutters can be made of asbestos cement | 12 Backing behind recessed lighting | 18 Outlets and switches | 23 Insulation on electrical wires |
| 5 Artificial fireplace logs and ashes | 13 Boiler and furnace insulation | 19 Gypsum board filling compound, and patching and joint compound for walls and ceilings | 24 Heat reflector for wood stove |
| 6 Acoustic tiles | 14 Asbestos can be found in stucco | | |
| 7 Deck under-sheeting | | | |
| 8 Asbestos pad under the fireplace hearth | | | |



Competent professional

In accordance with the WSH regulation, an employer or owner must ensure that a person who is competent in identifying ACMs is required for inventory.

Inventories should be prepared by safety and health professionals competent in the practice of conducting asbestos inventories. The safety and health professional must have demonstrated knowledge and experience in recognizing suspect ACMs, sample collection techniques, laboratory data interpretation, inventory preparation and reporting.

Examples of a competent safety and health professional may include a Certified Canadian Registered Safety Professional (CRSP), a Certified Industrial Hygienist (CIH), a Registered Industrial Hygienist (ROH), a certified AHERA (Asbestos Hazard Emergency Response Act) building inspector (a U.S. EPA-accredited course) among others. The most important part of competency is the professional's demonstrated knowledge and experience.

1.1 SOURCES OF ASBESTOS

May include, but are not limited to, the following materials, used or installed between 1930 and 1990:

- asbestos cement pipes, wallboard, shingles, siding, roofing
- floor tiles, vinyl and asphalt flooring, including backing and mastics
- acoustic or decorative wall and ceiling plaster (for example, popcorn & stipple ceilings), paints, spackles, coatings
- ceiling tiles, lay-in panels
- spray-applied, blown-in, boiler, breeching, pipe, tank, vessel and other thermal insulation
- fireproofing material including blankets, curtains, countertops, gloves, electrical wiring insulation, cloth and structural insulation
- flexible fabric duct connections and insulation
- packing materials, gaskets, felts, caulking, putties, mastics, adhesives
- brake shoes
- interior surfaces of ductwork in buildings contaminated with asbestos
- mechanical insulation (parging cement, air cell, mag block)
- drywall joint compound
- vermiculite (not asbestos, however, assumed to be contaminated with asbestos fibres).

1.2 INVENTORY METHODOLOGY

An inventory of all ACMs will include:

- a review of the site's history, construction and renovations
- a complete walkthrough inspection of the building's interior; floor by floor, room by room, including facilities servicing each area and overall structure (electrical, plumbing, ventilation equipment), architectural and finishing details (ceilings, walls, floors, sealers or caulking)
- a complete examination of the building's exterior; architectural finishing (stucco, parging, cementitious materials, siding, caulking), roofing
- comments regarding hidden or concealed materials that are not practical to access or sample but are suspected to exist and contain asbestos
- studying architectural plans for the building when available
- submitting samples of all materials, including suspect materials for analysis at an accredited laboratory
- preparing a report of findings, including nil findings
- photographs.

Resources

The American Society for Testing and Materials (ASTM) – Standard Practice for Comprehensive Building Asbestos Surveys (E 2356) is a practical resource for preparing asbestos inventories.

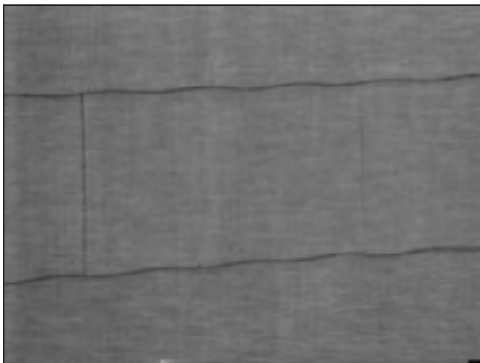
Examples of materials containing asbestos



Pipe insulation



Boiler or vessel insulation



Exterior wall siding



Structural insulation



1.3 BULK SAMPLE COLLECTION

Required in order to confirm the presence of asbestos. If sampling is not conducted, suspect materials must be handled as though they contain asbestos throughout maintenance, repair, renovation, removal and demolition activities.

Bulk sampling precautions

Must be taken to avoid exposure to asbestos while collecting samples.

- Avoid collecting samples when occupants are present.
- People taking samples should wear an NIOSH*-approved respirator appropriate to the risk.
- Suspect materials must be sprayed with a light mist of water to prevent fibre release during sampling.
- Suspect material must not be disturbed more than necessary; if possible, sample from a location with existing damage.
- Contact the laboratory performing the analysis for the minimum sample size requirements for the materials being sampled.
- If more than one layer of material is present (for example, a boiler covering) the sample must include material from each layer.
- Each sample must be collected in a separate container and labelled.
- The sample container (sealable plastic bag or container) should be held away from the face during sampling.
- Each sample container must be numbered and a record kept of where each sample was collected.
- Where material is damaged during sampling, measures must be applied to prevent fibre release (such as a patch).



Collecting a bulk sample

*National Institute for Occupational Safety and Health (see glossary)

**high-efficiency particulate air (see glossary)

Number of samples

A practical number of samples must be obtained for each kind of material or area of the building. For example, it is not necessary to sample ceiling tiles from every room if it can be shown that all ceiling tiles are of the same kind. Similarly, not all pipe wrap from a room or building must be sampled if it is apparent that the same insulation was used throughout the area or building.

If the same material has been used throughout the area or building, three samples of that material need to be collected. A minimum of three samples will be required to demonstrate that a material is asbestos-free.

Laboratory Analysis

When selecting a laboratory to perform the analysis, first confirm whether the laboratory's employees know the proper techniques for asbestos analysis. For example, laboratory accreditation such as the AIHA (American Industrial Hygiene Association) or the NVLAP (National Voluntary Laboratory Accreditation Program) would be acceptable.

Measurement method for bulk samples

An accredited laboratory will cite the method for bulk sample analysis. Those may include:

- a) NIOSH method 9002, or
- b) U.S. EPA method 600/R-93/116 for bulk asbestos sampling, or
- c) an alternate method established by a recognized occupational hygiene practice,
and
- d) U.S. EPA method 600/R-04/004 for vermiculite.

1.4 RECORD KEEPING

The inventory is an important record that must be maintained by the asbestos program manager. **The inventory must be kept on site** (in the boiler room, front office, by maintenance personnel as examples) and be accessible at all times. All trained personnel should know where it is, review the inventory before conducting maintenance, repairs, renovation or demolition work on, or near, materials containing asbestos.

Once it is determined that ACMs are present at a site, a written asbestos control plan, including all elements outlined below and/or procedures for working with asbestos, must be developed and followed prior to any maintenance, renovation, repair or demolition work carried out at that site.



2. ASBESTOS CONTROL PLAN

A written asbestos control plan is required when asbestos or ACMs exist, or are suspected to exist, in a workplace, workplace location, building or structure (site).

This section presents the minimum actions that must be taken by persons engaged in maintenance, repairs and renovations at a site.

Responsibilities

Building owners and employers are responsible to develop and follow all components of the written asbestos control plan for the site. Contractors engaged in activities at a site are responsible to find out if a site has an asbestos control plan prior to carrying out work and to follow it.

In a written asbestos control plan, the owner or employer will state the actions they will take to control ACMs while they remain at that site. The written plan gives direction to maintenance and custodial staff, contractors and people of all trades performing work activities at that site.

The asbestos control plan must be developed and implemented in consultation with the workplace safety and health (WSH) committee, the representative or the workers where there is no committee. If the site has multiple tenants, the owner must ensure each tenant's WSH committee, safety and health representative or worker(s) is consulted in developing and implementing the plan.

It is recommended that a site owner or employer appoint an asbestos control plan manager. The plan manager must be properly trained for asbestos awareness and asbestos work practices. The manager may be a health and safety officer, risk manager, physical plant director, maintenance manager, building and grounds manager, facility manager or an external consultant involved in ongoing building project management for that site. The asbestos control plan manager, maintenance and custodial staff and members of the workplace safety and health committees or the safety and health representative are key participants in the asbestos control plan.

The objectives of the written asbestos control plan are to:

- monitor the condition of the material containing asbestos
- prevent release of asbestos fibre by minimizing disturbance or damage of material containing asbestos
- safely address asbestos fibre releases.

2.1 CONTENT OF AN ASBESTOS CONTROL PLAN

An asbestos control plan shall be in written form and must continue until all ACMs are removed or the building is demolished.

The written asbestos control plan must clearly identify who is responsible for each element or action required by the plan. It must also state how and when the actions will be performed. An asbestos control plan should include, but not be limited to, the following elements:

- roles and responsibilities of personnel involved in actions to manage ACMs at the site; plan manager, inventory preparation, training, inspections, repairs or maintenance, etc.
- periodic and long-term actions put in place to protect the health and safety of building occupants
- an inventory of all ACMs; list of all buildings with inventories
- where the asbestos inventories will be kept
- description of how ACMs will be labeled or identified
- description of how building occupants, maintenance staff, external contractors and others will be informed of the presence of asbestos
- description of how and when periodic inspections of ACMs will be performed
- written procedures for ACM repairs and/or working near ACMs
- procedures to be followed in the event of fibre release
- training requirements for
 - asbestos awareness
 - workers and supervisors of workers who work with asbestos
 - emergencies involving fibre release (site isolation)
 - when the training is to be conducted, and
 - who is to conduct the training
- identification of staff trained in the procedures involving fibre release and for working with asbestos
- circumstances whereby an area shall be secured, work stopped and an external consultant or contractor engaged to perform tasks involving working with ACMs
- asbestos waste disposal procedures
- records keeping requirements.

