

### **PURPOSE/APPLICATION**

Canadian Plains Energy Services (CPES) will only undertake work activities that involve the removal of low risk asbestos containing material. Work activities that involve the disturbance and/or removal of high risk asbestos containing materials will be contracted to a company with expertise in asbestos abatement. This safe work practice was developed for **informational purposes**.

Asbestos is a naturally occurring mineral. The most commonly used types of asbestos are named chrysotile, amosite and crocidolite. Asbestos has been and continues to be used in a variety of materials due to its strength and unique fire and chemical resistance properties.

Worker exposure to asbestos containing material will be kept as low as reasonably practicable and every effort will be made to ensure worker exposure will never exceed its occupational exposure limit.

#### **PPE**

- Canadian Plains Energy Services (CPE) minimum requirements
- Approved respiratory protective equipment (RPE)

#### **TRAINING**

#### **HAZARDS & CONCERNS**

- Occupational Illness (lung cancer, Mesothelioma, Asbestosis)
- Biological Hazards

### **PRECAUTIONS**

When working in areas where asbestos containing materials may be disturbed or where asbestos abatement projects are underway, the following precautions must be adhered to:

- Do not disturb any materials that you may believe contain asbestos.
- Do not enter the immediate area where abatement activities are taking place.
- Observe and obey all warning signs set out by the abatement contractor.

Contact your supervisor immediately if you believe that you are working in an area where asbestos containing materials may exist.

### **REFERENCES / ADDITIONAL INFORMATION**

Asbestos must be inhaled to cause disease. Intact and undisturbed asbestos presents no direct health hazard but does present a potential exposure hazard should fibres be released and inhaled. As a result, there is risk associated with all asbestos.

A material that is **friable** is one which can be crumbled, pulverized or powdered by hand pressure. If a friable asbestos-containing material is damaged or disturbed, it presents an inhalation risk because asbestos fibres are more easily released into the air. Examples of friable materials include sprayed fireproofing on structural steelwork, or thermal insulation on pipes.

A **non-friable** asbestos product is one in which the asbestos fibres are bound or locked into the product matrix, so that the fibres are not readily released. Such a product would present a risk for fibre release only when it is subject to significant abrasion through activities such as sanding or cutting with electric power tools. Examples of nonfriable asbestos products include vinyl asbestos floor tiles, acoustic ceiling tiles, and asbestos cement products.

**ACM / PACM INFORMATION**

Building and facility owners shall determine the presence, location, and quantity of Asbestos Containing Material (ACM) and/or Previously Asbestos Containing Material (PACM) at the work site. Employers and

building and facility owners shall exercise due diligence in complying with these requirements to inform employers and employees about the presence and location of ACM and PACM.

Building and facility owners shall maintain records of all information required to be provided pursuant to this section and/or otherwise known to the building owner concerning the presence, location and quantity of ACM and PACM in the building/facility. Such records shall be kept for the duration of ownership and shall be transferred to successive owners.

Building and facility owners shall inform employers of employees, and employers shall inform employees who will perform housekeeping activities in areas which contain ACM and/or PACM of the presence and location of ACM and/or PACM in such areas which may be contacted during such activities.

**Warning Signs Posting**

Warning signs shall be provided and displayed at each regulated area. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

Workers may find asbestos containing products in the following locations:

***Building exteriors***

- Asbestos cement siding panels
- Building overhangs – thermal spray
- Asbestos cement soffits
- Stucco
- Asbestos cement roof panels – corrugated
- Brick and block mortar
- Roofing felts and mastics
- Loose fill insulation in exterior wall cavities (vermiculite)

***Flooring***

- Vinyl asbestos tiles
- Floor leveling compound
- Sheet vinyl flooring (asbestos paper backing)

***Ceilings***

- T-bar ceiling tile
- Acoustic and stippled finishes
- Asbestos cement ceiling tile

***Walls***

- Plaster or drywall jointing materials
- Thermal spray

- Stippled finishes
- Asbestos cement panels

***Service areas***

- Insulation in boiler rooms – boilers, vessels, pipes, ducts, incinerators, floors
- Machine rooms – insulation on pipes, ducts, floors, ceilings, walls
- Ceilings, walls
- Crawl spaces – insulation on pipes, duct wall cavities, insulation above
- Fan rooms – insulation on pipes, ducts, chillers, floors, ceilings, walls
- Wall cavities, insulation above ceiling spaces – pipe and duct chases, pipes, duct

