



**SAFE
WORK**

S SPOT THE HAZARD
A ASSESS THE RISK
F FIND A SAFER WAY
E EVERYDAY

**EVERYONE'S
RESPONSIBILITY**



Guidelines for an Asbestos Operations and Maintenance Program

February 2007

Manitoba 

Guidelines for an Asbestos Operations and Maintenance Program

**Workplace Safety & Health
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INTRODUCTION

Introduction

This guideline provides general information to building owners, custodial staff, maintenance staff, consultants, abatement contractors, building occupants and others concerned with the presence of asbestos and materials containing asbestos in buildings. This guideline provides information about action that must be taken by people performing maintenance and renovation programs to prevent asbestos from becoming an airborne hazard. Information is also provided on proper decontamination following a disturbance of asbestos or materials containing asbestos.

Workplace Safety and Health Regulation Requirements

The Workplace Safety and Health Act and Part 37 of the Manitoba Workplace Safety and Health Regulation, M.R. 217/2006, require specific actions when a potential health hazard is present in a workplace. This guideline explains actions required when asbestos is present, including the development of a written control plan, creation of an inventory, notification, labelling, training, periodic surveillance, renovation and fibre release.

ASBESTOS OPERATIONS AND MAINTENANCE PROGRAM

Introduction

If material containing asbestos is in good condition, and is unlikely to be disturbed or eroded, building clean up followed by proper maintenance and periodic reassessment is appropriate. This is referred to as an operations and maintenance program (O&M).

The purpose of an O&M program is to:

- clean up asbestos fibres previously released
- prevent future release by minimizing disturbance or damage of material containing asbestos
- monitor the condition of the material containing asbestos

The O&M program must continue until all material containing asbestos is removed or the building is demolished.

The O&M program includes:

- a written asbestos control plan
- an inventory of **all** materials containing asbestos
- labelling of **all** materials containing asbestos
- notifying building occupants
- training all maintenance and custodial staff and any other person required to work with or near materials containing asbestos
- monitoring material containing asbestos
- procedures for renovations involving or near materials containing asbestos
- special clean up procedures following an incident of fibre release

Sources of asbestos in a building may include:

- asbestos cement pipes, wallboard, shingles, siding, roofing
- vinyl and asphalt flooring, including backing and mastics
- acoustic or decorative wall and ceiling plaster, 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, joint compounds, adhesives
- interior surfaces of ductwork in buildings contaminated with asbestos

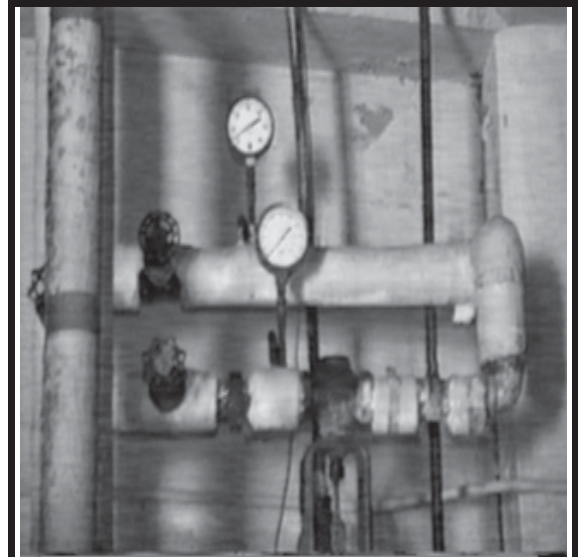
An effective O&M program requires commitment from all levels of management.

It is recommended that the building owner or employer appoint an asbestos program manager to oversee the program. The asbestos program manager may be a health and safety officer, risk manager, physical plant director, maintenance manager, building and grounds manager or facility manager. The asbestos program manager, all maintenance staff, all custodial staff and members of the workplace safety and health committees or the safety and health representatives are key participants in O&M programs.