2.2 NOTIFICATION OF OCCUPANTS

If materials containing asbestos are found at a site, all occupants who may be affected by the ACMs must be informed and provided with information on how to avoid the potential health hazard in the building. Building occupants, maintenance and custodial staff, outside contractors and others are less likely to disturb the materials if they know that the materials contain asbestos.

Building occupants and users can be informed by distributing notices, holding information meetings and identifying the presence of materials containing asbestos on any tenders and drawings provided to contractors. All outside contractors must be notified of the exact location of the ACMs they are to work on, or may potentially disturb, prior to any work being done.



Building occupants need to know:

- contact information of the asbestos control plan manager
- exact location of materials containing asbestos – though it may not be necessary to inform every occupant of all locations throughout the building, each occupant must be made aware of the locations of ACMs that may affect them
- the condition of the existing ACM
- the intended action for each location where asbestos is found (e.g., abatement, leave intact, regular maintenance)
- the health hazards associated with asbestos exposure and the conditions upon which it can create a hazard (i.e., when it is disturbed)
- directions not to disturb or damage any material containing asbestos
- directions to report any disturbance or change in the condition of the material containing asbestos, such as damage, dust or debris accumulation, to the asbestos program manager.

2.3 LABELLING AND SIGNAGE

A final line of defence to warn occupants and prevent unprotected or unauthorized people from the risk of exposure to asbestos:

All asbestos or ACMs must be clearly identified with signs, labels or other effective means in accordance with Part 37.4. Information on warning labels and signs must be understandable to the workers and include:

- the risks associated with exposure to asbestos fibres
- cautionary statement to not disturb materials containing asbestos
- cautionary statement respecting entering an area where repair or renovation activities involving these materials are underway.

Labelling and signage format

Usually in the form of a posted sign:

- attached directly to materials containing asbestos
- at the entrance to an area where material containing asbestos is present
- at entrances to areas where asbestos is being cleaned up or removed.

An appropriate sign displayed at the entrance and around the perimeter asbestos cleanup work or removal project is shown (right) and represented in the following text.



Warning Sign Outside of Asbestos Work Being Conducted in a Boiler Room

DANGER ASBESTOS

**CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA**

An appropriate label for material containing asbestos would be:

**DANGER
CONTAINS ASBESTOS FIBRES
CANCER AND LUNG DISEASE HAZARD
DO NOT DISTURB**

An appropriate sign in an area where routine maintenance is performed on near material containing asbestos would be:

**CAUTION: ASBESTOS
DO NOT DISTURB WITHOUT
PROPER TRAINING, EQUIPMENT AND AUTHORITY**



2.4 PERIODIC INSPECTION

Periodically inspecting all ACM identified in the inventory is essential to the asbestos control plan.

Inspection and damage reports carried out by competent, trained personnel should identify damage or deterioration allowing corrective action **before** any exposure risk occurs. Inspection must be performed, **at least once a year**, prior to and following any planned nearby work activities, and if there are any conditions that may have altered the site conditions (for example, water infiltration). The inspection may occur more frequently if damage potential is high. When inspecting, the following information, at a minimum, must be recorded:

- the location of the ACM, address, building room(s), location or general description
- the type of ACM (ceiling tile, floor tiles, pipe wrap insulation, joint compound, other)
- the present abatement status, if any (encapsulated, enclosed, removed or other)
- evidence of physical damage and approximate size (length, width, volume) without coming into contact with the damaged ACM
- evidence of water damage
- evidence of delamination or other deterioration
- the ACM accessibility for workers
- any work activity near the material
- the location of nearby air plenums, air shafts or air streams, if any.

A sample form (Form 1) to record the results of periodic inspection is included at the back of this guideline.

If ACMs are found to be in good condition, and are unlikely to be disturbed or eroded, proper maintenance and periodic inspection is appropriate. When poor condition or damage on ACMs is discovered, it must be reported immediately for corrective actions to be taken as soon as possible.

Air monitoring, either area or personal, can be done in addition to the physical examination, but should not be the only basis for decisions on cleanup, control or other corrective measures. Though effective air monitoring will provide information about building occupant exposure to asbestos, one-time readings can be unreliable. Airborne fibre concentration can change significantly in a short time. It is possible to obtain low readings even when material containing asbestos is in poor condition. Using a variety of monitoring and inspection methods is best. Preventive measures must be considered well before exposure levels reach the occupational exposure limit of 0.1 fibres/cubic centimetre for all forms of asbestos.

2.5 CLEANING PROCEDURES

While the principal objective of the asbestos control plan is to maintain ACMs in good condition to prevent fibre release, cleaning up existing and occasional asbestos contamination may be necessary.

Only properly trained and appropriately protected workers may clean an area contaminated by damage to ACMs. It is essential for these trained workers to only use approved cleaning procedures.

- **Wet mopping/wiping** – Only wet mopping/wiping or specialized vacuuming must be used to clean surfaces that may be contaminated with asbestos. Vacuuming must be conducted with a high-efficiency particulate air (HEPA) vacuum cleaner. A HEPA vacuum cleaner has an efficient filter that traps the microscopic asbestos fibres responsible for human health effects. Ordinary vacuum cleaners may allow tiny asbestos fibres to pass through the filter or bag, re-enter the work area and be spread to other areas of the workplace.

Wet mopping/wiping is performed by gently spraying surfaces with **amended water** before cleaning. Amended water is a mixture of water and commercially available soap or chemicals that allows water to penetrate more easily into the material containing asbestos. Wetting surfaces reduces the potential for asbestos fibres to become airborne.

Surfaces, such as walls, non-carpeted floors, light fixtures, exteriors of air handling ducts and filing cabinets should be cleaned using mops and dust cloths or rags that are wetted with amended water.

DO NOT USE – Dry brooms, mops, dust cloths and standard household or shop vacuum cleaners must not be used for asbestos cleanup as they may create a risk of airborne exposure to asbestos fibres.

- **HEPA vacuum** – Irregular surfaces (curtains, books, furniture and carpeting) should be cleaned using a HEPA vacuum.

Additional information on cleaning procedures is provided in the section on *Working with Asbestos*, prepared for workers, contractors and others involved in Type 1, 2 or 3 asbestos work.

2.6 RENOVATIONS WITH AN ASBESTOS CONTROL PLAN

For the purposes of the asbestos control plan at a site, renovation is defined here as “alteration where the ACMs are not intended to be removed or affected but may be accidentally disturbed as part of the renovation activity.”

Examples of a renovation may include:

- partial building demolition
- moving interior walls
- replacing window coverings
- removing or replacing ceiling tiles
- building or removing book shelves
- remodelling where the activities may contact the material containing asbestos.

Specific safe work procedures are required when ACMs are to be removed or controlled. These procedures must be in place before the renovation activity begins. These procedures are outlined in the section on *Working with Asbestos*.



Where renovation involves direct contact but not removal of the ACMs (e.g.,: painting or wallpapering over material containing asbestos), special precautions must be taken to not create dust. Where an activity may disturb ACMs, greater care is required. These precautions may range from minor removal procedures to full asbestos abatement. A review of the asbestos inventory must be conducted before planning any renovation, minor or major.

The asbestos control plan manager must review the renovation, remodeling or maintenance work plans to be carried out near ACMs before work begins. A written request and approval system must be used to ensure proper procedures and precautions will be in place to prevent asbestos contamination.

Sample forms (Form 2 and Form 3) to record the request and approval are included at the back of this guideline.

2.7 FIBRE RELEASE INCIDENTS

As long as ACMs remain in the building, a fibre release incident may occur. Maintenance and custodial staff must remain alert for debris on floors, water or physical damage to the ACMs or other evidence of possible fibre release. Fibre release may occur with normal breakdown of ACMs or during maintenance or renovation activities.

Where fibre release or damage has occurred, the damage must be repaired and the area decontaminated by appropriately trained staff or contractors competent in working with asbestos, as soon as possible.

The minor and major incidents discussed in this section are not planned asbestos removal or abatement projects, but accidental disturbances of materials containing asbestos.

Minor Fibre Release Incidents

Examples of minor incidents include:

- accidental puncture of an insulated pipe
- contact with an insulated structural beam
- breakage of a corner section of tile or wall panel, where a small amount of ACM is dislodged or exposed.



Minor Damage to Pipe Wrap



Major Damage to Fire Insulation

These minor incidents of fibre release can be treated with standard wet cleaning or HEPA vacuuming techniques. In such cases, the following procedures must be used **by workers properly trained to work with asbestos**:

- Control all access to the affected area, as may be required, and post warning signage.
- Wear an appropriate respirator (see Table 1 in Appendix A) based on the potential exposure to asbestos fibre or, at a minimum, a half face respirator with P100 particulate filters.

- Use a spray container with a very fine spray output to saturate the debris thoroughly with amended water. The debris must then be carefully placed in an asbestos waste container (as per definition in glossary) properly labelled for disposal or collected with a HEPA vacuum cleaner. The debris area must be thoroughly cleaned with a damp cloth or mop, or be vacuumed with a HEPA vacuum.
- Place all debris and materials used in the cleanup in an asbestos waste container, labelled and properly disposed of as asbestos waste.
- The damaged material containing asbestos must be repaired with asbestos-free spackling, plaster, cement or insulation, or sealed with latex paint or an encapsulant.