***Structural***

- Fireproofing spray on beams, decks, joists, columns and other structural members

***Pipes (insulation on either exposed or concealed pipes)***

- Steam and hot water heating supply and return lines
- Rain water and sanitary lines – asbestos cement or bell and spigot cast iron
- Domestic water supply and drain lines
- Insulated or bare pipe
- Chilled water lines
- Gaskets in flanged pipe joints

***Miscellaneous***

- Incandescent light fixture backing
- Emergency generators – thermal insulation and exhaust manifolds
- Wire insulation
- Fire stopping
- Fume hoods – internal linings and exhaust ducts
- Theatre curtains
- Lab counters
- Welding blankets and screens
- Elevator brake shoes
- Incinerators – internal insulation
- Heating cabinet panels (asbestos cement)
- Cooling towers – panels and fill
- Fire dampers and fire stop flaps
- Duct expansion/vibration isolation joint
- Diffuser back plaster

- The health risk is considered minimal for asbestos materials in good condition in an inaccessible location and protected from damage. Workers currently having the highest risk of asbestos exposure are those doing maintenance on equipment or buildings that use asbestos-containing products, or those who may work in an area where asbestos is being disturbed by others.

### **Monitoring for Asbestos Exposure**

Air monitoring is important in evaluating how well workers are being protected, the selection of respiratory protective equipment, the effectiveness of decontamination and the integrity of the containment during abatement activities. Collection of reliable data requires a thorough knowledge of air sampling, analytical techniques and when a particular technique should be used. Air monitoring must only be performed by competent personnel. During asbestos abatement activities monitoring will be conducted to ensure that no employee is exposed to an airborne concentration of asbestos excess of 0.1 fiber per cubic centimeter of air (1 f/cc) in an 8-hour exposure limit.

Air sampling and sample analysis must be conducted according to the most current edition of the NIOSH Manual of Analytical Methods (NMAM).

Two types of sampling can be used to determine airborne fibre concentrations:

#### **1. Personal/breathing zone/occupational sampling**

Personal, breathing zone or occupational samples are collected using a portable battery-powered pump worn by the worker during specific abatement activities. The sampling cassette is positioned facing downward in the worker's "breathing zone" (as close to the mouth as possible) and the pump is attached to a belt worn around the worker's waist. Typically, phase contrast microscopy is used to analyze the samples. Personal sampling should be done during a repair, renovation or abatement project to determine the worker's exposure to asbestos fibres. Representative samples should be taken to confirm proper selection of respiratory protective equipment and the effectiveness of removal or control techniques in reducing worker exposure to airborne asbestos fibres.

#### **2. Area sampling**

Area sampling should be used in the following situations during abatement projects:

- a. *Before abatement activities begin* — air monitoring conducted prior to abatement work commencing is called "background sampling" or "prevalent level sampling". Background samples provide valuable information for documentation purposes. Generally, one background sample should be taken for each 450 m<sup>2</sup> of space (3000 to 10,000 litres of air volume in the work space).
- b. *Area air samples outside the work area but inside the building* — samples are collected throughout the duration of the asbestos abatement project to determine how well asbestos fibres are being contained in the work area. These samples are very important when abatement activities are performed in an occupied building. Samples should be collected from:
  - i. the clean room;
  - ii. the clean side of the containment barrier;
  - iii. in multi-storey buildings, one floor above and one floor below (if these areas are occupied) and the floor on which abatement activities are occurring; and
  - iv. at any other locations representative of those that could be contaminated due to fibre migration should there be a loss of containment.
- c. *Area sampling outside the building* — area sampling can be conducted outside the building during abatement activities to determine if any asbestos fibres are leaking from the work area. Suggested sampling locations include windows, doors, the exhaust from negative air units, waste load-out areas and areas downwind of abatement activities.

- d. Area air sampling after final clean-up of the work area — after a thorough final visual inspection has been completed and the clean-up is considered acceptable, the abatement contractor encapsulates all surfaces inside the containment with a glue spray. The spray is allowed to settle and dry for a minimum of 4 hours (ideally 8 to 12 hours) and then final air tests can be conducted. Negative air units should remain running until the final air test is completed and analyzed as acceptable unless dust from construction or other activities would be drawn into the containment. Care must be taken to collect a sufficient volume of air to achieve quantifiable loadings on the filter.