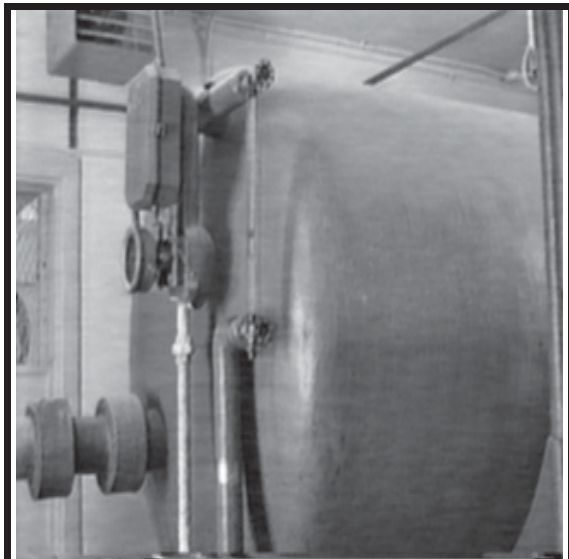
Examples of Materials Containing Asbestos



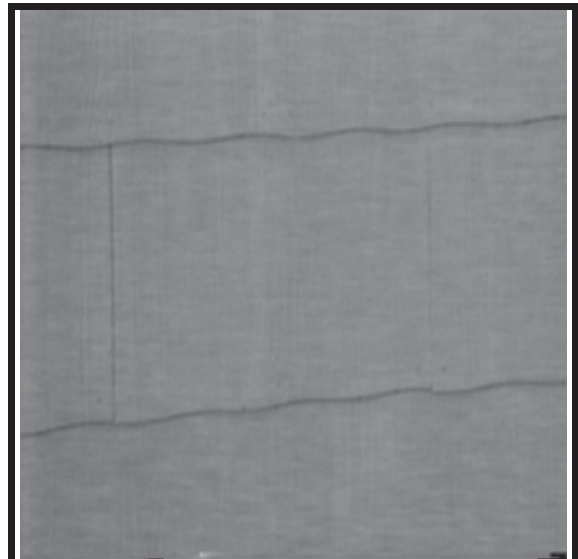
Structural Insulation



Pipe Insulation



Boiler or Vessel Insulation



Exterior Wall Siding

ASBESTOS CONTROL PLAN

The purpose of the asbestos control plan is to state what the building owner will do to control material containing asbestos while it remains in that building. The written plan directs maintenance and custodial staff and contractors who work in the building. It must be developed and implemented in consultation with the workplace safety and health (WSH) committee or representative. If the facility has multiple tenants, the owner must ensure each tenant's WSH committee or representative is consulted in developing and implementing the plan.

The written plan must state clearly who is responsible for each action required in the O&M program. It must also state how and when that action will be performed. The plan must be provided to the workplace safety and health committee or representative and communicated to all building occupants.

The plan should:

- describe all buildings included in the plan
- name the designated asbestos program manager
- advise who will prepare and maintain an asbestos inventory
- state where the inventory will be stored
- show how building occupants, maintenance staff, external contractors, and others will be informed of the presence of asbestos
- describe how materials containing asbestos will be labelled or identified
- name staff to be trained in asbestos control procedures
- provide details about who will provide asbestos control training and when
- state when periodic surveillance will be performed and who will perform it
- list who will carry out any repairs needed
- describe what repair methods will be used

INVENTORY

The first step in the O&M program is to identify all materials in the building containing more than 0.1 per cent of friable or fragile asbestos, or more than 1 per cent of non-friable or sound asbestos. This is done by preparing a complete inventory of all asbestos materials. Conducting a walkthrough inspection, studying architectural plans for the building and submitting samples of suspected materials for analysis will help you complete an accurate inventory. Specific precautions must be taken to avoid exposure to asbestos while collecting samples:

- no more than 5 to 6 square centimetres should be collected (contact the laboratory performing the analysis for their exact requirements)
- if more than one layer of material is present (for example a boiler covering) the sample must include material from each layer
- samples must be collected only when an area is not occupied
- only people needed should be present
- the sample container (sealable plastic bag or pill bottle) must be held away from the face during sampling
- each sample must be collected in a separate container
- each sample container must be numbered and a record kept of where each sample was collected
- suspect material must not be disturbed more than necessary
- suspect materials must be sprayed with a light mist of water to prevent fibre release during sampling
- people taking samples must wear, at minimum, a half-face respirator with a *NIOSH-rated N100, P100 or R100 air filter
- if pieces of material break off or are dislodged during sampling, immediately wet mop/wipe or use a **HEPA filter vacuum where material fell and properly dispose of any debris