Major Fibre Release Incidents

Major incidents of fibre release are very serious. Disturbing a large amount of ACMs may contaminate an entire building with asbestos fibres. Examples of major incidents include:

- water or physical damage to pipe insulation, resulting in missing sections
- insulation falling from structural beams onto the back of ceiling tiles. In these cases, immediate and thorough procedures are required. Well-trained and properly equipped people must address these situations. Typically, these are contractors trained and equipped to deal with asbestos decontamination.
- accidental or unexpected disturbance of ACMs during a maintenance, repair or renovation activity whereby ACMs may have been missed in the inventory, perhaps hidden (e.g., inside walls).

The following immediate actions must be used in the event of a major asbestos fibre release:

- **Notify WSH of a serious incident immediately by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba)**
- Notify the occupants that an asbestos fibre release has occurred and that corrective measures are being implemented.
- The area must be isolated as soon as possible after the material containing asbestos is discovered. Where doors can seal the area, the doors must be locked from the inside (be careful not to violate fire regulations if the area is an escape corridor).
- The air handling system must be shut off or temporarily modified to prevent the distribution of fibres from the affected area to other areas of the building.
- Doors, windows and air registers in the contaminated area must be sealed with two layers of 6 mm plastic sheets and tape.
- Appropriate warning signs must be posted to prevent unauthorized entry.

Any further actions should be undertaken in accordance with procedures set forth in the section on *Working with Asbestos*.

Documenting Incidents

Each incident of fibre release, whether minor or major, must be documented. The report should include information regarding the location, a description of the event, the cause of the incident and a detailed account showing action taken and who took it. This report must be communicated to the members of the workplace safety and health committee or representative.



3. TRAINING

Training for maintenance and custodial staff, and people of trades (e.g., construction trades, carpenters, plumbers, electricians, painters, labourers, pipe fitters, HVAC and refrigeration workers) performing routine or intermittent work on or near ACMs at a site is an important part of effective asbestos management.

All maintenance and custodial staff and people of all trades have potential to encounter ACMs in the course of work activities carried out at a site where ACMs exist, or are suspected to be present. These workers must all obtain ACM awareness training and adequate instruction and training in the safe work procedures they may require for maintenance, minor repair or renovation tasks at a site.

All workers regularly working with ACMs require adequate instruction and training to carry out safe work procedures for Type 1, 2 or 3 asbestos work.

Training programs must be reviewed every year, or more often, depending on changes in work conditions. Training programs shall be reviewed as necessary, in consultation with the workplace safety and health committee or workplace safety and health representative.

3.1 TRAINING FOR MAINTENANCE, REPAIR AND RENOVATION

An employer, owner or person acting on behalf of the owner must ensure that all workers (maintenance, custodial and people of all trades) and supervisors of workers, who will work with or near ACMs receive training in keeping with the potential hazard of their work, before they do the work.

Levels of training

Near ACMs

Workers performing maintenance, repair or renovations **near ACMs** must receive, at minimum, training for:

- asbestos awareness, and
- prohibited activities.

With ACMs

Workers who **work with ACMs** are those who carry out maintenance, repair and renovation tasks where asbestos may become disturbed. They must receive training for:

- asbestos awareness
- prohibited activities, and
- safe work procedures for working with asbestos in keeping with the extent of asbestos work they may be required to carry out (Type 1, 2 or 3).

Trainer qualifications

Training must be carried out by safety and health professionals with demonstrated knowledge and experience in working with asbestos. Some of these professionals may hold a designation such as CRSP, CIH, ROH, etc. The effectiveness of the training should be evaluated by the worker's knowledge and competency to safely perform tasks involved in working with asbestos and the way in which an employer manages the work site.



3.1.1 Awareness training

All workers who work with or near ACMs, including maintenance and custodial staff, **and people of all trades**, must hold a record of attendance in awareness training.

Objectives of asbestos awareness training are to recognize when ACMs may be present, to know to ask the employer about ACMs and to assume they are present when the information is not made available.

Awareness training must include but not be limited to:

- a) sources of asbestos, the exposure and risk
- b) possible health effects and the additional hazard of cigarette smoking as a risk factor in asbestos-related disease
- c) information on the label and what it means
- d) photographs and examples
- e) learning what to do when a site is suspected to contain ACMs
- f) learning to ask if there are ACMs and if the information is not available, to assume they are present at sites where ACMs are suspected to be present
- g) know where an inventory can be found and how to read and understand it
- h) how to avoid disturbing materials containing asbestos
- i) how to recognize and report damage to these materials
- j) safe work procedures in case of emergencies involving asbestos; leaving the site and reporting the emergency
- k) names and telephone numbers of people responsible for asbestos-related activities in the building.

3.1.2 Prohibited activities

Maintenance and custodial staff must ensure their activities do not damage or disturb ACMs. Maintenance and custodial staff must be instructed to observe the rules:

- **Do not** drill holes into material containing asbestos.
- **Do not** hang pictures, signs (except asbestos warning signs), clothing, plants, or any other articles on structures covered with ACMs.
- **Do not** sand, saw or grind floor tiles, hard board panels or other materials that may contain asbestos.
- **Do not** damage materials containing asbestos while moving furniture or other objects.
- **Do not** install curtains, drapes or dividers in such a way that they damage ACMs.
- **Do not** dust floors, ceilings, mouldings or other surfaces with a dry brush, or sweep with a broom in an environment containing asbestos.
- **Do not** use an ordinary vacuum to clean up debris containing asbestos.
- **Do not** remove ceiling tiles below materials containing asbestos without wearing proper respiratory protection and clearing the area of other people.
- **Do not** remove or shake ventilation system filters in a dry state if it is suspected they may contain asbestos fibres.
- **Do not** shake ventilation system filters.



3.2 TRAINING FOR WORKERS WORKING WITH ASBESTOS

Supervisors

- must hold a record of their attendance at an asbestos removal training course (three days minimum duration)
- must have demonstrated knowledge of asbestos work of all Types (1, 2 and 3)
- must be able to evaluate worker competency.

Workers

- Maintenance and custodial staff and workers of all trades who may work with, or near ACMs, must hold a record of attendance for asbestos awareness training.
- Workers who work with asbestos must hold a record of attendance for training on the procedures for working with asbestos (two days minimum duration).
 - Workers must be able to demonstrate their knowledge in each type of asbestos work procedure they will be assigned to carry out (Type 1, 2 and/or 3).
 - They must be directly supervised on all new procedures for a minimum of three days.

4. WORKING WITH ASBESTOS

This section applies to all workplaces, workplace locations or buildings where asbestos or ACMs are being used, handled, abated, demolished, and cleaned up after incidents involving an accidental release of asbestos fibres. The objectives of the following procedures are to prevent workers and others from being exposed to asbestos fibres when work is planned, and following an accidental release.

Outlined below are the minimum requirements to be followed to prevent the release of asbestos fibres in the event of disturbances of ACMs, or an asbestos removal project.

Inventory

The first step in planning an alteration, renovation, removal (abatement) or demolition is to determine if ACMs are present, or suspected to be present, at the site, prior to any work being carried out. This is accomplished by preparing an asbestos inventory.

Remove ACM prior to demolition

All ACMs that may be disturbed in a building must be removed before demolition is performed in that building or location.

The building owner or employer must notify occupants (workers and others) who may be affected when ACMs are likely to be disturbed or when work is to be carried out on or near ACMs.

Asbestos-containing material should be considered for removal:

- a) when it is breaking away from the surface to which it is applied
- b) when the material is likely to be damaged
- c) when the ACM is friable and in poor condition
- d) when the concentration of airborne asbestos fibres is above the occupational exposure limit
- e) prior to renovation or demolition.



4.1 GENERAL REQUIREMENTS FOR WORKING WITH ASBESTOS

Following are some general requirements that apply whenever reference is made to the procedures for working with asbestos.

NOTIFICATION TO WORKPLACE SAFETY AND HEALTH

An employer or owner must notify the Workplace Safety and Health Branch at least **five calendar days** before beginning the work to alter, renovate or demolish a building or structure that contains ACMs that may release ACMs into the atmosphere. The notification form is accessible on the WSH website: www.manitoba.ca/labour/safety. Where Internet access is not available, notification can be made by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba).

In the case of an emergency where an immediate repair or cleanup is required, for example, when critical services are affected, WSH will make allowances for the five days' notice. However, the notice must be provided as soon as reasonably practicable and before the work is carried out.

Reporting to WSH is a prescribed provision under Manitoba Regulation 89/2014. Failure to report to WSH prior to carrying out the work activities could result in an administrative penalty. The potential for the release of ACMs while working with asbestos can occur during Type 2 and Type 3 work.

The report shall include the following information:

- a) the name, address and telephone number of the person giving notice
- b) the name, address and telephone number of the owner of the building, or agent of the owner, where the work will be performed
- c) the address or municipal location of the building where the work will be performed
- d) the name, address and telephone number of the company performing the work
- e) a description of the work to be performed
- f) the start date and expected completion date of the work
- g) the name, address and telephone number of the supervisor in charge of the work.

ASBESTOS EXPOSURE AIR SAMPLING

Occupational Exposure Limit

Asbestos is identified as a designated material under Part 36, section 36.5(1) (b) of the *Workplace Safety and Health Regulation*. In Manitoba, designated materials include carcinogens. The American Conference of Governmental Industrial Hygienists (ACGIH) and IARC (International Agency on Research Council) reports asbestos to be a carcinogen, a substance that can increase the risk of cancer in humans who are exposed to it.