### **Worker Training**

All workers who work with asbestos will receive training necessary for them to perform their work safely. Workers who may enter a “restricted area” must successfully complete an asbestos abatement course of at least two days duration. Only competent workers will be allowed to conduct asbestos abatement activities. Worker competence will be determined by the supervisor. Supervisors will use both formal training and on-the-job training to assess competence.

Workers must have their valid certification cards available at the work site when they are working. Occupational Health and Safety Officers may ask a worker to produce their original card plus appropriate identification.

Workers involved in low and moderate risk abatement projects (work sites that are not restricted areas) are not required to complete a two-day asbestos abatement course and need not possess an Asbestos Worker Card. Training will be provided that is appropriate to the level of worker involvement in the project. The training will, at a minimum, contain the following elements:

- a. health hazards associated with exposure to asbestos;
- b. responsibility of workers, employers, contractors and suppliers under the OHS Act;
- c. asbestos requirements in Part 4 of the OHS Code;
- d. safe work procedures related to the work, see section 5.2 and 5.3 of this manual, as appropriate;
- e. how to properly wear, use and maintain personal protective equipment that will be used at the work site.

This training may be provided by a training agency or in-house by persons who are knowledgeable in the procedures and hazards associated with asbestos abatement.

### **Decontamination**

1. For high risk removal jobs, the only satisfactory method of providing an appropriate decontamination facility is with a mobile or specially constructed on-site unit. The decontamination facility is located immediately adjacent to, and joined to, the enclosed asbestos removal area. The facility is divided into three distinct rooms; Dirty Room, Shower Room and Clean Room.
2. The decontamination facility’s three rooms are separated from one another by means of a suitable airlock or buffer zone. This airlock defines the boundary between each segment of the decontamination facility. The airlock allows personnel to access the removal area and restricts the flow of air between areas. Partitions between rooms in the decontamination facility must be self-closing so that each room functions as an airlock. These partitions are normally constructed of overlapping sheets of heavy weight plastic suspended to form a curtain.
3. Generally, no more than 10 persons should use one decontamination facility so that adequate access to shower and cleaning facilities is provided and line ups are avoided.

4. The Dirty Room should have provision for:
  - a. hosing down contaminated clothing and footwear or cleaning it with a vacuum cleaner fitted with a HEPA filter;
  - b. storage of contaminated clothing and footwear;
  - c. bins for waste materials; and
  - d. airflow towards the removal area.
5. The Shower Room should have provision for:
  - a. a shower area with an adequate supply of soap, shampoo and hot and cold water;
  - b. airflow towards the dirty decontamination area.
6. The Clean Room should have provision for:
  - a. storage of individual respirators in containers or lockers;
  - b. a mirror to assist in donning respiratory protective equipment;
  - c. storage of clean clothing;
  - d. separate storage of clean and dirty towels; and
  - e. airflow towards the shower and dirty area.
7. All water from the decontamination facility should pass through a 10 micrometre filter before it passes into the sewer mains.

### **Waste Handling**

Waste material from within the enclosed asbestos work area must be placed in impervious containers (doubled polyethylene bags at least 6 mm thick are acceptable), sealed and clearly labeled to indicate that:

- a. they contain asbestos;
- b. asbestos is carcinogenic; and
- c. asbestos fibres should not be inhaled.

If the waste materials are likely to puncture the polyethylene bags, suitable rigid containers must be used.

Clean the external surfaces of sealed containers of asbestos waste by wiping with a damp cloth that is also to be disposed of as asbestos waste, or by using a vacuum cleaner fitted with a HEPA filter, before the containers leave the contaminant area/transfer room.

In the equipment transfer room, sealed containers must be packaged to withstand handling and transportation to the disposal site without being punctured or otherwise damaged.

A continuous clean-up and disposal program must be in place to prevent unnecessary accumulation of asbestos-containing waste materials at the work site.

At the end of each workshift, all asbestos waste material must be properly contained. Prior arrangement must be made with appropriate authorities to deliver asbestos containing waste to assigned dump sites. Transport drivers must be informed of the precautions that must be taken. Transport vehicles may be required to carry signs or placards specifying the nature of the cargo (see Section 3 and the *Transportation of Dangerous Goods Act*).

Disposal sites must conform to provincial and municipal requirements (refer to Section 3 on legislation and contact the Waste Management Branch of Alberta Environment for more information).