Collecting a Bulk Sample

*National Institute for Occupational Safety and Health

**high efficiency particulate air

Materials that may contain asbestos (listed on page two) must be handled as if they do unless documentation or analytical testing confirms they do not. 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. In situations where the same material has been used throughout the area or building, only three to five samples of that material need to be tested.

When selecting a laboratory to perform the analysis, first confirm whether the laboratory's employees know the proper techniques for asbestos analysis.

The inventory is an important record that must be maintained by the asbestos program manager. Review the inventory before conducting maintenance or renovation work on or near materials containing asbestos.

NOTIFICATION

If materials containing asbestos are found in a building, all building occupants must be informed and provided with basic information on how to avoid the potential hazard in the building. Building occupants, maintenance staff, custodial staff, outside contractors and others are unlikely to disturb the materials if they know 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 materials containing asbestos they are to work on, or may potentially disturb, prior to any work being done.

Building occupants need to know:

- 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 materials containing asbestos that may affect them
- the condition of the existing materials containing asbestos
- the intended action for each location where asbestos is found (ex: abatement, leave intact, ongoing cleaning)
- the health hazards associated with asbestos exposure
- directions not to disturb or damage any material containing asbestos
- any disturbance or change in the condition, of the material containing asbestos, such as crumbling, dust or debris accumulation, must be reported to the asbestos program manager

LABELLING

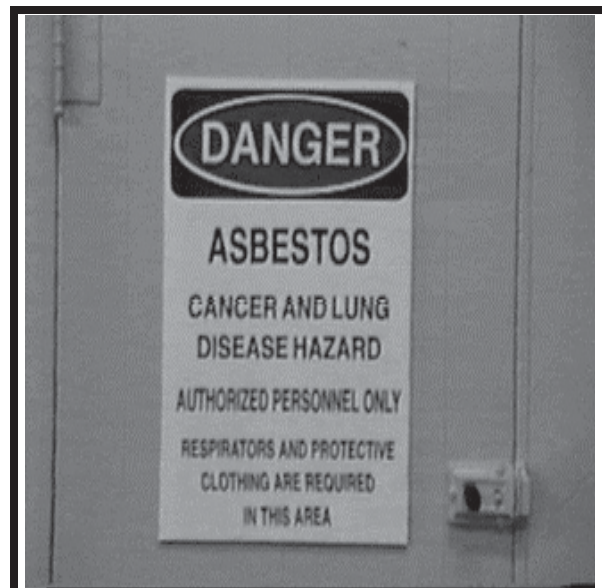
Labelling functions as a final line of defence to prevent unprotected or unauthorized people from:

- risks associated with exposure to material containing asbestos
- disturbing materials containing asbestos
- entering an area where repair or renovation activities involving these materials are underway

Labelling is usually in the form of posted signs:

- 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 of an asbestos clean up or removal project is shown (right), and represented in the text below:



Warning Sign Outside of 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 material containing asbestos would be:

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

TRAINING

Training of maintenance and custodial staff, who perform routine activities on or near materials containing asbestos, is an important part of an effective O&M Program. Training must include:

- what asbestos is and how it is used
- health effects associated with exposure to asbestos
- **exact** locations of materials containing asbestos in the building
- how to avoid disturbing materials containing asbestos
- how to recognize and report damage to these materials
- how custodial and maintenance staff must deal with materials containing asbestos to prevent fibre release, including wet mopping, wiping and HEPA vacuum cleaning techniques (see section viii for further information on HEPA vacuuming)
- selection and use of protective clothing and respirators
- procedures for the safe use, storage, handling and disposal of asbestos (additional information regarding disposal of asbestos is available from Manitoba Conservation)
- procedures for dealing with asbestos dust
- procedures in the event of an emergency involving asbestos
- periodic and long term actions put in place to protect the health and safety of building occupants
- names and telephone numbers of people responsible for asbestos related activities in the building

The employer must educate and train employees likely to work in areas where asbestos is present. The employer must ensure that maintenance and custodial staff are aware of the health risks, methods of prevention and proper work practices associated with asbestos. All custodial and maintenance staff whose work may disturb materials containing asbestos must receive training before performing their work. Training programs for custodial and maintenance staff must be reviewed every year, or more often, depending on changes in work conditions.