In Manitoba, the occupational exposure limit (OEL) of a designated material must be as close to zero as is reasonably practicable but shall not exceed the Threshold Limit Value (TLV[©]) established by the ACGIH. The OEL for all forms of asbestos is 0.1 fibres per cubic centimetre of air.

Perimeter air sampling during work

Perimeter air sampling (outside the enclosure) should be done during asbestos Type 2 and 3 work when unprotected people are in the area outside the enclosure as follows:

- For Type 3 work, intermittent air sampling at perimeter of the enclosure, during removal and cleanup, to be less than 0.1 fibres per cubic centimeter
- For Type 2 work with an enclosure, intermittent just outside the enclosure entrance, to be less than 0.1 fibre per cubic centimeter
- Glove bag – area sampled during work activity to be less than 0.1 fibre per cubic centimeter

Final air clearance sample

Upon completion of Type 3 work, airborne asbestos fibre inside the enclosure must be less than 0.01 fibres per cubic centimetre of air for all forms of asbestos before the negative pressure enclosure is removed and workers and others are allowed to reoccupy an area where asbestos has been removed.

It is recommended that an aggressive air sampling technique be used when collecting the Type 3 final air clearance sample.

Measurement method

The concentration of asbestos must be measured in accordance with *NIOSH Manual of Analytical Methods*, 3rd Edition, U.S. Department of Health and Human Services, Public Health Service, Centre for Disease Control, National Institute for Occupational Safety and Health, Division of Physical Sciences and Engineering using:

- method 7400 for all fibres, and
- 7402 for characterization of the fibres (TEM – Transmission Electron Microscopy) for airborne asbestos exposure analysis.

Laboratory analysis

Should be performed by a laboratory with an accreditation such as AIHA.

Competent person

Asbestos air sampling must be conducted by a safety and health professional with demonstrated knowledge and experience in the practice of collecting asbestos air samples, laboratory data interpretation, reporting and current Manitoba regulatory requirements respecting occupational exposure limits.



TOOLS

Vacuum cleaning equipment

Use only a vacuum cleaner equipped with a HEPA filter for collecting asbestos dust and waste. The vacuum cleaner must be designed to keep the dust from escaping back into the workplace.

- The vacuum bags should be disposable.
- The vacuum cleaner must be removed from the workplace immediately if the vacuum bag bursts. All burst bags and their contents must be placed in an asbestos waste container by an operator wearing protective clothing and respiratory equipment.
- The interior of the vacuum cleaner must then be cleaned of asbestos with the use of another vacuum cleaner equipped with a HEPA filter or by wet wiping.
- The collected material must be disposed of as asbestos waste.

Vacuums equipped with HEPA filters can be used to exhaust air from a Type 2 enclosure if they are dedicated for this purpose and performance testing of the HEPA filtered vacuum must be carried out quarterly (four times a year). The performance testing can be carried out using a DOP (Diocetyl Phthalate) or PAO (Poly Alfa Olefin) testing procedure or equivalent.

It is recommended that vacuums be exhausted to the outdoors. In cases where they cannot be exhausted outdoors, an onsite performance test will be required.

Negative air cabinets

Negative air cabinets must be used for all Type 3 enclosures and air must be exhausted outdoors.

Performance testing (DOP or equivalent) for negative air cabinets is required annually at minimum but should be carried out quarterly (every three months).

Written permission must be obtained from WSH when air cannot be exhausted outdoors and must be exhausted indoors. In addition, onsite performance testing for the unit(s) will be required.

LABELLING OF PRODUCTS AND RISK AREAS

All asbestos or ACMs must be clearly identified with signs, labels or other effective means according to the *Workplace Safety and Health Regulation*.

The information on warning labels and signs must be understandable to the workers.

CATEGORY OF WORK TYPE 1, 2 OR 3

Work that may result in worker exposure to asbestos is categorized as:

- **Type 1** (low risk) where there is no expectation of asbestos fibre being released or becoming airborne to a level above the Occupational Exposure Limit (OEL) or
- **Type 2** (medium risk) or
- **Type 3** (high risk) in both Type 2 and Type 3 airborne fibres will be released and must be controlled.

Factors to consider

Categorizing (to establish the work type), include:

- Amount of ACMs disturbed

More material = more risk

- Asbestos content

Higher asbestos content = greater risk, number of asbestos fibres = more risk

The risk increases as the amount of airborne fibres increases. The order of risk from high to low is typically known to be:

HIGH RISK: contamination > poor condition > fair condition > good condition: LOW RISK

- Friable materials will easily release the asbestos fibres from the matrix (high risk)
- With non-friable materials, the fibres are bound and not easily released (low risk)
- Materials that are non-friable may become friable over time (as a result of weathering, fire, water damage) or during a work activity

Process

Assess the likelihood of a process releasing airborne particles and the potential concentration (how much).

Following are examples of increasing levels of risk resulting from a process:

- a) Removal of manufactured materials containing asbestos with no damage (e.g., intact floor tiles, cementitious siding)
- b) Use of hand tools on in situ materials containing asbestos with minimal breakage (e.g., removing stucco with hand tools in large pieces)
- c) Use of a power tool with effective dust control measures (e.g., drilling through an ACM flooring with a tool equipped with a HEPA filter)
- d) Use of a power tool with no effective dust control

WORK TYPE EXAMPLES

Outlined below are some of the common tasks for each work Type 1, 2 and 3.

Type 1 work includes, but is not limited to:

- a) installation or removal of non-friable manufactured products that contain asbestos, such as vinyl asbestos floor tiles or sheets, ceiling tiles, gaskets, seals, packing, construction mastics, cementitious asbestos-containing cementitious siding (Transite panels), shingles and wallboard, brake shoes, clutch plates or asbestos cement products, provided such materials are in a non-friable condition and are not rendered friable by such work
- b) cutting or shaping ACMs mentioned in (a) above with hand tools only
- c) cutting, grinding, drilling, sanding or scraping of ACMs mentioned in (a) above with a power tool equipped with a HEPA filter



Type 2 work includes, but is not limited to:

- a) Type 2 is work where the release of asbestos fibre is expected, but can be carried out in less than three hours
- b) removal of part or all of a false ceiling where there are friable ACMs lying on the surface of the false ceiling
- c) enclosure of friable asbestos-containing material
- d) drywall panel having joint compound containing asbestos if the removal can be carried out in less than three hours
- e) minor removal, repair or disturbance of less than one square metre (1 m²) of friable ACMs during the repair, alteration, maintenance or demolition of a building, any machinery or equipment (other than air handling equipment in a building that has sprayed asbestos thermal or fireproofing) that can be completed within a three-hour period
- f) bulk sample collection and removal of vermiculite greater than a volume of four litres
- g) cutting or shaping non-friable ACMs with hand tools only
- h) any other abatement or work with asbestos not mentioned as Type 1 or Type 3 work that may result in worker exposure to airborne asbestos fibres in excess of the occupational exposure limit of 0.1 fibre per cubic centimetre of air

Type 3 work includes, but is not limited to:

- a) removal of greater than one square metre (1 m²) of friable ACMs or vermiculite during the repair, alteration, maintenance or demolition of a building, machinery or equipment
- b) removal or disturbance of less than one square metre (1 m²) of friable ACMs or vermiculite during the repair, alteration, maintenance or demolition of a building, machinery or equipment that cannot be completed within a three-hour period
- c) spray application of a sealant or encapsulant to greater than one square metre (1 m²) of friable ACMs
- d) cleaning or removal of air-handling equipment, including rigid ducting, in a building that has sprayed asbestos fireproofing, thermal or acoustic insulation in the area of work or that has previously had sprayed asbestos fire proofing or sprayed thermal or acoustic insulation in the area of work and the air-handling equipment, including rigid ducting, has not been previously cleaned
- e) repair, alteration or demolition of equipment made in part of refractory ACMs
- f) grinding, cutting, drilling, sanding or scraping any ACMs involved in Type 1 work with a power tool not equipped with a HEPA filter
- g) removal of drywall panels with asbestos-containing dry wall joint compound requiring more than three hours of work to complete

4.2 PROCEDURES FOR WORKING WITH ASBESTOS

The following are procedures that apply when working with asbestos or ACMs in Types 1, 2 and 3.

4.2.1 Procedures for Type 1 Work

- Eating, drinking, chewing or smoking is prohibited in the work area.
- Before any work is performed, all asbestos dust and contaminated debris must be removed by a vacuum cleaner equipped with a HEPA filter, or by wet mopping or wet wiping.
- Compressed air must not be used to clean up or remove dust and debris from contaminated surfaces.
- Wet handling techniques must be used to control dust on the surfaces of any ACMs mentioned in Type 1 work unless wetting creates a hazard or causes damage.
- Where the surfaces mentioned above cannot be wetted, a vacuum cleaner equipped with a HEPA filter or other method that does not create airborne asbestos fibres must be used to control the spread of dust.

- The spread of asbestos from the work area must be controlled by appropriate methods, including the use of polyethylene drop sheets.
- The polyethylene sheeting mentioned above must be frequently cleaned with the use of a vacuum cleaner equipped with a HEPA filter or wetted to control the spread of asbestos.
- The polyethylene sheeting mentioned above must be placed in an appropriate asbestos waste container, as defined in the glossary, and disposed of as asbestos waste at the completion of work in the area.
- An employer should provide appropriate respiratory protection and protective clothing.
- Hand and face washing facilities must be available for workers in the work area and workers must wash before leaving the work area.

