



# Parks Canada Asbestos Management Guide

January 2014



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Parks Canada Intranet Site: <http://intranet2/our-work/environmental-and-fleet-management/environmental-management/asbestos-amiante/>

**RESCINDED DOCUMENT:** Interim Guidance on the Evaluation and Control of Asbestos Containing Materials (2010)

**REVIEW:** This Guide will be reviewed on a five year basis and updated/revised as necessary.

**AMENDMENTS:**

CHANGE / RATIONALE	DATE	APPROVAL

Original signed by George Green on January 14, 2014

\_\_\_\_\_  
 George Green  
 Chief Administrative Officer

\_\_\_\_\_  
 Date



## 1 PURPOSE

This document provides Parks Canada Asset Managers, Townsite Managers, asset management staff and Project Managers with background information, as well as recommended procedures and work practices necessary to manage asbestos present at Parks Canada-owned locations and facilities. It contains supporting information for facility maintenance, alteration, repair or other activities that may disturb asbestos and provides guidance for ongoing re-assessment of friable and non-friable asbestos materials, or Asbestos Containing Materials (ACMs).

Procedures for small scale operations or minor disturbance (Type 1 and Type 2 as defined in Section 3) of friable asbestos materials (e.g. plaster and/or mechanical insulation) and non-friable materials are described along with policies for inspection of work, air monitoring, and staff training. Procedures for large scale operations involving significant disturbance of ACMs (Type 3 as defined in Section 3) have not been included in this document as this work will be conducted by third party contractors.

Detailed information on asbestos is found in Appendix A.

**Note: The document should be used in conjunction with the Parks Canada Asbestos Management Standard. Most of the procedures contained within this Guide are recommended and should be followed unless there are operational requirements or acceptable alternatives. However, any mandatory requirements included in the Parks Canada Asbestos Management Standard must be complied with as stated, and those requirements will be noted in this Guide by the use of “shall” or “will” instead of “should” or similar terms.**

**For ease of reading purposes, the term “Asset Manager” is used throughout this document. However, the Guide also applies to Townsite and Project Managers as appropriate.**

## 2 DEFINITIONS

**Abatement:** Removal of asbestos and asbestos containing materials (ACM's). (*Désamiantage*)

**ACM assessment or survey:** spot check type survey where a small number of random samples are done at different locations of similar or non similar materials to get a localized perspective as to where asbestos-containing materials are located. This type of survey would be good in areas such as boiler rooms where high concentrations of most materials are suspect to contain asbestos in localized areas such as boiler jacketing, pipe lagging, and exhaust breaching. (*Évaluation ou enquête des MCA*)

**Amended Water:** Water that has been treated with a chemical agent to enhance the wetting of asbestos material prior to removal. (*Eau modifiée*)

**Amosite:** a trade name for a type of asbestos called "brown asbestos" from the amphibole group. (*Amosite*)

**Amphibole:** one of the two families of natural asbestos. Amphibole asbestos fibres are needle-like. (*Amphibole*)

**Asbestos:** natural mineral silicates which are capable of being separated into fibres. Asbestos comes from the Greek word indestructible. (*Amiante*)

**Asbestos-containing material (ACM):** material found to contain asbestos at or above the concentration limit determined by standardized methods and as regulated by provinces and territories. (*Matériau contenant de l'amiante (MCA)*)

**Crocidolite:** a form of asbestos called "blue asbestos" from the amphibole group. (*Crocidolite*)

**Chrysotile:** a form of asbestos called "white asbestos" from the serpentine group. (*Chrysotile*)



**Friable asbestos:** asbestos-containing material that, when dry, can be crumbled, pulverized or powdered by hand pressure. This definition also includes dust or debris arising from non-friable materials that are, or will become, crumbled, pulverized or powdered, i.e., asbestos-containing plaster disturbed by demolition. Friable asbestos-suspect products include: Sprayed asbestos products, (fireproofing, thermal insulation, acoustic insulation or decorative products), applied in 1974 or earlier; Acoustic or texture plaster applied in 1990 or earlier; Mechanical insulation installed in 1983 or earlier, (jacketed or not); Compressed mineral fibre ceiling tiles installed in 1983 or earlier. (*Amiante friable*)

**HEPA:** High-Efficiency Particulate Air (a standard and widely used type of air filter). (*HEPA*)

**Qualified person or qualified contractor:** refers to someone who received formal training on how to assess, handle, abate or otherwise manipulate ACM and asbestos waste safely. Some provincial or territorial jurisdictions may have defined specific asbestos training requirements in order for contractors to be able to work in that province or territory. (*Personne qualifiée ou entrepreneur qualifié*)

**Room by room survey or assessment:** survey of individual rooms where each plane within the room is sampled visually and scientifically tested for the presence of asbestos-containing material. (*Enquête ou évaluation pièce par pièce*)

**Serpentine:** one of the two families of natural asbestos. Serpentine asbestos fibres are curly. (*Serpentine*)

### 3 ASBESTOS WORK TYPE CLASSIFICATIONS

Maintenance, repair, renovation or construction work that involves asbestos-containing material may generate airborne asbestos fibres and hence pose a hazard. Under regulations, asbestos work is classified into three categories:

**Type 1 asbestos work:** small scale operations on asbestos-containing material that generally present little hazard to staff or bystanders. Type 1 work is often referred to as «low risk».

**Type 2 asbestos work:** small scale or short term operations on asbestos-containing material that may create exposure to airborne asbestos fibres above acceptable limits. Type 2 work is often referred to as «moderate risk».

**Type 3 asbestos work:** large scale operations on asbestos-containing material that may generate significant airborne asbestos fibres above acceptable limits. Type 3 work is often referred to as «high risk»

**Note:** *The Asset Manager is responsible for determining the work type appropriate to the task involved. Typical examples of each work type are provided in Appendix B while detail on equipment to be used, execution of work, waste disposal, etc. can be found in Section 7.*

*Parks Canada staff, upon completion of required training and with appropriate tools and equipment may undertake Type 1 and Type 2 asbestos work, however, the Asset Manager may determine that it is more cost effective and safer to undertake Type 1 or Type 2 work by means of a third party contractor.*

*Only third party contractors will undertake Type 3 asbestos work.*

### 4 MANAGEMENT PRACTICES AND PRINCIPLES

The following management practices should be applied to buildings/facilities with identified or suspected ACMs and to asbestos waste material. Note that buildings that were constructed after 1990 are not likely to contain any ACMs since legislation adopted across Canada have considerably limited or banned the use of ACM in building material. Although it is very unlikely that buildings constructed after 1990, or building materials purchased after 1990 contain ACMs, if there is any suspicion that some materials may contain asbestos, those materials shall be tested.



- An inventory of known ACM locations will be maintained, including where ACM's are present in heritage buildings. Copies of this information, including (re)assessment reports, will be kept by the Field Unit and made available to local staff upon request. The Canada Labour Code requires that this information be kept for a period of 30 years.
- Identified ACMs that are in good condition (condition evaluation is detailed in *Section 6.1*) can be managed in place.
- Identified ACMs in poor condition should be addressed to prevent exposure risks. Mitigations, such as sealing the ACM or removal will be evaluated. Generally, removal is preferable, subject to a cost/benefit analysis.
- Suspected ACMs deemed visually similar to identified ACMs shall be considered asbestos-containing and handled as such, unless proven otherwise through analytical testing.
- On completion of any work which involves asbestos removal or repair, or alters the condition of an ACM, a report will be added to the facility/project records, which indicates the asbestos-related work that has been completed.
- To ensure a safe workplace environment for all employees, air quality testing should be performed subsequent to work involving ACMs until it meets the Canada Occupational Health and Safety Regulations (SOR/86-304) section 10.19 which states that «an employee shall be kept free from exposure to a concentration of airborne chrysotile asbestos in excess of one fibre per cubic centimeter».
- Qualifications and standards working with ACM's vary for each province/territory. When hiring a contractor to work with ACM's (including survey, testing, removal, etc.), Parks Canada will require that the contractor demonstrates that they meet the applicable provincial/territorial requirements and accreditations, and that they certify that they meet those requirements and assume related liability for the contracted work.

If encountered during renovation and/or demolition activities, any suspected ACMs not accessible and/or identified in assessment reports shall be considered as asbestos-containing and handled as such, unless proven otherwise through analytical testing.

## 4.1 Managing ACMs – operations and projects

The Asset Manager should review all projects/maintenance work that require disturbance to building materials or systems in buildings where ACMs have been identified, to determine whether project activities will or may disturb identified ACMs. This should be done in the initial, planning stages of projects. As much of the survey information that is available may be preliminary in nature, additional information and/or assessment may be required.