Maintenance staff required to work on materials containing asbestos must receive specific training relevant to that work. Depending on the specific tasks involved, maintenance staff may also need training in specific asbestos abatement techniques including:

- isolation of the HVAC system
- isolation of the work area
- HEPA vacuuming
- methods to reduce fibre release
- glove bag techniques for working around pipe insulation
- clean up and decontamination procedures
- respiratory and body protection

- disposal of materials containing asbestos

When work near or on materials containing asbestos may result in the material being significantly disturbed, consider employing contractors knowledgeable in asbestos abatement.

Precautions should be taken before allowing outside contractors to work on or near materials containing asbestos. Provide all contractors with information about the location of materials in the building known or suspected to contain asbestos. The asbestos program manager or building owner must require proof that the contractor is familiar with the site-specific O&M program, has experience working with or around materials containing asbestos and has adequately trained workers. A trained member of the building custodial or maintenance staff should be present to oversee all maintenance performed by outside contractors on materials containing asbestos.

PERIODIC INSPECTION

Periodically inspecting all asbestos containing materials identified in the inventory is essential to the O&M program. Inspection and damage reports completed by custodial and maintenance staff, can identify damage or deterioration allowing corrective action **before** any exposure risk occurs. Inspection must be performed at least once a year. The building owner may inspect more frequently if damage potential is high.

When inspecting, the following information, at a minimum, must be recorded:

- the location of the material containing asbestos, address, building room(s), or general description
- the type of material containing asbestos
- the present abatement status, if any (encapsulate, enclosed, or neither)
- evidence of physical damage
- evidence of water damage
- evidence of delamination or other deterioration
- the degree of material accessibility
- the level of work activity near the material
- the location of nearby air plenums, air shafts, or air streams, if any

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 clean up, 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.

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

CLEANING PROCEDURES

While the principal objective of the O&M program is to maintain materials containing asbestos in good condition to prevent fibre release, cleaning up existing and occasional asbestos contamination may be necessary.

Contaminated areas must be decontaminated as part of the O&M program. Only properly trained and protected workers may do this. It is essential to use approved cleaning procedures.

Only wet mopping/wiping or specialized vacuuming may 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 either water or **amended water** before cleaning. Amended water is a mixture of water and commercially available chemicals that allow water to penetrate more easily into the material containing asbestos. A dust suppressant could also be used on mops. Wetting surfaces reduces the potential for asbestos dust to become airborne. Dry brooms, mops, dust cloths and standard household or shop vacuum cleaners must not be used for asbestos clean up as they may create a risk of airborne exposure to asbestos fibres.

Irregular surfaces (curtains, books, furniture and carpeting) should be cleaned using a HEPA vacuum. Other 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. Workers performing this initial decontamination must wear an appropriate respirator and body protection. Additional information on cleaning procedures is available in the Manitoba Workplace Safety and Health Division (WSHD) publication: *Guidelines for Working With Asbestos*.

Periodic cleaning is less demanding than initial decontamination. Periodic cleaning is to be done as needed or on a regular schedule, depending on the extent of the material containing asbestos in the building and the amount of contamination. Respiratory protection is not normally required for custodial staff performing periodic cleaning.

PROHIBITED ACTIVITIES

Custodial and maintenance staff must ensure that their activities do not damage or disturb materials containing asbestos. Custodial and maintenance staff must be instructed to observe these 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 materials containing asbestos
- **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 materials containing asbestos
- **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, clearing the area of other people and observing asbestos waste disposal procedures
- **do not** remove ventilation system filters in a dry state
- **do not** shake ventilation system filters

RENOVATION

Renovation is defined in this document as “alteration where the material containing asbestos is not intended to be removed or controlled, 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 asbestos abatement procedures are required where material containing asbestos will be removed or controlled. These procedures must be in place before the renovation activity begins. Further details for the intended removal of asbestos can be found in the WSHD publication: *Guidelines for Working With Asbestos*.