Removing asbestos-containing flooring material:

- Resilient flooring material and tiles, including the backing material and adhesive/mastic, must be assumed to contain asbestos if it was manufactured before 1980 (approximate year when asbestos stopped being used by manufacturers in this type of flooring), unless the material has been analyzed using a method specified in this guideline, and proven not to contain asbestos.
- Removal not utilizing the procedures outlined below must be carried out using Type 2 procedures.
- Sanding and cutting of the vinyl asbestos flooring surface, backing material or adhesive with high rpm equipment is prohibited unless performed as Type 2 or Type 3 work.
- Mechanical chipping is prohibited unless performed as Type 2 work.
- Sheet flooring must be cut into strips with a width not more than 15 centimetres.
- If possible, tiles must be removed intact.
- The strips, or tiles, and backing must be wetted and then scraped up with the use of a scraper, shovel, trowel or other hand tools.
- Residual adhesive and backing material must be scraped off under wet conditions.
- The removed strips or tiles, backing material and adhesive/mastic must be immediately placed in an asbestos waste container, and disposed of as asbestos waste.
- All debris must be cleaned up using a vacuum cleaner equipped with a HEPA filter, or by wet mopping, wet sweeping or wet wiping, and disposed of as asbestos waste.
- Dry sweeping is prohibited.

Removing cementitious ACMs including panels (Transite), siding, shingles and wallboard:

- Grinding, cutting, drilling, sanding or scraping the ACM mentioned above with a power tool is prohibited unless the power tool is equipped with a HEPA filter.
- The asbestos-containing material mentioned above must be wetted prior to removal.
- Ensure the material is removed with minimal breakage.
- All unfinished edges of asbestos cement boards should be treated with a sealing solution.
- Above-mentioned materials are to be handled in either of two ways:
 - immediately lowered to the ground, in a manner that will not break the material, and then either placed in an asbestos waste container and disposed of as asbestos waste.
 - placed in an asbestos waste container immediately and lowered to the ground by the end of the shift and disposed of as asbestos waste.



4.2.2 Procedures for Type 2 Work

For work where a release of asbestos fibre is expected and work is typically carried out in less than three hours.

- Workplace Safety and Health Branch must be notified at least five calendar days before beginning the work. The notification form is accessible on the WSH website: www.manitoba.ca/labour/safety. Where Internet access is not available, notification can be made by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba).
- Eating, drinking, chewing or smoking is prohibited in the work area.
- The contaminated area must be identified by clearly visible signs warning of the asbestos work and hazard.
- Before any work is performed, all asbestos dust and contaminated debris must be removed by a vacuum cleaner equipped with a HEPA filter, or by wet mopping, or wet wiping.
- Movable equipment within the work area must be cleaned by wet wiping or with a vacuum cleaner equipped with a HEPA filter and then removed from the work site.
- Fixed equipment within the work area must be cleaned by wet wiping or with a vacuum cleaner equipped with a HEPA filter and then covered with impermeable sheeting and sealed with tape.
- Compressed air must not be used to clean up or remove dust and debris from contaminated surfaces.
- For work done indoors and where walls do not enclose the work, the spread of asbestos must be prevented by constructing a walk-in negative pressure enclosure.
- For work done indoors and where walls do enclose the work area, the spread of asbestos must be prevented by using negative pressure in the work area and protecting walls, floors and ceilings with 6-mil polyethylene sheeting.
- For work done outdoors, the use of an enclosure will be required unless written approval is obtained from WS&H.

Negative Pressure Enclosures

- Negative pressure enclosure must be constructed of a double layer of 6-mil polyethylene, or a single layer of 10-mil polyethylene or other suitable material, with reinforced polyethylene on the floor.
- The negative pressure enclosure must be kept at a minimum pressure differential of -0.02 inches of water gauge relative to the air outside of the enclosure at all times during the work by using a negative air cabinet or a dedicated vacuum cleaner equipped with a HEPA filter or a similar ventilation unit and recommended to be vented to the outside of the building.
- When air cannot be exhausted to the exterior, an on-site performance test (DOP or equivalent) for the unit is required (see Tools section for more information on vacuum and negative cabinet requirements).
- All mechanical ventilation in the asbestos work area must be disabled except for the ventilation required to maintain the negative pressure.
- Special attention should be given to the potential for accumulation of airborne contaminants from gas-fired equipment inside an enclosure (for example, carbon monoxide).
- Two layers of 6-mil polyethylene must be placed to seal all openings in the asbestos work area.
- Overlapping polyethylene sheets shall be installed at the entrance to the work area.
- An airlock chamber should be used at the entrance of the enclosure to facilitate decontamination.
- Wet handling techniques must be used to control dust on the surfaces of any ACMs unless wetting creates a hazard or causes damage.
- Electrical circuits inside the contaminated area must be deactivated unless equipped with ground-fault circuit interrupters.

- Where the surfaces mentioned above cannot be wetted, a vacuum cleaner equipped with a HEPA filter or other method that does not create airborne asbestos fibres must be used to control the spread of dust.
- Dry stripping is prohibited as Type 2 work and must be carried out as Type 3 work.
- The polyethylene sheeting mentioned above must be frequently cleaned with the use of a vacuum cleaner equipped with a HEPA filter or wetted to control the spread of asbestos.
- All surfaces inside the negative pressure enclosure must be HEPA vacuumed and/or wet wiped to remove any trace of visible debris.
- A lock down agent must be used on the inside of the enclosure walls, on in-situ building materials that have been stripped of ACMs to prevent any remaining fibres from becoming airborne.
- The polyethylene sheeting mentioned above must be placed in an appropriate asbestos waste container, as defined in the glossary, and disposed of as asbestos waste at the completion of work in the area.

Personal Protective Equipment

- Only people wearing protective clothing and respiratory protection are allowed to enter the contaminated area.
- Unless personal air sampling is performed inside the contaminated work area to determine the actual exposure to airborne asbestos fibres and an appropriate respirator is selected from Table 1, all people inside the contaminated area must wear, at minimum, a full face powered air purifying respirator with HEPA or P 100 cartridges while working on wetted asbestos-containing materials.
- A half face respirator with P 100 cartridges may be worn if a competent person conducts a risk assessment for the job.

Decontamination

- All people must decontaminate their protective clothing and respirators by using a vacuum cleaner equipped with a HEPA filter or by wet wiping after completing the work and before leaving the contaminated area.
- All protective clothing must be disposable and disposed of as asbestos waste.
- Hand and face washing facilities must be available to workers in the work area and workers must wash before leaving the work area.

Glove Bag Method

A glove bag method is a Type 2 technique where the glove bag replaces the negative pressure enclosure. It may be used to remove ACMs from piping as follows:

- Workplace Safety and Health Branch must be notified at least five calendar days before beginning the work. The notification form is accessible on the WSH website: www.manitoba.ca/labour/safety. Where Internet access is not available, notification can be made by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba).
- At minimum, a half face respirator with P 100 cartridges and protective clothing must be worn.
- Air sampling should be carried out during the work activity.
- Properly identify the work area by placement of tape barricade and signage for authorized personnel only.
- Review the need to isolate and/or otherwise shutdown any HVAC ducts.
- Glove bag must be made of a minimum of 6-mil polyethylene and must be seamless at the bottom.
- Before beginning work, all insulation must be wetted with amended water.
- Glove bag must be disposed of when full and not be re-used.
- Insulation material that has fallen from the pipe must be cleaned up by using a vacuum cleaner equipped with a HEPA filter, or by wet mopping or wet sweeping, prior to attaching the glove bag.



- j) All damaged areas of the pipe must be wrapped with polyethylene prior to removal.
- k) Where the insulation is not fully wrapped with polyethylene, the insulation must be banded with tape at the places where the glove bag is to be attached, to provide a clean surface for affixing the tape that seals the glove bag, and to prevent damage to the insulation when the sealing tape is removed.
- l) A glove bag properly designed for each task must be used.
- m) Pre-formed insulation blocks must be cut at the joints to minimize fibre generation.
- n) Exposed insulation must be wetted frequently during work.
- o) Contaminated tools must be removed in an inverted glove for transfer to the next glove bag.
- p) Accumulated debris must be cleaned up prior to removing the glove bag.
- q) Stable elevated platforms and scaffolding must be provided where needed.
- r) A smoke test should be performed inside the glove bag periodically to assure that the glove bag has been installed correctly.
- s) Care must be taken when metal bands, wires or metal jacketing are encountered to avoid lacerations to the hands or to the glove bag.
- t) Whenever possible, sharp edges must be folded in and the items placed in the bottom of the bag.
- u) The accumulation of debris and water in the glove bag must not exceed the ability of workers to handle the glove bag safely.
- v) A vacuum cleaner equipped with a HEPA filter must be used to remove the air inside the glove bag to ensure that no asbestos fibres are released during the removal of the bag from the pipe.
- w) The ends of the insulation must be sealed with an encapsulating material when partial removal creates exposed ends.
- x) The work area must be decontaminated by using a vacuum cleaner equipped with a HEPA filter, or by wet wiping, wet sweeping or wet mopping, after the completion of the removal.
- y) Where outdoor work is performed, in addition to the glove bag procedures outlined above, barricades must be placed around the work area.