The Asset Manager will determine the “Type” of asbestos work involved, and may chose to undertake maintenance or projects determined to be Type 1 or Type 2 with properly trained and equipped Parks Canada staff. Type 3 projects shall only be undertaken by third party contractors. The *Asset Manager* may chose to contract technical expertise to determine the Type of asbestos work involved (See Section 3).

Services related to the design and preparation of specifications of asbestos work to be undertaken by third party contractors may be performed by consultants or engineers with the appropriate training, experience and insurance for asbestos-related work. For any consultant, engineer, or third party contractor, insurance shall specifically include professional liability with pollution coverage.



### 4.1.1 Maintenance

When there are friable or non-friable ACMs in the area where maintenance activities (inspections, monitoring, routine adjustments and scheduled repairs/replacements) occur, and this material will be disturbed by those activities, those ACM's that are repeatedly disturbed shall be removed.

If there are friable ACMs in the area of maintenance, and it has been determined that these materials will not likely be disturbed by the maintenance work, the asset manager shall inform maintenance staff and/or the contractor of the presence of friable ACMs prior to the commencement of work. The contractor shall be required to sign the [Parks Canada Contractor Notification and Acknowledgement Form](#) prior to commencement of the work.

### 4.1.2 Renovation and Construction

Prior to commencement of projects that include the demolition of building components testing of the materials (that will be disturbed) for asbestos shall be undertaken, unless previous comprehensive testing in the building or other records has shown the components are free of asbestos. If required by provincial regulations, the third party contractor should be required to complete a hazardous materials report, or other provincially required reports/assessments. Test results shall be maintained by the Asset Manager along with the asbestos surveys of the building.

When there are friable ACMs in the renovation area, and the Asset Manager has determined that these materials are not likely to be disturbed by the work, Parks Canada staff or the contractor must be notified of the presence of ACMs. The contractor shall be required to sign the [Parks Canada Contractor Notification and Acknowledgement Form](#) prior to commencement of the work.

### 4.1.3 ACM Removal/Disposal

Parks Canada staff may be retained to conduct small scale Type 1 or Type 2 asbestos removal work provided proper training and availability of protective equipment. Asbestos contractors will be retained to conduct any and all large scale Type 3 asbestos removal work within Parks Canada buildings and structures (See Section 3).

All asbestos containing waste will be handled, stored, and disposed of in accordance with the requirements of applicable provincial, territorial and/or federal transportation and/or disposal legislation.

### 4.1.4 Site Inspection and Air Monitoring

Type 1 and Type 2 Work: Asbestos-specific air monitoring or inspection is not mandatory, but may be requested and arranged by the Asset Manager, based on site-specific concerns or other factors.

Type 3 Work: The Asset Manager will require that the contractor undertake inspection and air monitoring of all Type 3 asbestos projects. In an occupied building or a building in use, inspection and air monitoring will be provided on a daily basis or to the extent required by applicable regional regulations – whichever is more stringent. If the building is not occupied, inspection shall be at critical stages of the work unless provincial standards require daily inspection.

Type 3 removal projects will be subject to daily air monitoring and final clearance air testing, in accordance with applicable regional regulations. Daily air sample results will be compared to applicable provincial regulations for exposure limits. The clearance criteria will be a maximum fibre concentration of air as determined by the standardized methods as specified by provincial or territorial occupational health and safety authorities.

## 4.2 Re-evaluation of ACM

Periodic reassessment inspections are the responsibility of Asset Managers. The inspection activity, along with damage reports should include identifying and recording changes in the condition of the ACMs, including damage and



deterioration, and changes in the use and activity of spaces containing suspected or confirmed ACMs. The Action Matrix (see **Section 6**) should be used to determine resulting recommendations for action.

Special attention should be paid to ACMs located in high activity areas that are susceptible to damage and subsequent deterioration.

The following information, at a minimum, should be documented when performing the periodic reassessment inspections:

- The location of the suspected or confirmed ACMs, address, building room(s), or general description;
- The type of suspected or confirmed ACMs;
- The present mitigation status, if any (encapsulate, enclosed, or neither);
- Evidence of any physical damage;
- Evidence of any water damage;
- Evidence of any delamination or other deterioration;
- The degree of accessibility of the material;
- The level of work activity near the material;
- The location of any nearby air plenums, air shafts or air streams.

As provincial or territorial occupational health and safety regulations generally require that records pertaining to ACMs in facilities be “kept current”, it is recommended that reassessment is conducted at least:

- As part of the overall asset condition reporting and update cycle;
- Whenever Parks Canada becomes aware of new information relating to suspect and confirmed ACMs within the facility;
- Prior to the initiation of renovation or demolition work in an area with known ACMs.

Furthermore, staff working in facilities at which the presence of ACMs is known or suspected should be trained to recognize damage and changes in the condition of confirmed and suspected ACMs on-site. Staff who notices any changes to the condition of the suspected or confirmed ACMs on-site should notify their supervisor/manager immediately for appropriate action to be taken.

## 5 IDENTIFYING THE PRESENCE OF ACMs

Each province and territory determines the concentration limits applicable within their jurisdiction to consider a material as an asbestos containing material (ACM) subject to regulation in buildings. See Appendix C for a listing by province/territory of limits.

### 5.1 Wall and/or Ceiling Finish Materials

Analytical results of samples collected from wall and/or ceiling finish materials (e.g. drywall joint compound, textured ceiling finishes) may yield inconsistent results, as materials of this nature were often applied by hand-mixing the components, and initial assessments often can only include limited sampling of such materials in occupied and operational facilities. In addition, visual distinction between asbestos-containing and non-asbestos-containing versions of wall and/or ceiling finish materials is generally not practical for the following reasons:

- It is possible that over the years, renovations were conducted where finish materials may have been layered or replaced
- Finished walls and/or ceilings are covered with multiple layers of paint
- Finishing is generally conducted to blend different types of wall and/or ceiling materials such that the visible surface appears continuous.



Considering the above information, unless definitive results are obtained, wall and/or ceiling finish materials shall be recommended to be “presumed” to be asbestos-containing throughout the building unless additional sampling and more detailed laboratory analysis indicates otherwise. As such, although an initial assessment may have been conducted within a particular building, additional testing of such materials shall be completed prior to the initiation of significant renovation.

## 5.2 Flooring Materials

Asbestos was widely used in flooring materials such as vinyl tiles or linoleum. Several flooring types are often present throughout a particular building, and various asbestos-containing flooring types may be identified – some of which may be present beneath other layers of non-asbestos-containing flooring. Although attempts may be made to lift the top layer(s) of flooring to determine whether concealed flooring layers are present during initial assessment work, due to the operational nature of most facilities during sampling, it is possible that additional, un-sampled flooring materials are concealed. As such, concealed flooring materials discovered during renovation or other activities that have not been sampled shall be considered asbestos-containing, and handled as such, unless additional sampling and laboratory analysis indicates otherwise.

## 5.3 Mechanical Insulating Materials

Analytical results of samples collected from insulating materials associated with mechanical systems (e.g. parping cement on mechanical pipe fittings) may yield inconsistent results, as materials of this nature were often applied by hand-mixing the components, initial assessments often can only include limited sampling of such materials in occupied and operational facilities, and as these materials are often removed in spot locations during mechanical upgrade or re-fit projects.

Considering the above information and the visual similarity of mechanical insulating materials (both old and new), unless definitive results are obtained, mechanical insulating materials will be suspected of being asbestos-containing throughout the building unless additional sampling and more detailed laboratory analysis indicates otherwise. As such, although an initial assessment may have been conducted within a particular building, additional testing of such materials shall be completed prior to the initiation of significant renovation.

## 5.4 Vermiculite

Vermiculite, a potential asbestos-containing form of loose-fill insulation, was often used to insulate masonry or brick wall cavities, attic spaces and/or floor spaces. As initial assessments are generally non-intrusive in nature, breaking into sealed wall, attic or floor cavities to assess for the presence of this potential ACM is generally not conducted.

As such, and in the absence of destructive testing for vermiculite insulation (or reasonable access to attic spaces, floor spaces or wall cavities through existing hatches or penetrations), sealed masonry block or brick wall cavities and/or sealed attic or floor cavities shall be assessed for the presence of vermiculite prior to the initiation of destructive actions (e.g. renovation or demolition) that would expose this potential ACM. If present, the material shall be presumed to be asbestos-containing and handled as such, unless otherwise proven, through analytical testing.