Where renovation involves direct contact but not removal of materials containing asbestos (ex: painting or wallpapering over material containing asbestos), special precautions must be taken not to create dust. Where an activity may disturb materials containing asbestos, 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.

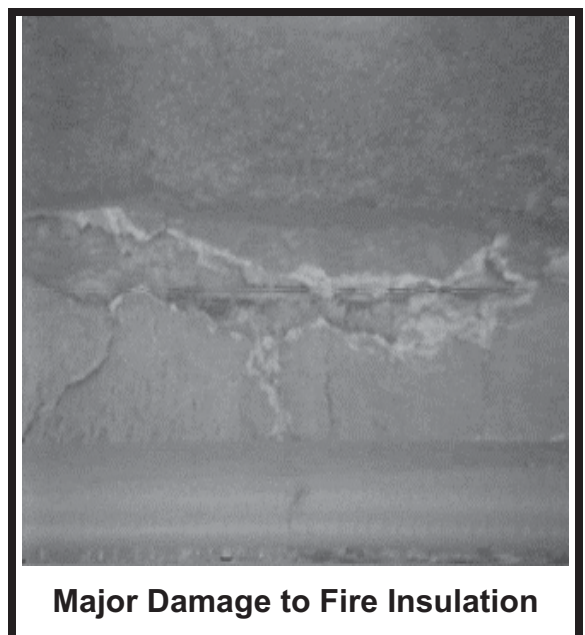
The asbestos program manager must review plans for renovation, remodelling or maintenance work near materials containing asbestos before work begins. A written request and approval system must be used to ensure proper procedures and precautions will be in place to prevent asbestos contamination. Sample forms (Form 2 and Form 3) to record the request and approval are included at the back of this guideline.

FIBRE RELEASE INCIDENTS

As long as material containing asbestos remains in the building, a fibre release incident may occur. Custodial and maintenance staff must remain alert for debris on the floor; water or physical damage to the material containing asbestos or other evidence of possible fibre release. Fibre release may occur with normal breakdown of material containing asbestos 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 abatement contractors as soon as possible.



Minor Damage to Pipe Wrap



Major Damage to Fire Insulation

The minor and major incidents discussed in this section are not planned asbestos 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 material containing asbestos is dislodged or exposed

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:

- Immediately control all access to the affected area. Unauthorized people should not be allowed entry to the area.
- Workers must wear an appropriate respirator (see Table 1) based on the potential exposure to asbestos fibre or, at a minimum, a half face, negative-pressure, air-purifying respirator with an N, P or R100 particulate filter.
- Workers must 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 a doubled 6-millimetre plastic bag (total thickness 12 millimetres) 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.
- All debris and materials used in the clean up must be double-bagged, 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 material containing asbestos 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.

The following procedures must be used in the event of a major release of asbestos fibres:

- A notice of asbestos abatement must be submitted to the Workplace Safety and Health Division, complete with a statement of the action to be taken.
- 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.