4.2.3 Procedures for Type 3 Work

For work where a release of asbestos fibre is expected.

- Workplace Safety and Health Branch must be notified at least five calendar days before beginning the work. The notification form is accessible on the WSH website: www.manitoba.ca/labour/safety. Where Internet access is not available, notification can be made by calling 204-957-SAFE or 1-855-957-SAFE (7233) (toll-free in Manitoba).
- Eating, drinking, chewing or smoking is prohibited in the work area.
- All entry points to the work site must have highly visible warning notices to identify as asbestos activity and forbid entry to anyone not wearing appropriate respiratory protection and protective clothing.
- Before any work is performed, all asbestos dust and contaminated debris must be removed by a vacuum cleaner equipped with a HEPA filter, or by wet mopping, or wet wiping.
- Compressed air must not be used to clean up or remove dust and debris from contaminated surfaces.
- Movable equipment within the work area must be cleaned by wet wiping or with a vacuum cleaner equipped with a HEPA filter and then removed from the work site.
- Fixed equipment within the work area must be cleaned by wet wiping or with a vacuum cleaner equipped with a HEPA filter and then covered with impermeable sheeting and sealed with tape.

- When walls do not enclose the operation, the spread of asbestos from the work area must be prevented by the construction of a negative pressure enclosure.
- When walls do enclose the work, the spread of asbestos must be prevented by using negative pressure in the work area and protecting walls, floors and ceilings with two layers of 6-mil polyethylene sheeting.
- A transparent panel must be installed to allow observation inside the enclosure.
- Wet handling techniques must be used to control dust from asbestos-containing material unless wetting creates a hazard or causes damage.
- Electrical circuits inside the contaminated area must be deactivated unless equipped with ground-fault circuit interrupters.
- Dry removal requires a written approval from WSH. It may produce very high levels of airborne asbestos fibres and should therefore be used only in instances when dry removal may be acceptable including:
 - a) where wet methods may be hazardous to workers
 - b) where live electrical apparatus might be made dangerous by contact with water
 - c) where hot metal is to be stripped and the use of water may be damaging.

Negative Pressure Enclosures

- The negative pressure enclosure must be constructed of two layers of a minimum of 6-mil polyethylene or other suitable material, with reinforced polyethylene on the floors.
- The negative pressure enclosure must have at least four air changes per hour and a minimum pressure differential of -0.02 inches of water gauge relative to the air outside of the enclosure must be maintained.
- The enclosure must be kept under negative pressure for the duration of the work (overnight and on weekends, the negative pressure unit must be kept on).
- All air exhausted from the negative pressure enclosure must be passed through a HEPA filter and then vented to the outside of the building.
- Written permission is required by WSH where air cannot be exhausted to the exterior, and onsite performance testing for the negative air unit (using DOP testing or equivalent) is required.
- All mechanical ventilation in the contaminated area, except for the ventilation required to provide the negative air pressure must be disabled and a barrier of at least two layers of 6-mil polyethylene or other suitable material placed to seal all openings in the contaminated area.
- Special attention should be given to the potential for accumulation of airborne contaminants from gas-fired equipment inside an enclosure (for example, carbon monoxide).
- All openings from the contaminated area, including windows and doors, must be adequately sealed with adhesive tape or isolated by two layers of 6-mil polyethylene sheeting or other suitable material.
- Ensure that asbestos dust cannot escape at points where pipes and conduits pass out of the working area.
- To ensure asbestos will not escape, the negative pressure enclosure must be tested daily and recorded using techniques such as:
 - a) operating a smoke generator inside the enclosure and watching for visible smoke outside the enclosure
 - b) using a recording manometer to ensure that a minimum pressure differential of -0.02 inches of water gauge relative to the air outside of the enclosure is being maintained at all times
 - c) daily perimeter air sampling.



Enclosure Inspections

- A competent person must inspect the work area for defects in the enclosure and confirm that the pressure differential is maintained:
 - a) at the beginning of each shift
 - b) at the end of a shift where there is no shift beginning immediately following the shift that is ending
 - c) at least once each day on days when there are no shifts but the adjacent areas are occupied by unprotected workers or others (check for defects and that negative pressure differential is maintained)
 - d) keep a log of the intermittent checks.

Any defects found on inspection must be repaired immediately and no work, other than necessary repair work, shall be done in the contaminated area until the repair work is completed.

Personal Protective Equipment

- Unless personal air sampling is performed inside the contaminated work area to determine the actual exposure to airborne asbestos fibres and an appropriate respirator is selected from Table 1, all persons inside the contaminated area must wear, at minimum, one of:
 - a) a full face powered air purifying respirator with HEPA or P 100 cartridges while working on wetted asbestos-containing materials
 - b) a full face supplied air respirator or self-contained breathing apparatus complete with a reserve escape bottle, operating in continuous flow mode while working on dry asbestos-containing materials.

Air Sampling

- Daily perimeter air sampling is recommended to ensure background concentrations of airborne asbestos are not exceeded.
- A final air clearance sample of the area inside the negative pressure enclosure must be obtained and the concentration of airborne asbestos fibres inside the enclosure must not exceed 0.01 fibres per cubic centimeter.
- It is recommended that aggressive air sampling techniques be used when collecting the final air clearance sample, prior to dismantling the enclosure. It can be conducted with air blowing equipment such as large fans. (Be careful not to introduce contaminants into the enclosure that could originate from gas-fired equipment sometimes used for aggressive sampling, e.g., leaf blowers' accumulation could be hazards in an enclosure).

Decontamination Area

- A worker decontamination unit must be connected to the work site, or be as close as possible to the work site.
- The worker decontamination unit must consist of a series of interconnecting rooms including:
 - a) a clean room suitable for changing into or out of street clothes and for storing clean clothing and equipment
 - b) a shower room
 - c) an equipment room suitable for changing into protective clothing and for storage of contaminated protective clothing and equipment.
- The worker decontamination unit must be constructed so that overlapping curtains of polyethylene sheeting or other suitable material are fitted to each side of the entrance or exit to each room.
- The worker decontamination unit must be arranged in sequence and constructed so that every person entering or leaving the work area must pass through each room of the decontamination unit.
- The shower room in the worker decontamination unit:
 - a) must have an adequate supply of tepid water
 - b) must have individual controls inside the room to regulate water flow or temperature if there is hot and cold water
 - c) must be inspected daily for defects and cleanliness
 - d) must have clean towels.

Procedures for entering and leaving the Type 3 enclosure

Workers entering the work area must:

- a) enter the clean room of the worker decontamination unit, remove all street clothing, store it in the space provided and put on clean, appropriate respiratory protection and protective clothing (disposable and covers head)
- b) pass through the shower room to the equipment room
- c) leave the equipment room to enter the work area.

Workers leaving the work area must:

- a) remove visible contamination from their protective clothing and respiratory protection in the work area
- b) enter the equipment room of the worker decontamination unit and remove all loose asbestos fibre from their respiratory protection equipment with the use of a HEPA filter-equipped vacuum cleaner
- c) remove the disposable coveralls and place them in an asbestos waste container
- d) pass into the shower room and shower thoroughly without removing the respiratory protection
- e) remove and thoroughly clean the respiratory protection equipment and store it appropriately
- f) place adhesive tape (duct tape) on the respirator filters prior to storage in the clean room
- g) pass into the clean area, dry off, dress and leave through the clean area door.



Remote decontamination areas

- Notification to WSH should include information regarding the use of remote decontamination units.
- Where it is not practical to attach the worker decontamination unit to the work area and passage through a non-contaminated zone is necessary, a two-room worker decontamination unit must be located at both the work site and at the remote worker decontamination unit, and the following procedure used to enter and exit the area:
 - a) when starting work, workers must:
 - i. enter the clean room of the remote worker decontamination unit, remove all street clothing, store it in the space provided and put on appropriate disposable protective clothing
 - ii. pass through the shower room and proceed to the decontamination unit attached to the work site
 - iii. enter the clean room of the worker decontamination unit attached to the work site and put on appropriate respiratory protection
 - iv. pass through the equipment room and enter the work area.
 - b) at the end of work, workers must:
 - i. remove visible contamination in the work area
 - ii. enter the equipment room of the worker decontamination unit attached to the work area and remove all asbestos fibre from respiratory protection using a HEPA-filter equipped vacuum cleaner
 - iii. disposable coveralls should be placed in an asbestos waste container for disposal with the asbestos waste
 - iv. proceed into the clean room, put on appropriate clean protective clothing, remove the respiratory protection and store it appropriately using adhesive tape to cover the filters; respiratory protection must be cleaned following manufacturers' instructions prior to next use.
 - v. proceed immediately to the remote worker decontamination unit
 - vi. enter the shower area of the remote worker decontamination unit, remove protective clothing and shower thoroughly
 - vii. pass into the clean area, dry off, dress in street clothes and leave through the clean area.

Waste disposal and waste decontamination

- All waste containing asbestos must be cleaned up frequently during work, and immediately after work is completed, by wet sweeping or wet mopping. Waste must be placed in an asbestos waste container and disposed of as asbestos waste.
- Waste containing asbestos must be kept wet.
- All bags of waste asbestos and contaminated protective clothing must be removed from the work area through a waste decontamination unit connected to the negative pressure enclosure.
- The waste decontamination unit must consist of a series of interconnecting rooms including:
 - a) a container clean room is a contaminated space
 - b) a holding room is a clean space; no worker need enter here
 - c) a transfer room is a clean space.