# 6 DECISION-MAKING USING THE ACTION MATRIX

An Action Matrix (See Table 6.1, Section 6.3 below) may be used to guide decision-making where the presence of asbestos is known. To use the matrix, both the condition and the accessibility of the asbestos must be determined. Section 6.1 and Section 6.2 below aim to assist staff in determining the condition and accessibility respectively. These



two factors applied to the Action Matrix can help determine the appropriate management actions to take to prevent exposure risks to airborne asbestos fibres.

## 6.1 Assessment of Condition for Common ACMs

Assessment techniques are outlined below for ACMs commonly found in buildings. Although these may not apply to all buildings or situations where ACMs have been identified, the principles are important to understand. These principles are general in nature and may apply to potential ACMs other than those listed.

### 6.1.1 Spray Applied Fireproofing, Insulation, and Textured Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation, or texture, decorative or acoustic finishes, the following criteria apply:

#### Good

Surface of material shows no significant signs of damage, deterioration, or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the assessor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes un-encapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

#### Fair

FAIR condition is not utilized or considered as a valid criterion in the evaluation of sprayed fireproofing, sprayed insulation, or texture coat finishes.

#### Poor

Sprayed materials show signs of damage, delamination, or deterioration. More than one percent damage to surface of ACM spray. In observation areas, where damage exists in isolated locations, both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the assessor's reassessment form. The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes that are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Some provincial health and safety regulations require Moderate Risk operations for the removal of all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.

### 6.1.2 Mechanical insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment, HVAC units, etc.) the following criteria are used. Note that although these may not apply to all situations where ACMs have been identified, the principles are general in nature and may apply to potential ACMs other than those listed.

#### Good

Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

#### Fair



Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

### **Poor**

Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. In these circumstances, it is not possible to observe each foot of mechanical insulation from all angles.

## **6.1.3 Non-Friable Materials**

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, e.g., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.

## **6.1.4 Asbestos-Containing Material Debris**

### **DEBRIS FROM FRIABLE ACM**

The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as debris.

### **DEBRIS FROM DAMAGED NON-FRIABLE ACM**

The presence of fallen ACM, from damaged non-friable ACM, is reported separately from the non-friable ACM source. Only fallen non-friable ACM, that has become friable, is reported as debris.

The identification of the exact location or presence of debris on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations. Staff should be advised to be watchful for the presence of debris prior to accessing, or working in proximity to, mechanical insulation or above ceiling areas of buildings with ACM, regardless of the reported presence or absence of debris. In cases where the removal of all or part of a false ceiling to obtain access to a work area, and asbestos-containing material is likely to be lying on the surface of the false ceiling, some provincial health and safety regulations will automatically categorize the work as Type 2.

## **6.2 Evaluation of Accessibility**

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

### **Access (A)**

Areas of the building within reach of all building users. Includes areas such as staff residences and associated common areas, workshops, and storage areas where activities of the building users may result in disturbance of ACM.

### **Access (B)**



Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e. tops of equipment, mezzanines.

### Access (C) Exposed

Areas of the building above 2.4 metres where the use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.

### Access (C) Concealed

Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.

### Access (D)

Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc. where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of the condition and extent of ACM is limited or impossible, depending on the assessor's ability to visually examine the materials in Access D.

## 6.3 Action Matrix and Action Descriptions

The Action Matrix provided below establishes the recommended asbestos control action depending on two variables; the condition of the ACM (Section 6.1) and the access level (Section 6.2). The ACTIONS that correspond to Table 6.1 are described below the table.

Table 6.1: Action Matrix

Access	ACM Condition			Debris
	Good	Fair	Poor	
(A)	ACTION 4 or 6 <sup>1</sup>	ACTION 4 or 5 <sup>2</sup>	ACTION 3	ACTION 1
(B)	ACTION 4 or 6	ACTION 5 or 4 <sup>3</sup>	ACTION 3	ACTION 1
(C) exposed	ACTION 4 or 6	ACTION 4 or 5	ACTION 2	ACTION 2
(C) concealed	ACTION 4 or 6	ACTION 4 or 6	ACTION 2	ACTION 2
(D)	ACTION 6	ACTION 6	ACTION 6	ACTION 6

#### NOTES:

<sup>1</sup> If material in ACCESS (A)/GOOD condition is not removed, ACTION 6 is required.

<sup>2</sup> If material in ACCESS (A)/FAIR condition is not removed, ACTION 5 is required.



<sup>3</sup> Remove ACM in ACCESS (B)/FAIR condition if ACM is likely to be disturbed.

## ACTION DESCRIPTIONS

### ***ACTION 1 Immediate clean-up of debris that is likely to be disturbed***

Restrict access that is likely to cause a disturbance of the ACM debris and arrange for immediate clean up of ACM debris in accordance with appropriate Work Type procedures (Section 7).

### ***ACTION 2 Limit/Restrict entry into areas where ACM is present and likely to be disturbed by access, or where ACM debris is present, until ACM or ACM debris is removed.***

Restrict access to the area to authorized staff or asbestos contractor personnel. At locations where ACM debris can be temporarily isolated, use appropriate means to limit entry to the area until the ACM debris has been removed, and the source of the debris has been stabilized or removed.

### ***ACTION 3 ACM removal***

Arrange for removal of ACM in accordance with appropriate Work Type procedures (Section 7).

### ***ACTION 4 Optional ACM removal***

If merited by a cost/benefit analysis, arrange for removal of ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.

### ***ACTION 5 ACM repair***

Arrange for repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as material in GOOD condition and implement ACTION 6. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 4.

### ***ACTION 6 Routine surveillance***

Institute routine surveillance of the ACM, in accordance with appropriate Work Type procedures (Section 7).

## **7 ASBESTOS REMOVAL AND DISTURBANCE PROCEDURE DESCRIPTIONS**

The procedures outlined below HAVE BEEN PROVIDED BY PWGSC BASED ON INDUSTRY BEST PRACTICES and are provided for information purposes only. They are not expected to be substituted for proper training nor can they cover all and every technical aspects related to asbestos removal and effective protection.

The Asset Manager may choose to undertake Type 1 and Type 2 work with either trained Parks Canada staff or by contracting to third party expertise (See Section 3). The Asset Manager will arrange for appropriate training programs, equipment, and materials for all Parks Canada staff involved in the removal or disturbance of ACMs. The following procedures do not replace, alter or supersede current provincial, territorial or federal regulations.



## 7.1 Type 1 Asbestos Removal Procedures

These Type 1 procedures assume the non-friable material can be removed with relatively little loose dry dust released. Generation of debris is permissible as long as the debris can be well wetted before being removed. If the work will release more than a trivial amount of dry loose dust, do not proceed. The Asset Manager will determine which of Type 1, 2 or 3 procedures are appropriate (See Section 3).

**EQUIPMENT:** All equipment must be on site before proceeding.

### A. Vacuum

- Use of a vacuum is optional. Wet cleaning methods may be used in place of a vacuum. If a vacuum is used it must be equipped with a HEPA filter and all brushes, fittings, etc. The vacuum must only be opened in an enclosure following Type 2 procedures, or in a laboratory exhaust hood. The vacuum exterior should be carefully wet cleaned after emptying.

### B. Respirators

- Use of a respirator is strongly advised for work on sheet flooring, any type of ceiling tile, any other work performed overhead. Parks Canada will supply a half face respirator with HEPA filters, with training on use and qualitative fit-testing. Respirator must be used according to written use procedures provided to staff as per training procedures. Filters must be changed after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects the seal between respirator and face. Disposable dust masks are not effective against airborne asbestos fibres and are not to be used as a substitute for respirators with HEPA filters.

### C. Protective Clothing

- Reusable or disposable (coverall) clothing may be used. Non-disposable clothing with visible asbestos contamination shall be cleaned with a HEPA vacuum and laundered as asbestos contaminated (use a special washing service if available in your area; do not bring asbestos contaminated clothes home to wash them to avoid possible exposure risks to family members). Disposable clothing and respirator filters to be disposed of as asbestos waste.

### D. Other Equipment

- Plastic sheet (0.15 mm polyethylene) - to serve as a drop sheet.
- Pump sprayer with mister nozzle or alternative method to wet material.
- Labelled yellow asbestos waste bags (0.15 mm) - for all asbestos waste, disposable equipment, plastic, etc.
- Small tools and cleaning supplies - e.g., scouring pads, sponges, brushes, buckets, etc.

### OTHER PROTECTIVE MEASURES

- Do not eat, drink or smoke in the work area.
- On leaving work area, proceed to washroom and wash all exposed skin on hands and face.

### PREPARATION

- Before disturbing non-friable asbestos materials, wherever practical cover floor and surfaces below work with polyethylene sheeting to catch debris.
- Wherever dust on a surface is likely to be disturbed remove with HEPA vacuum or damp cloth.