- Determine the extent of contamination with a thorough inspection. All people determining the extent of contamination must wear a powered air purifying respirator with a N, P or R100 particulate filter (or select an appropriate respirator from TABLE 1 based on the potential asbestos fibre exposure), a protective body suit, boots and head cover.
- Doors, windows and air registers in the contaminated area must be sealed with two layers of 6 mm plastic sheets and tape. The area must be isolated electrically.
- Appropriate warning signs must be posted to prevent unauthorized entry.
- Workers performing the decontamination must wear appropriate respirators based on the potential asbestos fibre exposure, the minimum being powered air purifying respirators with an N, P or R100 particulate filter, as well as protective body suits, boots and head covers.
- Fallen debris must be sprayed with amended water, double bagged, labelled and properly disposed of as asbestos waste. The floor must be thoroughly cleaned using wet mopping/wiping and vacuumed with a HEPA vacuum cleaner.
- Walls, ceilings, pipes, boilers, or other surfaces where material containing asbestos was damaged, must be temporarily repaired. This may involve plastering with asbestos-free material, spraying with an encapsulant or taping with duct tape.
- All equipment and tools used in the clean up operation must be washed or wiped with damp cloths. All HEPA vacuums must be immediately emptied and decontaminated. All disposable materials (ex: cloths, mop heads, filters, coveralls) must be discarded as asbestos waste.
- Before clean up work begins, a smoke generator should be used within the enclosure to test the efficiency of the enclosure. A visual inspection of the isolation system must be conducted before the clean up is started and before each work shift. Any defect found on inspection or testing must be remedied immediately.
- Monitoring for airborne asbestos fibres must be carried out just outside the work area.
- Where a visual examination of the enclosure reveals a problem, or air monitoring performed outside the enclosure is found to be in excess of the occupational exposure limit of 0.1 fibre per cubic centimetre, clean up activities must stop immediately and not begin again until the defect in the enclosure has been remedied.
- Air monitoring must be performed before the plastic barriers are removed and the area reoccupied. The concentration of asbestos within the enclosure must be less than 0.01 fibres per cubic centimetre of air before the enclosure is removed and occupants are allowed to re-enter the area. Additional air monitoring information is available in the WSHD publication *Guidelines For Working With Asbestos*.
- Worker decontamination procedures must be followed. Additional information on decontamination is available in the WSHD publication, *Guidelines For Working With Asbestos*.

- All normal procedures for asbestos abatement must be followed. Further specific requirements are contained in the WSHD publication *Guidelines For Working With Asbestos*.

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.

Form 1: Reinspection of Asbestos-Containing Material

Location of material containing asbestos (address, building, room or general description):

Type of material(s) containing asbestos:

1. sprayed or trowelled-on ceiling or wall
2. sprayed or trowelled-on structural members
3. insulation on pipes, tanks or boiler
4. other (describe)

Abatement Status:

1. The material has been encapsulated _____ enclosed _____ neither _____ removed _____

Assessment:

1. Evidence of physical damage: _____

2. Evidence of water damage: _____

3. Evidence of delamination or other damage: _____

4. Degree of material accessibility: _____

5. Degree of activity near the material: _____

6. Location of air plenum, airshaft or air stream: _____

7. Other observation (including the condition of the encapsulant or enclosure, if any): _____

Recommended Action: _____

Signed: _____
(evaluator)

Date: _____

Form 2: Job Request Form for Maintenance

Name: _____ Date: _____

Telephone No.: _____ Job Request No.: _____

Requested starting date: _____ Anticipated finish date: _____

Address, building, and room number(s) (or description of area) where work is to be performed:

Description of work:

Description of any material containing asbestos that might be affected, if known (including location and type):

Name and telephone number of requester: _____

Name and telephone number of supervisor: _____

Submit this application to: _____

(asbestos program manager)

NOTE: An application must be submitted for all maintenance work whether or not material containing asbestos might be affected. An authorization must be received before any work begins.

_____ Granted (Job Request No. _____)

_____ With conditions *

_____ Denied

* Conditions: _____

Form 3: Maintenance Work Authorization Form

AUTHORIZATION

Authorization is given to proceed with the following maintenance work:

PRESENCE OF MATERIALS CONTAINING ASBESTOS

- _____ Materials containing asbestos are not present near the maintenance work.
- _____ Material containing asbestos is present, but its disturbance is not anticipated. If conditions change, the asbestos program manager will re-evaluate the work request prior to proceeding.
- _____ Material containing asbestos is present and may be disturbed.

WORK PRACTICES IF MATERIALS CONTAINING ASBESTOS ARE PRESENT

The following work practices shall be employed to avoid or minimize disturbing asbestos:

PERSONAL PROTECTION IF MATERIALS CONTAINING ASBESTOS ARE PRESENT

The following equipment/clothing shall be used to protect workers:

(manuals on personal protection can be referenced)

SPECIAL PRACTICES AND EQUIPMENT REQUIRED:

Signed: _____ Date: _____
(asbestos program manager)