- The waste decontamination unit must be constructed so that overlapping curtains of polyethylene sheeting or other suitable material are fitted to each side of the entrance or exit to each room.
- Bags of asbestos waste and contaminated protective clothing must be removed from the work area using the following procedure:
 - a) Remove any contamination visible on the outsides of bags in the work area.
 - b) Transfer the bags into the container cleaning room.
 - c) Clean the outsides of bags with a damp cloth or sponge, place each bag into a second 6-mil polyethylene bag, seal the outer bag and transfer the double-bagged waste to the holding room.
 - d) Worker(s) performing the activities described in (b) and (c) must wear the same protective clothing and respiratory protection as those workers in the contaminated work area.
 - e) Workers performing the activities described in (b) and (c) must exit by the worker decontamination unit.
 - f) The double-bagged waste is then moved from the holding room to the container clean room, without entering the holding room, and then outside the waste decontamination unit by a worker who enters from the waste container clean room.
 - g) Workers performing the activity described in (f) do not require respiratory protection or protective clothing.
- Contaminated equipment, tools and other items used in the work area must be cleaned with a damp cloth, vacuumed with a vacuum equipped with a HEPA filter and removed from the work area through the waste decontamination unit by the same method as described for asbestos waste.
- Before the negative pressure enclosure, worker decontamination unit, and waste decontamination unit may be removed or altered:
 - a) the contaminated areas must be decontaminated by a combination of wet cleaning and vacuuming with vacuum cleaner equipped with a HEPA filter
 - b) there must be no visible trace of asbestos, any debris or dust
 - c) a lock-down agent should be used on the inside of the enclosure walls, ceiling and floors (on the polyethylene) and on in situ building materials that have been stripped of ACMs wherever possible to prevent any remaining fibres from becoming airborne
 - d) final air clearance samples must be collected and the results confirmed to be acceptable for dismantling the enclosure
 - e) it is recommended that an aggressive technique be used when collecting the final air clearance sample.
- All polyethylene sheets used to form the negative pressure enclosure, the worker decontamination unit(s), the waste decontamination unit and the polyethylene sheets covering all openings inside the contaminated area must be folded to contain any remaining debris, placed in an asbestos waste container and disposed of as asbestos waste.



5. ADDITIONAL REQUIREMENTS

5.1 DISPOSAL OF ASBESTOS WASTE

Friable

- Loose material collected by other means should be placed in an asbestos waste container.
- Asbestos waste must not be allowed to dry out on floors or other surfaces of the work area.
- Asbestos waste must be placed in suitable containers immediately on removal.
- Full containers must be sealed immediately to prevent the escape of airborne asbestos fibres.
- The external surface of all asbestos waste containers must be cleaned with a vacuum cleaner equipped with a HEPA filter or by wet wiping.
- The cleaned containers must be removed to a secure area set aside for such waste.
- The containers and the waste storage area must be clearly identified as containing asbestos.

Non-friable asbestos materials

- Non-friable asbestos waste, including ceiling tiles, gaskets, seals, packing, construction mastics, panels, siding, shingles, wallboard, brake shoes and clutch plates, asbestos cement products and joint sealant must be stored in a way to ensure that asbestos fibres will not become airborne while awaiting disposal.
- Non-friable asbestos waste must be placed in an asbestos waste container.
- Non-friable asbestos waste must be wetted in order to minimize the creation of airborne asbestos fibres.

Labelling and isolation of waste

- All containers of asbestos waste must be labelled in accordance with Part 35 of the *Workplace Safety and Health Regulation*.
- The label on containers of asbestos waste should include:
 - a) a product identifier
 - b) information for the safe handling of the controlled product.
- Asbestos waste awaiting disposal must be stored so that waste containers will not be damaged. Asbestos waste must not be mixed with other wastes having no special disposal requirements.

Transport of waste

- Written instructions on the actions to be taken in the event of an accidental spill must be issued to drivers of vehicles carrying asbestos waste.
- Workers must be trained in the procedures for cleaning up a spill.
- Workers performing the cleanup of a spill – workers must wear protective appropriate clothing and respiratory protection equipment.
- Cleanup procedures must be carried out immediately in the event of accidental spill during transport to the disposal site.
- All vehicles used for the transport of asbestos waste must be cleaned after unloading.

Procedure at the disposal site

- Approval for the disposal of asbestos waste at a disposal site must be obtained from the municipal authority, and/or Manitoba Conservation and Water Stewardship before a disposal site is used.
- The disposal site chosen must have vehicular access to the working face or to a hole or trench dug specifically to receive the asbestos waste.
- The waste should be deposited at the foot of the working face of the landfill site or at the bottom of an excavation dug to receive it.
- Ensure that bags or containers are not broken when the waste is being disposed of. All friable waste must be:
 - a) covered to a depth of 20 to 25 centimetres as soon as possible
 - b) covered to a minimum depth of 1 metre by the end of a working day.
- Ensure that non-friable waste deposited on a dry site is not broken by vehicles moving over it.
- Employers must provide suitable protective clothing, respiratory equipment and training for workers who are involved in collecting, transporting or disposing of asbestos waste.

5.2 MEDICAL SURVEILLANCE

Medical surveillance applies to workplaces where workers may have at least 100 hours of accumulated exposure to fibrogenic dust during a year of work.

SCREENING PROGRAM COMPONENTS

1. Pre-placement and baseline medical screening

- (a) A medical and occupational history, with emphasis on the respiratory system
- (b) A physical examination, with emphasis on the respiratory system
- (c) Pulmonary function test (PFT) – outlined in Table A below
- (d) A baseline chest x-ray
- (e) A respiratory health questionnaire (shown below)

2. Periodic medical screening

- (a) A biennial occupational medical history, with emphasis on any exposures during the previous year
- (b) A biennial pulmonary function test (PFT) in Table A
- (c) A biennial respiratory health questionnaire
- (d) A physical medical examination (with emphasis on the respiratory tract) should be pursued if the occupational medical history indicates a possible health problem that may be adversely affected by the work or the work environment
- (e) A chest x-ray as outlined in the schedules in Table B below



3. Reporting and actions

A. List of workers in the surveillance program

- List of those who participate in surveillance **each** year
- This list is to be shared with the workplace safety and health committee

B. Recording and reporting of individual results

- Each worker is told the results of all his/her screening tests and provided with further instruction and advice as indicated. This may be carried out by the employer's designated Occupational Health Physician/ Occupational Health Nurse or the worker's personal physician.
- The name and address of the worker's personal physician and date of screening must be recorded on the worker's chart.
- If the worker has gone or been sent to a private physician/clinic, the worker should provide the physician with an employer's form for signature indicating whether the worker is: fit for usual work; able to work with specified restrictions; or is unfit for work. The worker is then to return this signed form to the employer.
- A record of all individual workers' medical test results must be kept in a confidential file by the employer and accessible only by designated occupational health personnel. This file must be made available for 10 years.
- Confidential medical information, such as individual test results, can only be shared with the express written permission of the worker, except as stated above.

C. Results

The employer is responsible for setting up an "occupational health service" that will ensure the following instructions are carried out. This may be done by establishing a complete occupational health service that includes its own physician and nurse who then carry out all aspects of the Screening Guideline.

Alternatively, especially for employers with fewer workers, the screening program may be contracted out or a system be devised for workers to attend their own physicians. If, however, a worker does not have a personal physician, the company will have to contract with a physician to interpret and advise on the results. The employer must have a process in place for ensuring the worker is properly assessed for medically indicated work restrictions. This may be provided by the designated occupational health physician or, if necessary, by the worker's own physician. All abnormal results are to be forwarded to the worker's physician, if the worker agrees.

The appropriate medical investigation, treatment and followup are the responsibility of the worker's primary care physician. This followup includes the explanation of test results and their implications, especially as they relate to working. Note: A lung CT scan may be ordered for any worker whose chest x-ray report indicates the possibility of a silica- or asbestos-related abnormality – this is based on a case-by-case evaluation.

All abnormalities reported as work-related and that require medical investigation and or further treatment are to be reported to the Chief Occupational Medical Officer. The Chief Occupational Medical Officer may be in contact with the worker's physician to discuss the work-relatedness and prognosis for cure. A workplace safety and health investigation and improved preventive steps may be necessary to ensure worker protection from exposure.

Work-related disease must also be reported to the Workers Compensation Board on a case-by-case basis.

D. Annual Report

The employer must produce an annual report that includes a summary of the screening program test results and a summary of the actions taken by the employer to reduce worker exposure to fibrogenic dust. The report must also include the number of workers who undergo screening, the work location and type of work performed by each worker.

This Annual Fibrogenic Dust Surveillance Report must be forwarded to the Chief Occupational Medical Officer at the Workplace Safety and Health Division, and be shared with the joint workplace safety and health committee.

Table A – PULMONARY FUNCTION TESTING

FEV1
FVC
FEV1 / FVC ratio

TABLE B – CHEST X-RAY SCREENING FREQUENCY FOR SILICA OR ASBESTOS EXPOSURE

Duration of exposure*	Chest x-ray frequency
0 to 15 years	Every 4 years
Over 15 years	Every 2 years

* “Duration of exposure” includes the cumulative time from all previous employment

Chest x-rays must be interpreted and reported on by a licensed Radiologist. **All abnormal Pulmonary Function Tests (PFT)** must be interpreted and reported by a licensed physician experienced in reporting such tests.