## EXECUTION

### REMOVAL OF VINYL ASBESTOS FLOOR TILE

- Do not use electric powered scrapers.
- Start removal by wedging a heavy duty scraper in seam of two adjoining tiles and gradually force edge of one tile up and away from floor. Do not break off pieces of tile, but continue to force balance of tile up.
- Continue removal of tiles using hand tools, removing tiles intact wherever possible. When adhesive is spread heavily or is quite hard, it may prove easier to force scraper through tightly adhered areas by striking scraper handle with a hammer using blows of moderate force while maintaining scraper angled to the floor. When even this technique cannot loosen tile, removal can be simplified by heating tile thoroughly with a hot air gun until heat penetrates through tile and softens the adhesive.
- When tiles are removed, place into asbestos waste receptor. Do not break into smaller pieces.
- After removal of small area scrape up adhesive remaining on floor with a hand scraper until only a thin smooth film remains. Where deposits are heavy or difficult to scrape, a hot air gun may be used. Deposit scrapings in the asbestos waste disposal bag. Do not dry scrape surface of adhering pieces of tile. Do not use powered electric scrapers.
- On completion of area, vacuum clean floor with HEPA vacuum or wet mop. Dispose of the mop head as contaminated waste.

### REMOVAL OF ASBESTOS-CONTAINING SHEET FLOORING

- Remove binding strips or other restrictive mouldings. Staff shall wear air purifying respirator fitted with HEPA filter, and coveralls at all times.
- Make series of cuts 100 mm to 200 mm apart through top layers and about halfway through felt backing, parallel to wall.
- Start at end of room furthest from door and pry up corner of strip, separating top sheet from backing layer. Pull top layer back upon itself slowly and evenly, and half backing and top layers should pull free. After it is removed, roll up strip face out into tight roll, tape or tie securely, and place into asbestos waste receptor. Wet the asbestos felt underlay remaining on floor as soon as exposed.
- Continue with successive strips. Avoid walking on exposed asbestos felt. Seal asbestos waste receptors when filled. Remove maximum of three strips before wet scraping exposed felt underlay.
- Remove remaining adhered underlay by wet scraping. Soak area with water applied by sprayer. Allow water to penetrate felt. Scrape off remaining material. Maintain material wet by applying more water. Place scrapings in asbestos waste receptor.
- Continue this procedure alternately removing top sheets and then wet scraping felt, three strips at a time. Be careful not to walk on stripped floor.
- When whole floor has been cleaned of asbestos felt, allow it to dry and vacuum up any dirt with a HEPA vacuum or wet mop. Do not dry sweep. Dispose of the mop head as contaminated waste.
- Thoroughly clean tools and equipment with a damp cloth before being put back into regular service. Dispose of cloth as contaminated waste.

### INSTALLING, CUTTING OR DRILLING NON-FRIABLE ASBESTOS MATERIALS

- Work using power tools not fitted with a HEPA filter dust collector, must not be performed as Type 1 work.
- Where possible wet all materials to be disturbed.



- Immediately place waste in asbestos waste receptor. Clean area frequently during work with HEPA vacuum or by wet methods.
- At completion of work, clean drop sheets to be reused with HEPA vacuum or by wet methods.
- Drop sheets shall be disposed of as asbestos waste.

#### **REMOVAL OF OTHER NON-FRIABLE ASBESTOS MATERIALS**

- The Type 1 procedures apply only to materials which can be removed intact, or in sections, without producing a pulverized or powdered waste. This method is most applicable to asbestos-cement board products, acoustic ceiling tiles, gaskets, etc.
- Where possible wet all material to be disturbed.
- Undo fasteners necessary to remove material. Whenever possible remove asbestos cement panels intact. Break only if unavoidable. If broken, wet freshly exposed edges.
- Where sections are adhered to the substrate, wet material and use hand scraping to remove adhering material.
- Place removed material into asbestos waste receptor. Clean surrounding surfaces and asbestos work area frequently with HEPA vacuum or with wet methods. Damp cloth disposed of as asbestos waste after cleaning.
- Drop sheets shall be disposed of as asbestos waste.

#### **WASTE TRANSPORT AND DISPOSAL**

- Place waste into asbestos labelled disposal bag, seal with tape, clean the exterior of the bag with a clean cloth, and place into a second clean bag, also to be sealed with tape. Use a barrel, fibre drum, or cardboard or wooden box in place of the second bag when the asbestos waste material is likely to tear the inner bag. Seal the outer container.
- Provide storage area for holding minor amounts of asbestos waste in sealed containers. Garbage containers shall be labelled and assigned exclusively for asbestos waste.
- Wastewater contaminated with asbestos fibres should be disposed of as asbestos waste.
- Dispose of the waste in compliance with provincial or territorial regulations.

## **7.2 Type 2 Asbestos Removal Procedures**

**EQUIPMENT:** Equipment required for the work must be on-site before proceeding.

### **A. Vacuum**

- An asbestos-approved vacuum (HEPA filtered), equipped with brushes, fittings, etc. Vacuum must not be opened except by a fully protected worker within a Type 2 enclosure.

### **B. Respirators**

- Staff within the work area shall wear approved respirator. Respirators and filters will be provided by the manager, and individually assigned to staff. Respirator shall be a half-face piece respirator with HEPA filters. Respirators must be kept in position throughout the entire time the staff is in the area of the work from first disturbance of the ceiling tile or asbestos material until the final cleaning of the area and bagging of waste is complete. Change filters after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects seal between respirator and face.



### **C. Protective Clothing**

- All staff shall wear disposable coveralls with attached elasticized hood. Coveralls should be worn with the hood in place at all times. Coveralls may be vacuumed or wet wiped clean for re-use, for a maximum of 8 hours cumulative wear. Suit and head cover shall remain in place until staff members leave work area or the enclosure is dismantled. Boot covers or dedicated boots are recommended.

### **D. Other Equipment**

- plastic sheet (0.15 mm polyethylene) - to erect a total enclosure or to serve as drop sheet
- wood framing or clips to support polyethylene sheeting, as appropriate to work area
- tape - to fasten plastic enclosure to ceiling or to tape drop sheet to floor; 18 mm double-sided tape recommended for attaching polyethylene to T-bar ceiling
- labelled asbestos waste bag (0.15 mm) - for all asbestos waste, disposable suit, plastic for disposal, etc.
- pump sprayer containing water with wetting agent to wet asbestos as necessary; dilute wetting agent 15 ml per liter of water
- asbestos warning signs
- cleaning supplies - e.g., scouring pads, sponges, brushes, buckets, etc.
- insulation repair supplies (lagging compound, cloth, PVC covers)
- encapsulating sealer, for brush or airless spray application

### **OTHER PROTECTIVE MEASURES**

- Do not eat, drink or smoke in the work area.
- On completing clean-up of work area, use vacuum or wet cloth to clean hands, face, respirator and boots. Remove protective equipment and proceed to nearest washroom to wash exposed skin on hands and face.

### **SCHEDULING OF WORK**

- Schedule work when occupants are absent. If persons are present, do not start work.
- If work above ceiling is required on an emergency basis when area is occupied, arrange for occupants to vacate area until work is complete and clearance is given to return.

### **PREPARATION**

- Shut down ventilation systems to and from the work area. Seal over all ventilation openings, diffusers, grilles, etc., with plastic and tape.
- Where practical, clear areas of movable furnishings or equipment. This should include anything which occupants may wish to use during work period. Any furnishings or equipment not removed shall be adequately covered and sealed using 0.15 mm polyethylene and tape. The intent of the protection is to provide an airtight envelope to protect the articles from airborne dust or splashed debris.
- Post signs or barrier tape to indicate asbestos hazard and requirement for protective clothing for anyone entering the space.
- For small rooms, cover walls with plastic such that the complete room becomes the work area. For larger rooms, erect enclosure of 0.15 mm polyethylene of suitable dimensions to enclose the work area and scaffolds and ladders required to gain access. If a suspended ceiling is present, the enclosure shall extend to the ceiling line. The enclosure shall be as airtight as conditions permit including the provision of a double overlapping flap at the entrance. The floor of the work area shall be a layer of 0.15 mm polyethylene sealed to the plastic walls of the enclosure.



- Don protective clothing and respirator prior to removing ceiling tile or disturbing pipe jacketing or sprayed fireproofing.