### **Protective Clothing**

Protective clothing for asbestos abatement work usually consists of disposable, impermeable coveralls, foot coverings, gloves and head coverings. Protective clothing reduces contamination of the worker's body and hair and makes decontamination when leaving the work area much easier.

Protective clothing with an attached hood and foot coverings provides the most complete protection. Alternatively, laceless rubber boots can be worn as long as they are properly decontaminated prior to removal from the work site. Disposable types of protective clothing are made of products such as Tyvek™. Permeable outer clothing is not recommended for asbestos abatement work as fibres can penetrate the clothing, contaminating clothing worn beneath it and contaminating the skin.

Protective clothing *does not include* street clothes, shoes, T-shirts, socks, blue jeans, sweat bands, etc. If these items are used inside the work area, they should remain there and be disposed of as asbestos waste at the end of the job. Protective clothing that is reused must be collected, handled and washed in a manner that prevents the spread of asbestos fibres and ensures that the clothing is free of asbestos.

Workers must never take contaminated clothing or towels home for laundering. Reusable clothing and towels must be collected at the work site and sent to a laundry that specializes in cleaning clothing contaminated with asbestos.

Protective clothing may also be required to protect workers from physical hazards. If the asbestos-containing materials being removed contain wire mesh, lath or other sharp objects, heavy gloves should be worn to protect workers' hands.

Appropriate footwear must also be worn to provide protection from sharp or heavy objects and wet or slippery conditions. Other safety equipment such as head, eye and hearing protection should be worn if hazardous conditions requiring their use are encountered.

### **Health Assessment Records**

Each worker must undergo a health assessment within 30 days of becoming an exposed worker, and every two years thereafter. The worker may refuse the test by submitting a written refusal to the employer.

At the time the worker becomes an exposed worker, the employer will ensure that the health assessment is done. The assessment will be conducted by a qualified physician and consist of a chest x-ray, including radiologist's report, a pulmonary function test and worker's work history.

The cost of medical testing and the time taken to undergo the tests will be borne by the employer.

Test records will be kept confidential unless the worker has given written permission for access by another person or the records do not identify the worker. Only the worker or health professional who conducts the health assessment will have access to the exposed worker's health assessment.

### **REGULATIONS**

#### **Alberta OHS Code - Part 4 Chemical Hazards, Biological Hazards and Harmful Substances**

##### ***Worker exposure to harmful substances 16***

- 1. An employer must ensure that a worker's exposure to any substance listed in Schedule 1, Table 2 is kept as low as reasonably practicable, and does not exceed its occupational exposure limit.*

**Saskatchewan OHS Regulation - PART XXIII Asbestos**

***Asbestos processes 337***

1. *An employer or contractor shall:*
  - a. *ensure that every asbestos process is carried out in a manner that prevents, to the extent that is practicable, the release into the air of asbestos dust;*
  - b. *in consultation with the committee, develop an asbestos control plan that protects the health and safety of all workers in the event of the dispersal of asbestos dust into the atmosphere at a place of employment or worksite; and*
  - c. *implement the asbestos control plan developed pursuant to clause (b).*
2. *A plan developed pursuant to subsection (1) must be in writing and must include:*
  - a. *the emergency procedures to be used in case of and uncontrolled release of asbestos, including:*
    - I. *the means to protect exposed workers;*
    - II. *the methods to confine and control the release of asbestos; and*
    - III. *the decontamination procedures to be used;*
  - b. *the asbestos processes that workers may undertake;*
  - c. *the training of workers in any asbestos process the workers may be required or permitted to undertake;*
  - d. *the methods to control the release of asbestos dust;*
  - e. *the personal protective equipment that workers may be required to use;*
  - f. *the decontamination procedure for:*
    - I. *the worksite; and*
    - II. *the workers who undertake any asbestos process; and*
  - g. *the inspection and maintenance schedule for all asbestos-containing materials.*
3. *An employer or contractor shall make a copy of the plan developed pursuant to subsection (1) readily available for reference by workers:*

**British Columbia OHS Regulation – Part 6 Substance Specific Requirements**

**6.3 *Exposure control plan***

1. *If a worker is or may be exposed to potentially harmful levels of asbestos, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54.*
2. *To ensure adequate coordination of the overall plan, the employer must ensure that it is administered by a properly trained person.*

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