Health Questionnaire Fibrogenic Dust – Health Questionnaire

(This questionnaire focuses on respiratory health. However, other health issues may be of equal or more importance to the individual worker – this should be elaborated on and noted as necessary.)

Interview Date (M/D/Y) Worker ID Number

Last Name First Name

Address City Postal Code

Gender Male Female Birth date (M/D/Y)

MHSC # (medical) Occupational code

Company Name &

Company Business WCB firm number

Family Physician Physician Clinic

Clinic Address

Past Occupational History Answer Comments

Have you ever had a serious lung problem, like TB No Yes

Have you had exposure to asbestos/silica in your previous job? No Yes

Have you been exposed to gas or chemical fumes since last surveillance or on previous job? No Yes

When was your last chest x-ray?

Present Occupational History

Position/Job title

How long have you been working at this job?

Do you work underground or on surface?

Do you work in a quarry/gravel pit/pit No Yes

Do you work in casting/smelter? No Yes

Do you work in pottery/grinding? No Yes

Do you work in an asbestos/silica dusty environment? No Yes

Do you need to wear a respirator at work? No Yes

Medical History Comments

Does your health interfere or impair your performance at work? No Yes

Have you ever been diagnosed with T.B., interstitial fibrosis, asbestosis, silicosis, lung cancer No Yes

Have you ever been diagnosed with asthma, bronchitis or emphysema? No Yes

Have you had any chest injuries or surgeries? No Yes

Have you ever or are you now experiencing

- 1. Shortness of breath (SOB) or wheezing when:
 - a. walking at a brisk pace on ground level or up slight hills No Yes
 - b. walking with other people of your age on a ground level No Yes
 - c. at rest No Yes
- 2. Coughing frequently and most days? No Yes
 - If yes, for how long?
 - Do your symptoms change during the working day? No Yes
 - Do you use a puffer (bronchodilator or inhaled steroids) No Yes
 - If yes, how often do you use it?
 - What causes more frequent puffer use?
 - Have you had a cold, bronchitis or pneumonia within last 3 weeks? No Yes

Tobacco Smoking

- Have you ever smoked? No Yes
- Do you smoke now? No Yes
- When was the last time you smoked?
- How old were you when started smoking?
- On average, how many cigarettes, cigars or pipes do you or did you smoke per day?



6. ADDITIONAL INFORMATION

Personal Monitoring

- For details on the requirements of personal monitoring, refer to Part 36
- Personal monitoring is carried out while the worker is working.
- Personal monitoring is done in a way that the average and, in any case, the maximum level of exposure of each worker can be determined when the concentration of airborne asbestos fibres may vary from one work operation or phase to another.
- Personal monitoring should be done at various times throughout the work shift and, where appropriate, should include short-term sampling during periods of peak emission.

Record-keeping

Monitoring records must be kept for 30 years.

Personal protective equipment

For details on personal protective equipment, refer Part 6 of the *Workplace Safety and Health Regulation*.

Respirators

- A respirator must not be shared unless it is cleaned and disinfected before a different worker uses it.
- All respirators must be provided and maintained by the employer without cost to the worker.
- Only those types of respirators tested and certified by the National Institute for Occupational Safety and Health (NIOSH) in accordance with the current edition Canadian Standards Association Standard CSA Z94.4 – 11 (or most current), Selection, Use and Care of Respirators, or other device approved by the director of the Workplace Safety and Health Branch may be used.
- All air purifying respirators must be equipped with an N, P, or R 100 filter.
- A respirator must be selected with an appropriate protection factor so that the user's exposure does not exceed 0.1 fibres per cubic centimetre of air.
- The protection factors (adopted in CSA Standard Z94.4 – 11), presented in Table 1 of this guideline must be used when selecting a respirator.
- The maximum use concentration for each type of respirator is listed in Table 1.
- The employer must provide supervision to ensure the respirator is used properly.
- Workers required to wear a respirator must be adequately trained in the use, care and maintenance of that respirator.
- Instruction must be given on:
 - a) reasons for using the respirator
 - b) when to use the respirator
 - c) how the respirator works
 - d) how to check for proper fit
 - e) how to perform regular servicing
 - f) the name of the respiratory protection program co-ordinator.

- A record of training must be kept for each worker.
- Respirators must be appropriately cleaned and serviced on a regular basis.
- A suitable container, such as a metal box or polyethylene bag, must be provided to store individual respirators when not in use.
- Respirators must be maintained according to procedures described in Canadian Standards Association Standard CSA Z94.4 – 11 and the manufacturer's specifications.

Respirator fit testing

- An ongoing record must be kept for each worker who is required to wear a respirator, listing the type of respirator issued, the date of **fit testing**, model number and size, and method of fit testing (i.e., qualitative or quantitative).
- Respirator fit testing should be conducted every two years and include the medical pre-screening step.
- Respirator fit testing must be carried out by a competent professional experienced in the practice of fit testing.
- Use of respiratory protection should be recorded on the monitoring records of exposure for that job.

Protective clothing

- When the use of a respirator is required, protective clothing must also be provided and worn.
- Protective clothing, including appropriate head covering, must completely cover all parts of the body.
- Protective clothing must be disposable.

Other trades working with ACMs

All trades and workers involved in the manufacturing of products that contain ACMs should, at minimum, receive awareness training. In addition, the following practices should be applied for these workers.

Use of friction material in workshops

- Where practical, friction materials should be supplied prefabricated, machined or drilled to requirements.
- Where practical, hand tools or slow-running tools that produce coarse dust or chips should be used rather than high-speed machines or those that cut by grinding or scraping the material.
- Fixed workstations or machines should have an effective local exhaust ventilation system installed.
- Portable tools should be fitted with built-in local exhaust units.
- Low-volume, high-velocity systems are the most appropriate for this purpose.
- All local exhaust ventilation systems must be fitted with HEPA filters.
- Dust extraction equipment should be installed at workstations where linings, blocks and clutch facings are riveted.
- All exhaust ventilation equipment should be inspected and tested by a competent person at regular weekly intervals.
- A record of every inspection should be kept.



APPENDIX A

TABLE 1

This table is based on *CSA Z94.4-11 Selection, Use and Care of Respirators* for the more common respiratory protection types with the appropriate quantitative fit test performed. Assigned Protection Factor (APF) values are a maximum of 10 with a qualitative fit test.

Type of Respirator	Assigned Protection Factor	Maximum Use Concentration fibres per cc
Air Purifying		
disposable filtering facepiece or dust mask	Not recommended for protection from airborne asbestos fibres	
half facepiece	10	1
full facepiece	50	5
Powered Air Purifying		
half facepiece	50	5
full facepiece	1000	100
helmut/hood	25*	2.5
loose-fitting facepiece/visor	25	2.5
Air Supplying		
airline (pressure demand or continuous flow)		
half facepiece	50	5
full facepiece	1000	100
self contained breathing air SCBA (pressure demand)	10000	1000
*With a SWPF study, the APF is 1000 Manufacturer may provide a simulated workplace protection factor study		

GLOSSARY

Amended water – Water with the addition of a wetting agent such as a non-sudsing type of soap, used at the manufacturers' recommended concentration.

Asbestos – The fibrous form of crocidolite, amosite, chrysotile, anthophyllite, actinolite, tremolite or a mixture containing any of these minerals.

Asbestos-containing material

- a) a friable material containing 0.1 per cent or greater asbestos;
- b) a non-friable material containing 1.0 per cent or greater asbestos; and
- c) vermiculite insulation that contains asbestos.

Asbestos dust – particles of asbestos or settled particles of asbestos that may become airborne in the workplace.

Asbestos fibre – a particle form of asbestos greater than five micrometres in length, with a minimum length-to-diameter ratio of three to one.

Asbestos work area – Area within which the work taking place will, or may, disturb ACMs.

Asbestos waste container – Impermeable container labelled as asbestos-containing materials, comprised of the following:

- A sealed 6 mil (0.15 mm) polyethylene bag or glove bag, inside a second 6 mil (0.15 mm) sealed polyethylene bag; or
- A sealed 6 mil (0.15 mm) polyethylene bag or glove bag, positioned inside or outside a rigid sealed container of sufficient strength to prevent perforation of the container during filling, transportation and disposal.

Competent person – A person who, through education, training and experience, understands the nature, monitoring and control of health hazards associated with exposure to asbestos. Registered occupational hygienists (as registered by the Canadian Registration Board of Occupational Hygiene) and certified industrial hygienists (as certified by the American Board of Industrial Hygiene) are deemed to be technically qualified people. Other people without such certifications may be technically qualified based on other education, training and experience.

Decontamination unit – A series of interconnected airlocks used for employee or waste decontamination.

Designated material – A chemical or biological substance that meets criteria as a carcinogen, mutagen, respiratory sensitizer, reproductive toxin, fetotoxin or teratogen under the Workplace Safety and Health Regulation.

Friable material – A material that when dry can be crumbled, crushed or powdered by hand pressure.

HEPA filter – A high efficiency particulate air filter capable of removing 99.97 per cent of a 0.3 micrometre aerosol.

Negative pressure enclosure – A restricted enclosed area within a workplace where reduced pressure is created by removing air from the enclosure and passing it through a HEPA filter, to the outside of the building.

NIOSH – National Institute of Occupational Health and Safety.

Non-friable material – A material that when dry cannot be crumbled, crushed or powdered by hand pressure (e.g., vinyl asbestos floor tiles, vinyl sheet flooring, or gaskets).









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