## EXECUTION

- To remove fireproofing or texture plaster, saturate using amended water solution, by use of a pump sprayer. Do not remove the asbestos material until the material is thoroughly wetted to the substrate. Do not use water where electrical hazard exists.
- To remove pipe insulation, first wet any area of damage, then carefully cut jacket. Keep insulation surface wetted by mist of water with wetting agent. Remove insulation in large sections and place immediately in disposal bag. After large pieces have been removed, saturate debris on mechanical equipment and clean all exposed surfaces with abrasive pads, sponges, cloths, etc.
- To repair pipe insulation, use drop sheet under area of work to aid clean-up of any dislodged material. Plastic enclosure is not required. Mist any exposed insulation to wet surface and apply lagging paint and canvas or PVC jacketing as required.
- For removal of suspended ceiling tiles (where asbestos debris is present on top of tiles or equipment to be accessed), remove the first tile carefully and vacuum all surfaces. Vacuum the upper surface of each subsequent tile prior to removal. Store tiles in the work area.
- Remove dust and loose friable material likely to be disturbed in the process of doing the work, with a HEPA vacuum or by damp wiping.
- When asbestos material is removed, all pieces should be placed directly into 0.15 mm polyethylene bags as they are removed. Avoid dropping material to floor wherever possible. After bulk removal is complete, wet wash the exposed surface.
- Frequently, and at regular intervals during the work, clean up dust and waste in the work area by wet mopping, placing in disposal bags, or by HEPA vacuuming.
- After completion of removal, seal exposed ends of fireproofing, texture plaster, or mechanical insulation with heavy layer of encapsulating sealer. Apply sealer coat to surfaces from which asbestos material was removed.
- At completion of work, decontaminate equipment, tools and materials used in the work area by wet cleaning or HEPA vacuum.
- Dispose of drop sheets and enclosures by wetting the polyethylene, then folding into disposal bags. Do not reuse drop sheets or enclosures.
- Before leaving work area, decontaminate shoes and protective clothing by using HEPA vacuum or damp wiping. When protective clothing is to be disposed of, it shall be decontaminated as above and placed in labelled disposal bags. The staff shall vacuum all exposed skin, suit and respirator, and proceed to nearest washroom to wash hands and face.

## WASTE TRANSPORT AND DISPOSAL

- Place waste into asbestos labelled disposal bag, seal with tape, clean the bag, and place into a second clean bag, also to be sealed with tape. Use a barrel, fibre drum, or cardboard or wooden box in place of the second bag when the asbestos waste material is likely to tear the inner bag. Seal the rigid outer container.
- Provide storage area for holding minor amounts of asbestos waste in sealed containers. Containers shall be labelled and assigned exclusively for asbestos waste.
- Dispose of waste in compliance with provincial regulations.



## 7.3 Type 2 Glove Bag Asbestos Removal Procedures

### EQUIPMENT

All equipment must be on site before proceeding with the work. Note that these procedures are primarily based on the use of Safe-T-Strip polyvinyl chloride movable glove bags. Parks Canada Asset Managers will be responsible to determine the appropriate type of glove bag in accordance with applicable provincial regulations.

#### A. Glove Bag

- Prefabricated, 0.25 mm minimum thickness polyvinyl-chloride bag with integral 0.25 mm thick polyvinyl-chloride gloves and elasticized port. Bag shall be equipped with reversible double-pull double throw zipper on top. Bag must incorporate internal closure strip if it is to be removed from pipe for re-use elsewhere.
- Prefabricated polyethylene glove bag, single use, not movable.
- Provide size and configuration appropriate for insulation to be removed. Once filled bag must be disposed of. Bag shall not be emptied and reused.

#### B. Securing Straps

- Reusable nylon straps at least 25 mm wide with metal buckle for sealing ends of bags around pipe and/or insulation.

#### C. Water Sprayer

- Garden reservoir type, low velocity, capable of producing mist or fine spray with water containing wetting agent. Wetting agent shall be diluted 15 ml per liter of water.

#### D. Respirators

- Staff using glove bag must wear approved respiratory protection. Respiratory protection must be equal to or exceed protection of half-face respirator with HEPA filters. Respirators must be kept in position from the time the worker attaches the glove bag to the pipe until final cleaning of the pipe and bagging of waste is completed. Filters shall be changed after 24 hours of wear or sooner if breathing resistance increases. No person using respirator shall wear facial hair which affects the seal between respirator and face.

#### E. Protective Clothing

- Staff shall wear disposable suit with attached head cover. Suit and head cover shall remain in place until worker completes cleaning of pipe. Suit may be cleaned for re-use or disposed of as asbestos waste.

#### F. Other Equipment

- Labelled asbestos waste bags (0.15 mm) - for all asbestos waste in glove bag, disposable suit, cleaning materials, etc.
- Asbestos warning signs
- Wire saw - saw with flexible serrated wire blade and handles to allow use inside glove bag
- Knife with fully retractable blade for use inside glove bag
- Plastic sheet (0.1 mm polyethylene) to cover exposed or damaged section of pipe prior to attaching glove bag
- Tape - to fasten plastic to pipe if required
- Cleaning supplies, e.g., scouring pads, sponges, brushes, buckets, etc.



- HEPA vacuum, for evacuating air from bag prior to removing bag from pipe

#### **OTHER PROTECTIVE MEASURES**

- Do not eat, drink or smoke in the work area.
- On completing clean-up of work area, use HEPA vacuum or wet cloth to clean hands, face, respirator and boots. Remove protective equipment and proceed to nearest washroom to wash all exposed skin on hands and face.

#### **SCHEDULING OF WORK**

- Schedule work when occupants are absent. If persons are present, do not start work.

#### **PREPARATION**

- Where practical, clear area below pipe of moveable furnishing or equipment. Provide scaffold as required to reach pipe.
- Post an asbestos warning sign at all entrances to room in which the procedure is being used. Use rope or tape barriers to separate work area.
- Segregate the area of asbestos work from other parts of the building required to remain in use using polyethylene walls or barrier tape.
- Shut off and seal all diffusers, vents and other openings to ventilation and exhaust systems in the room with polyethylene secured with tape.
- Cover all items or equipment located in the designated work area with polyethylene if the items or equipment cannot be cleaned in the case of a spill. Tape the polyethylene in place. The polyethylene should cover a width equal to the height of the pipe from the floor, with a minimum width of 3.6 meters, where required.
- Seal all openings or voids in the vicinity of the glove bag operation with one layer of polyethylene secured with tape.
- Check condition of pipe insulation where work will be performed. If the pipe insulation has minor isolated damage, mist surface and patch with tape. If damage is more extensive, wrap pipe with plastic and "candy stripe" it with duct tape first. If pipe insulation is severely damaged and cannot be simply repaired, glove bag is not appropriate. (See Type 2 Procedures.)
- Pre-clean with HEPA vacuum or wet methods any loose material on surface of pipe or any material on the floor. If significant amount of material is on floor, Type 2 procedures may be required for clean-up. (See Type 2 Procedures)
- Place necessary tools in bottom of glove bag.

#### **EXECUTION**

- Zip the bag onto the pipe and seal each end to the pipe with the securing straps. Do not pull the bag tightly to the ends - a small amount of slack allows better room to work within the bag. If a vertical bag is in use, ensure lower strap passes through plastic grommet and cloth tab on zipper.
- Place hands into gloves and use necessary tools (wire saw, utility knife, wire cutters) to remove insulation from pipe. Arrange insulation in bottom of bag to obtain full capacity of bag. Roll jacketing carefully to minimize the possibility of ripping or puncturing the bag.
- Insert nozzle of spray pump into bag through valve and wash pipe and interior of upper section of bag thoroughly. Use one hand to aid washing process. Wet surface of insulation in lower section of bag and any exposed ends of asbestos insulation remaining on pipe.



- Prior to removing the bag from the pipe, wash the top section of the bag and tools thoroughly. Insert nozzle of HEPA filtered vacuum into bag through elasticized valve and evacuate air from bag. Seal the closure strip, remove the vacuum nozzle and straps, and remove the bag. Re-install and seal in new location before reopening closure.
- If bag is to be moved along the same pipe, loosen securing straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat insulation removal operation.
- If during use the glove bag is ripped, cut or opened in any way, cease work and repair opening before continuing work. All spilled material must be cleaned up and removed with a HEPA vacuum or wet cleaning.
- To remove tools after completion of insulation removal, thoroughly wash top section of bag and tools. Place tools in one glove, pull hand out inverted, twist to create a separate pouch, tape inside-out glove at two separate locations 25 mm apart to seal pouch. Remove inside-out glove and tools by cutting between the tape seals.
- Place glove pouch and tools into the next clean glove bag to be used. Alternately, place the tool pouch into water bucket, open pouch underwater and clean tools, then allow to dry.
- Prior to disposal of bag, evacuate the bag with a HEPA vacuum. Pull a 0.15 mm polyethylene bag over glove bag before removing from pipe. Remove securing straps. Unfasten zipper. Seal glove bag and seal 0.15 mm polyethylene bag.
- After removal of bag ensure pipe is clean of all residue. If necessary, after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA filtered vacuum equipment or wipe with wet cloth.
- Seal all surfaces of freshly-exposed pipe with encapsulating sealer to tack-down any residual dust. Cover exposed ends of any remaining asbestos insulation with lagging cloth or tape.
- Before leaving work area, decontaminate shoes and protective clothing by using HEPA vacuum or damp wiping. When protective clothing is to be disposed of, it shall be decontaminated as above and placed in labelled disposal bags. Workers shall vacuum all exposed skin, suit, respirator and hair (after removing hood) and proceed to nearest washroom to wash hands and face.

#### **WASTE TRANSPORT AND DISPOSAL**

- Provide storage area for holding minor amounts of asbestos waste in sealed containers. Containers shall be labelled and assigned exclusively for asbestos waste.
- Dispose of waste in compliance with provincial regulations.

## **7.4 Type 3 Asbestos Removal Procedures**

As stated in Section 8.5 of the Parks Canada Asbestos Management Standard, Parks Canada staff will not be directly involved in the large scale physical removal and disposal of ACMs. Third party contractors will be used for all Type 3 asbestos removal work. Descriptions of Type 3 procedures are therefore not included in this guide.

## **8 RESPONSE TO ACCIDENTAL RELEASE OF AIRBORNE ASBESTOS**

The Asset Manager will be responsible to determine the appropriate level of response, actions to be taken, and to inform staff and contractors who may have been exposed. Staff and contractors shall inform the Asset Manager immediately upon noticing a potential exposure to airborne asbestos.

The general principle of emergency response is to protect the staff performing the repair and to minimize the exposure of others to airborne asbestos. The general procedures given below should be followed to the extent possible in the circumstances of the emergency.



- VACATE the area of unnecessary personnel.
- LIMIT the spread of asbestos contamination.
- Shut down ventilation system serving area.
- CONTACT the Asset Manager for guidance on contamination and to arrange for removal, clean-up or repair of the asbestos material
- Construct barriers around area if time permits.
- For Type 3 work, the contractor will conduct a risk assessment to determine personal protective equipment, procedures, removal tools and equipment to be used in accordance with the applicable provincial or territorial regulations, based on the type of material disturbed and the extent of disturbance.
- For Type 3 work, the contractor shall perform emergency repair with minimum disturbance to asbestos-containing materials.
- In the case of potential exposure to asbestos fibres by a Parks Canada staff member, the staff member shall report the incident to their immediate supervisor and follow the established Hazardous Incident/Accident reporting protocols for the Field Unit.
- Before removing an enclosure, have the consultant or other authorized person monitor the air to confirm acceptable levels and document readings. Obtain verification from consultant or other qualified person on air monitoring requirements. If regulatory bodies perform the monitoring, the services of a consultant may not be required.
- Arrange for a qualified person to inspect the work as soon as possible and, in conjunction with the regulatory bodies (if applicable), to oversee the work and approve the corrective work required.
- Document the disposal of the asbestos and the procedures used

## 8.1 Minor Accidental Release of Airborne Asbestos

Examples of minor incidents include an accidental puncture of an insulated pipe, contact with an insulated structural beam, or breakage of a corner of a tile or wall panel, where a small amount of ACM is dislodged. These minor incidents can be treated with standard wet cleaning and HEPA vacuum techniques. In such cases, and for reference, procedures should consist of the following:

- Immediately control all access to the affected area. Unauthorized persons should not be allowed into the area.
- Parks Canada staff or contract workers must wear a respirator appropriate to the hazard based on the potential asbestos fibre exposure or at a minimum a half-face, negative pressure, air-purifying respirator equipped with HEPA filters.
- Parks Canada staff or contract workers must thoroughly saturate the debris with amended water using a spray container with a very fine spray. The debris must then be carefully placed in double 0.15 mm plastic bags that are properly labelled as containing asbestos waste, for disposal. Alternatively, the debris can be collected with a HEPA equipped vacuum cleaner.
- The area where the debris is located should be thoroughly cleaned with a damp cloth/mop or vacuumed with a HEPA equipped vacuum.
- Materials used in the clean up should be double bagged, labelled and properly disposed of as asbestos waste.
- The damaged ACM should be repaired with asbestos-free spackling, plaster, cement, insulation or sealed with latex paint or an approved encapsulant.



## 8.2 Major Accidental Release of Airborne Asbestos

Examples of a major incident include water or physical damage to pipe insulation resulting in missing sections or insulation falling from structural beams onto the back of ceiling tiles. In these cases, immediate and rigorous control and clean up procedures are required and third party contractors will be hired to do the work (not Parks Canada staff). In major release incidents, the following procedures must be followed:

- The area must be isolated as soon as possible after the ACM is discovered and access to the area restricted to persons wearing personal protective equipment.
- 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.
- Establish the extent of contamination through a thorough visual inspection and/or area asbestos air monitoring. All persons determining the extent of contamination should wear powered air-purifying respirators equipped with HEPA filters (at a minimum) or select an appropriate respirator based on the potential asbestos fibre exposure, protective clothing, boots and head covers.
- Fallen debris must be sprayed with amended water, double bagged, labelled and properly disposed of as asbestos waste.
- Horizontal and vertical surfaces must be thoroughly cleaned using wet mopping/wiping and vacuumed with a HEPA vacuum cleaner.
- Walls, ceilings, pipes, boilers or other surfaces where ACM was damaged must be repaired temporarily. This may involve plastering with asbestos-free material, spraying with an encapsulant, taping with duct tape, or covering with canvas.
- 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 (e.g., cloths, mop heads, filters, and coveralls) must be discarded as asbestos waste.

If the release is significant and warrants a high risk clean up the following applies:

- Notification of municipal, provincial, and federal authorities having jurisdiction may be required (in many cases, emergency clean up does not require normal asbestos notification procedures i.e., clean up may begin immediately after submittal of notification).
- The contractor must construct an enclosure system of at least 0.15 mm polyethylene, spray glue adhesive and waterproof duct tape. Construction of temporary walls to reinforce the polyethylene barriers may be required.
- Once the containment has been properly constructed, the contractor must install a sufficient quantity of negative air units (equipped with HEPA filters) to create a pressure differential between the contaminated work area and the area outside the enclosure. The pressure differential must be a minimum 5 Pascal (as measured by a Magnehelic Pressure Differential gauge). The efficiency of HEPA equipment must be challenged on-site through HEPA integrity testing. Certification verifying that HEPA equipment has passed the integrity testing should be attached to each unit.
- A visual inspection of the enclosure system shall be conducted before the removal is started and at the beginning and end of each shift and at least once on days when there are no shifts. Any defect found during inspection must be remedied immediately.
- Air monitoring for airborne asbestos fibres should be completed in at least one location outside the work area.
- Air monitoring should also be completed inside the removal area to verify the effectiveness of removal techniques and to ensure that the appropriate respiratory protection is being utilized by workers according to the requirements of applicable regulations.



- Where a visual examination of the enclosure system reveals a problem, or air monitoring performed outside the enclosure is found to be in excess of the occupational exposure limit, removal activities must be stopped at once until the defect in the enclosure has been remedied.
- Air monitoring must be performed before the enclosure is removed and the area re-occupied. Final air clearance samples must not exceed 0.01 fibres/cubic centimetre.
- Appropriate worker decontamination procedures must be followed throughout the removal process.
- All normal procedures for asbestos removal must be followed.

### 8.3 Reporting

Each minor or major incidents of accidental asbestos fibre release must be documented, with resulting reports to be included in building/project/facility specific records. The report should include a description where the event occurred, a description of what caused or may have caused the incident, and a detailed account of what actions were taken and by whom. In cases where Parks Canada staff may have been exposed to asbestos, this will be communicated to both the staff and to the members of the local OSH Committee. Note that according to the Canada Occupational Health and Safety Regulations, Parks Canada must retain all incident and accident reports involving hazardous substances for a period of thirty (30) years.

## 9 INFORMING STAFF AND CONTRACTORS

Providing information in a timely manner to building occupants (including tenants), contractors, and staff is an important aspect of asbestos management. Field Units are responsible to provide notice to these workplace parties in defined circumstances. The Field Unit (superintendent and asset managers) will inform applicable workplace parties about the presence of confirmed and suspected ACMs by:

- Distributing written notices and / or reports (where applicable)
- Posting signs or labels in an appropriate location where affected staff can see them, where applicable (see section 9.1 below on Asbestos Labelling)
- Holding awareness or information sessions.

Before requesting tender or arranging a construction project or demolition work, the Asset Manager shall determine if bulk asbestos sampling is required and notify workplace parties involved (e.g., contractors, and/or subcontractors) by way of a complete report. This report must include:

- A statement of whether the materials are ACM or not, or are to be treated as such;
- A description of the condition of the materials and whether they are friable or non-friable;
- Drawings, plans, and/or specifications (as appropriate) to show the location of all materials identified.

Staff should be informed of the presence of ACMs before commencement of work, especially if there is risk of disturbance of non-friable ACMs, or the presence of friable ACMs, but it may not be necessary to inform every occupant of all the ACM locations throughout the building. However, each occupant should be aware of the locations of suspected or confirmed ACMs that may be present within their work area.

Contractors shall be provided with a report detailing the location of confirmed or suspected ACMs in the building. The Asset Manager shall require documentation confirming the contractor is familiar with the site specific asbestos management plan (if applicable), has experience working with or around ACMs, and has adequately trained staff and proper insurance. Managing asbestos related project requirements involving contractors in the building can be achieved by completing the [Parks Canada Contractor Notification and Acknowledgement Form](#) available on the intranet.

### Asbestos Labelling

Effective communication is one of the most essential tools in preventing unintended asbestos exposures when repair or renovation work may disturb asbestos-containing material (ACM). As over 3,000 different types of building materials



may contain asbestos, generalizations must be made to keep the labels practical. For this purpose, four types of labels are proposed for use by field units according to their specific needs. The labels are provided on the Parks Canada Intranet at <http://intranet2/our-work/environmental-and-fleet-management/environmental-management/asbestos-amiante/>. They are not mandatory to use but should be implemented where practical and feasible. The following guidelines will help you decide which is most relevant and practical.

Labels are only to be used when ACMs have been positively identified through appropriate testing. However, the use of labels does not substitute for good record-keeping and inventory of known ACMs in buildings. The labels serve mainly the purpose of warning Parks Canada maintenance staff, trades staff and contractors about the presence of asbestos in specific locations or material prior to any type of activity that may disturb them in these areas. Labels may also facilitate annual inspections of ACMs to monitor for their general state and condition.

When using labels, the following should be taken into consideration:

- Review asbestos documentation for the building, including surveys, inventory, floor plans, asbestos removal records and general state or condition of ACMs;
- Assess whether the room is in a restricted access (e.g. boiler room, electric panel rooms, etc.), general staff access (e.g. administration offices, meeting rooms) or public access area (e.g. visitor centre, public restrooms, camping facilities, etc.);
- Assess the potential for vandalizing or altering – inadvertently or deliberately - labels before choosing where to place them;
- Decide on appropriateness of each label type according to the room and intent of the message;

Use bilingual format labels. The four types of labels are outlined below. Label examples are posted on the intranet at <http://intranet2/our-work/environmental-and-fleet-management/environmental-management/asbestos-amiante/>.

### **Type 1: Restricted entry labels**

Type 1 labels are to be placed in areas such as attics, crawlspaces or other spaces not intended for continuous occupancy with actual presence of asbestos containing material (ACM) or ACM debris.

### **Type 2: Wall notices**

Type 2 labels are to be placed in areas such as attics, crawlspaces or other spaces not intended for continuous occupancy with actual presence of ACMs or ACM debris. This is a site-specific label that can be customized to provide the specific ACM present in the room within different material categories.

### **Type 3: Asbestos warning labels**

Type 3 labels are to be placed directly on known friable or non-friable ACMs located in mechanical rooms or similar areas only accessed by maintenance personnel and/or contractors.

### **Type 4: Door frame labels**

Type 4 labels are to be placed in common areas frequented by public, tenants or non-maintenance personnel. Placed on the hinge side of the door frame, this label serves to identify categories of material containing asbestos and not specific ACM within the room.



## 10 TRAINING

Training and instruction should be provided to every staff member in Parks Canada facilities who are likely to come into contact with asbestos in their work. Training of staff based on their roles and responsibilities related to asbestos management and handling is one of the most important aspects of successful and effective management of asbestos. Two categories of training are applicable to Parks Canada workplaces:

- Asbestos Awareness
- Asbestos Management and Handling

### 10.1 Asbestos Awareness Training

Consistent with the *Canada Labour Code Part II*, Parks Canada aims to ensure that each staff member is made aware of every known or foreseeable health or safety hazard at the workplace. Regarding the specific issues of asbestos in the workplace, Parks Canada developed a self-tutorial Asbestos Awareness Training. Contact Environmental Management for further details.

The training is available to all staff but is mandatory to those likely to come into contact with asbestos during their work. This includes trades staff such as carpenters, electricians, plumbers, general labourers involved in facility maintenance or construction activities, asset managers, project managers and supervisors involved in maintenance and construction activities and any other staff that may perform work on facilities or materials that contain asbestos (i.e. conservators, students, staff housing residents, etc.). The training is intended to increase worker knowledge and reduce hazard of accidental exposure. However, it is not intended to provide detailed technical training on asbestos removal other than basic work safety procedures in case of sampling or minor disturbances of asbestos material. The Asbestos Awareness Training covers the following topics:

- Introduction to asbestos and its uses;
- Health risk factors and illnesses or conditions associated with exposure to asbestos fibres;
- Regulations pertaining to asbestos;
- Managers' and staff roles and responsibilities when asbestos is found;
- Bulk asbestos sampling, safety precautions, reporting on findings;
- Classification types of asbestos related work.

### 10.2 Management and Handling of ACMs

Training on the management and/or handling (including removal and any other disturbance) of asbestos will be provided to Asset Managers, as well as trades staff that are mostly likely to disturb ACMs or to encounter potential ACMs. Field Units will determine and organize the specific requirements/nature for such training, dependent on local operations and facilities. As required, this training will include information on potential ACM's they may encounter that have not yet been confirmed, health hazards of asbestos exposure, regulations, the Parks Canada Asbestos Management Standard, classification of asbestos work, and emergency procedures. This training should also include a technical component on procedures and equipment required to undertake minor interventions and emergency repairs associated with Type 1 (low risk) and Type 2 (moderate risk) asbestos work. Although staff will not be involved in Type 3 Asbestos work, Asset Managers may choose to provide some training in this level of work to enable staff to better manage Type 3 work undertaken by third party contractors.



## 11 RECORD KEEPING

Documentation regarding any asbestos-related activities shall be retained by the Asset Manager and will be made available upon request. All records should be maintained and kept in accordance with Parks Canada, and Government of Canada information management standards and requirements. Documentation includes but is not limited to, the following:

- Work records documenting all asbestos-related activities, including, but not limited to, repair, enclosure and removal work done on-site must be retained indefinitely.
- Training records (which shall be maintained as part of the personnel files for Parks Canada staff).
- Notification of ACMs and other asbestos-related documents and correspondences with tenants, building personnel, contractors and consultants.
- Asbestos survey reports, updates and addenda that reflect the changing condition and amount of ACMs on-site.
- A completed original asbestos waste manifest for any disposed ACMs.
- Any personal air sampling results for building personnel performing asbestos related work



## APPENDIX A

### Asbestos Background Information

Asbestos is a naturally occurring mineral fibre that has long been recognized as having inherent properties that make the mineral ideal for diverse applications. The name asbestos comes from a Greek term meaning “indestructible” and the mineral has been mined in many countries, including Canada. Asbestos has two main mineralogical classifications; the most common asbestos used in Canada is called chrysotile asbestos, which is a serpentine form of asbestos. Amphibole asbestos is another common asbestos type that contains further subgroups called amosite, crocidolite, actinolite, anthophyllite, and tremolite asbestos.

Chrysotile asbestos is commonly referred to as “white” asbestos and has been widely used in Canada (and other countries) to provide thermal insulation and increase the durability of products containing the mineral. Chrysotile asbestos can be found in many products including: mechanical insulation, fireproofing, manufactured cement board or cement piping, floor tile, ceiling tiles, drywall jointing compounds, sheet vinyl flooring paper backing, incandescent light fixture backing paper, gaskets, brake shoes, even wigs and children’s clothing.

Amosite or “brown” asbestos has also been widely used across Canada. Amosite asbestos can be found in products including: mechanical insulation, fireproofing, and ceiling tiles. Crocidolite or “blue” asbestos can be found in Canada, but is less common than amosite and much less common than chrysotile asbestos. Crocidolite asbestos can be found (most commonly) in industrial uses such as sprayed on thermal, acoustic or chemical barriers. Additional special precautions with personal protective equipment (i.e., type of respirator) are required when working with types of asbestos other than chrysotile, such as amosite and crocidolite asbestos.

#### Health Effects of Asbestos Exposure

Most asbestos related diseases are caused by the inhalation of airborne asbestos fibres. However, asbestos has been linked to cancer of the colon, larynx, rectum, stomach, and trachea. Asbestosis is a terminal disease caused by excessive scarring of the lung tissue, as a result of inhalation of airborne asbestos fibres. Mesothelioma is a rare form of cancer that has been linked to asbestos and is also terminal. Lung cancer may also result from exposure to airborne asbestos fibres. Smokers have up to 70 times the relative risk of developing fatal lung cancer if they are (sufficiently) exposed to airborne asbestos fibres.

#### Examples of Asbestos-Containing Building Materials

ACMs are often described as being friable or non-friable. The term friable is applied to a material that a) when dry, can be crumbled, pulverized or powdered by hand pressure, or b) is crumbled, pulverized, or powdered. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed. Non-friable materials are less likely to result in airborne exposures, however if they are cut, machined, fabricated, ground, demolished, or are poor condition the potential for fibre release increases. The new asbestos regulation addresses both friable and non friable material, and draws distinctions between ACMS when assigning appropriate work practices.

The following table below is a brief list of some ACMs that may be present at the subject facility. It is important to note that not all ACMs are listed here, as there are well over 3,000 products that may contain ACMs. Since listing all of these products is impractical, any building material that is not obviously some other material such as steel or fibreglass, must be treated as asbestos-containing until proven otherwise.



Table A.1: Examples of Types of ACM's

<b>Friable ACMs</b>	
Sprayed or Trowelled Fireproofing	Usually applied to a building's support structures and the underside (decking) of floors. Caution must be taken due to the fact that overspray fireproofing may be present on all building systems (i.e. ducts, pipes, and ceiling) in an area with sprayed fireproofing. Asbestos-containing fireproofing usually contains amosite or chrysotile asbestos.
Mechanical Insulation	This includes parging on ductwork, boilers, chillers, hot water tanks, and any insulated vessels; mud products applied to pipe elbows or any other mechanical fitting; as well as asbestos-containing straight run insulation found on straight runs of piping.
Sheet Vinyl Flooring (paper backing)	The backing paper may contain a high percentage asbestos (usually chrysotile asbestos).
<b>Non-Friable ACMs</b>	
Drywall Jointing Compounds	Drywall jointing compounds can be found on any gypsum plasterboard surface. Asbestos-containing drywall jointing compounds usually contain chrysotile asbestos.
Plaster Walls and Ceilings	Plaster walls and ceilings may contain asbestos. These surfaces usually consist of two layers; the first material applied to the structure is the "scratch coat" or rough layer. The scratch coat layer is then covered with the "smooth coat" layer, which is then sanded and painted. Both layers may contain asbestos (usually chrysotile asbestos).
Floor Tiles	Floor tiles including 23 x 23 cm and 30 x 30 cm may contain asbestos. Asbestos-containing floor tiles usually contain chrysotile asbestos. Mastics used to adhere floor tiles may also contain asbestos.
Ceiling Tiles	Most sizes and shapes of ceiling tile may contain asbestos. Including 30 x 30 cm, and 60 x 120 cm. Some types of ceiling tiles may contain amosite asbestos.
Floor leveling Compounds	Floor leveling compounds are often present over concrete floors; however, they may also be found covering other flooring surfaces. Asbestos-containing floor leveling compounds usually contain chrysotile asbestos.
Asbestos-Containing Cement Products	Asbestos-containing cement products include cement board, roofing and cladding tiles, and piping. Most asbestos-containing cement products contain chrysotile asbestos; however, cement piping may contain crocidolite asbestos and cement panels may contain amosite.
Gaskets	Asbestos-containing gaskets may be present in various mechanical systems. Asbestos-containing gaskets usually contain chrysotile asbestos.



## APPENDIX B

### Typical Examples of Operations for Each Asbestos Work Type

Any operation such as maintenance, repairs, renovations or constructions that involve asbestos-containing material may generate airborne asbestos fibres and hence pose a hazard. Under regulations, asbestos work is classified into three categories, namely Type 1, Type 2 and Type 3 work depending on the amount of airborne fibres the operation may release and the duration of the work. In most cases, the manager would specify the classification (See Section 3).

Thus, if any work must be performed on friable or non-friable asbestos, the Asset Manager shall determine which work type is applicable to the activity or operation and hence determine the level of protection that is required for the hazards involved. The following is a list of representative examples of operations and activities categorized into the three asbestos work types. The lists below are not exhaustive but are general in nature and are intended to provide information pertaining to the overall types of activities that fall within each category. Other types of asbestos operations may fall into any or all categories, based on qualified risk assessment.

#### **Type 1 asbestos work – low risk**

Small scale operations on asbestos-containing material that generally present little hazard to workers or bystanders. Representative Type 1 operations include:

- Inspection of friable asbestos-containing material, such as sprayed fireproofing above false ceilings.
- Cutting, drilling, or shaping of non-friable material by non-powered hand tools.
- Installation or removal of a non-friable ACM with a non-powered hand tool.
- Disturbance of a non-friable ACM with a powered tool equipped with a HEPA dust collection device.
- Minor removal of drywall materials where joint filling materials contain asbestos.
- Removal or replacement of ten (10) or less asbestos-containing compressed mineral fibre type ceiling tiles.
- Removal of vinyl-asbestos floor tiles.
- Collecting samples of asbestos-suspect friable materials.
- Working close to friable sprayed asbestos, where the material may be affected by the work activities.

#### **Type 2 asbestos work – moderate risk**

Small scale or short term operations on asbestos-containing material that may create exposure to airborne asbestos fibres above acceptable limits. Representative Type 2 operations include:

- Cutting, drilling, or shaping of non-friable material by power tools equipped with HEPA filter.
- Removal or replacement of more than ten asbestos-containing compressed mineral fibre type ceiling tiles.
- Removal of insulation that is asbestos-containing material.
- Entry into ceiling spaces, crawlspaces, pipe tunnels, etc., where friable asbestos debris is present.
- Minor removal of friable ACM. Type 2 removal is limited to a maximum per work period which is different in each province. Asset Managers will need to confirm with provincial regulations to confirm the applicable level.
- Significant removal of drywall where asbestos joint compounds were used.



- Repair of asbestos mechanical insulation. (No limit is imposed as to the amount of repair permitted under Type 2 conditions.)
- Enclosure of friable asbestos-containing material.
- Application of tape, sealant or other covering to pipe or boiler insulation containing asbestos.
- Disturbance of ACM that is not wetted and work is done with non-powered hand tools.
- Cleaning, removing or replacing HEPA vacuum filters or bags.
- Removal of asbestos-containing pipe insulation using a glove-bag method.
- Removal of vinyl-asbestos floor tiles (large area/ major operation).

### **Type 3 asbestos work – high risk**

Large scale operations on asbestos-containing material that may generate significant airborne asbestos fibres above acceptable limits. Representative Type 3 operations include:

- Any major disturbance or removal of friable asbestos-containing material.
- Use of a power tool on non-friable ACM without HEPA exhausted dust collection.
- The spray application of an encapsulant or sealer to friable asbestos surfacing materials.
- Disturbance of the ductwork and air handling equipment serving or passing through areas of buildings with sprayed asbestos fireproofing or insulation.
- Repair, alteration or demolition of a boiler, furnace, kiln, or similar equipment with asbestos-containing refractory.
- Cutting, grinding or abrading asbestos products with power tool unequipped with dust collection device and HEPA filter.
- Work on ceiling tiles, drywall or friable ACM is classified according to total area on which work is done.



## APPENDIX C

### Applicable Concentration Limits for ACM

Each province and territory determines the concentration limits applicable within their jurisdiction to consider a material as an asbestos containing material (ACM) subject to regulation in buildings. The following concentration limits are valid as of March 2012. As there are no federal standards, Parks Canada will adopt the regulated limits within the applicable province or territory. Note that these limits may be adjusted in future, and that third party testing contracts must require that current provincial standards and limits (at time of testing) are used.

Table 3.1: Recognized Limits for Standard Analytical Methods  
March, 2012

Province or Territory	Concentration defining materials as ACM
Newfoundland Nova Scotia Prince Edward Island New Brunswick Northwest Territories Yukon Territory Nunavut	1.0%
Ontario (includes part of National Capital Area) British Columbia	0.5%
Quebec (includes part of National Capital Area)	0.1%
Manitoba Saskatchewan*	1.0% (non-friable) 0.1% (friable)
* Although not indicated explicitly in the SK OH&S Regulation, the Saskatchewan Ministry of Advanced Education, Employment and Labour standard defines an ACM as indicated herein	