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3.0 EXPOSURE CONTROL PROGRAM AND MODERATE RISK SAFE WORK PROCEDURE FOR CLEAN-
1.0 INTRODUCTION

This training program was developed to provide municipal employees with information on the precautions that must be taken when cleaning up and disposing abandoned drywall (gypsum) board that has suspect or confirmed asbestos-containing drywall joint compound, texture coating, or any other plaster product adhered to it.

IMPORTANT NOTE: The asbestos safety precautions detailed in this program are not required for the cleanup or disposal of drywall (gypsum) board that does not have suspect or confirmed asbestos-containing drywall joint compound, texture coating, or any other plaster product adhered to it. If the drywall has not been painted, textured or joined with other drywall or surfaces, it will not contain asbestos.

1.1 COURSE OBJECTIVES

At the end of this course, participants will:

1. Understand the hazards of the Asbestos-Containing Materials (ACMs) to be able to proactively identify situations where there is a risk of harmful exposure and to protect themselves and others from the risk of harmful exposure

2. Know the applicable sections of the British Columbia Occupational Health and Safety Regulation.

3. Understand an asbestos exposure control plan and safe work procedure including the precautions that must be taken when cleaning up and disposing of asbestos-contaminated drywall waste.

4. Be able to follow Moderate Risk Abatement techniques and procedures detailed in the above-noted asbestos exposure control plan and safe work procedure.
1.2 LEGISLATION

Worker’s Compensation Act

Workplace health and safety is regulated in British Columbia by WorkSafeBC under the Workers’ Compensation Act (effective April 15, 1998), as amended by the Workers’ Compensation (Occupational Health and Safety) Amendment Act (effective October 1, 1999).

The Act defines the general duties and obligations of the employer, employees and others at the work site.

BC Occupational Health and Safety Regulation

ACMs are regulated specifically under Part 6 (sections 6.1 to 6.32) of British Columbia Occupational Health and Safety Regulation (BC Reg.) 296/97, as amended from time to time.

Maximum Allowable Asbestos Exposure Levels

The Time-Weighted Average (TWA) for all forms of asbestos for an 8-hour work shift is:

- f/cc 0.1 (fibres per cubic centimeter)

For extended work shifts the TWA must be adjusted consistent with the requirements of Part 5.50 of the OH&S Regulations.

Provincial Environmental Legislation

In British Columbia, environmental matters pertaining to waste generally fall under the jurisdiction of the British Columbia Ministry of Environment (MoE), pursuant to the Environmental Management Act.

The key waste regulation under the Environmental Management Act relating to hazardous building materials is the Hazardous Waste Regulation (HWR), BC Reg. 63/88, as amended by BC Reg. 319/2004, as amended from time to time.
ASBESTOS CONTAINING DRYWALL DISPOSAL

The HWR provides the requirements for the proper handling, storage, transportation, treatment, recycling and disposal of hazardous wastes in the province. The regulation also outlines the materials and criteria to be used to characterize waste as hazardous.

Transportation Regulations

The transportation of hazardous wastes is governed under the Transportation of Dangerous Goods (TDG) Act and Regulations which outline the requirements for storage, handling, and transportation of hazardous waste, amongst other products.

Guidelines


This manual outlines basic information on asbestos and asbestos products, health hazards requirements for worker protection, safe work procedures and principles that should be followed in selecting the most suitable technique for the safe abatement of ACMs.

WorkSafeBC has also published “G20.112 Hazardous Materials – Asbestos”, dated 2008. The purpose of this guideline is to explain the hazards associated with the uncontrolled release of asbestos. It also provides information for owners, employers, consultants, workers and other involved persons on what constitutes a compliant asbestos inspection, arranging for and confirming the safe abatement of asbestos, and what to do if additional materials suspected to contain asbestos are encountered during demolition or salvage work.

Jurisdictional Controls

According to the Ten Steps to Compliance as outlined in WorkSafeBC guideline 20.112, an ACM survey must be completed prior to renovating and/or demolishing any building or structure that was built prior to 1990.
2.0 **ASBESTOS AWARENESS**

Asbestos is a group of naturally occurring mineral fibres that are most commonly mined in open pits.

**Three common types of asbestos include:**

- Chrysotile: White
- Amosite: Brown
- Crocidolite: Blue

2.1 **USES OF ASBESTOS**

Asbestos was used in thousands of materials due to its wide range of benefits.

**Useful Properties of Asbestos:**

- Resists burning, even at high temperatures
- Has great tensile strength
- Acoustic dampener
- Resists corrosion by chemical
- Resists biological growth
- Insulates against the conduction of electricity
- Is very flexible
Asbestos Containing Materials (ACMs):

- **Building Exteriors**
  - Cement paneling, soffits and roof panels
  - Roofing felts and mastics
  - Stucco
  - Brick and block mortar
  - Loose fill insulation in exterior wall cavities

- **Flooring**
  - Floor tile
  - Sheet vinyl flooring
  - Floor leveling compound

- **Ceilings**
  - T-bar ceiling tile
  - Cement ceiling tile
  - Acoustic finishes
  - Stippled finishes
  - Plaster or drywall joint compound (DWJC)
ASBESTOS CONTAINING DRYWALL DISPOSAL

- Walls
  - Plaster or drywall joint compound (DWJC)
  - Surface texture applied to walls
  - Texture coating
  - Transite wall board

- Service Areas
  - Boiler room insulation – boilers, pipes, ducts, incinerators, floors, walls, ceilings
  - Fan room insulation – insulation on pipes, chillers, floors, ceilings, walls
  - Machine room insulation – insulations on pipes, ducts, floors, ceilings, walls
  - Crawl space insulation - insulation on pipes and ducts
  - Wall cavity insulation
• Pipe or Boiler Insulation
  o Steam and hot water pipes
  o Domestic water and drains
  o Rain water lines
  o Gaskets in flanged pipe joints
  o Insulating jackets on boilers and hot water tanks
  o Pipe chases – insulation wrap on concealed mechanical systems

• Miscellaneous Materials
  o Incandescent light fixture backings
  o Wire insulation
  o Fume hoods
  o Laboratory counter-tops
  o Fire blankets
  o Brake pads
  o Fire-stopping theatre curtains
2.2 HEALTH AND EXPOSURE RISKS

Health Risk

Asbestos disease is a result of deep lung inhalation of asbestos fibres. The risk for workers is associated with inhaling airborne fibres. If the asbestos is not disturbed and does not become airborne, the exposure potential is minimal. Materials that have low friability, are in good condition, in an inaccessible location, and protected from damage are low hazard. Where damage or disturbance cannot be controlled, management of the exposure risk is very difficult.

Hazardous Fibres

The hazard associated with the fibres is due to their size and shape. Long, fine fibres are most hazardous and can still be inhaled into the deep lung. A fibre is most hazardous if its length is greater than 5 microns and the width is less than 60% of its length. In contrast, fibreglass fibres tend to be too large to reach the deep lung and are not as significant an exposure hazard.

The Three Main Diseases of Asbestos:

- Asbestosis
- Lung Cancer
- Mesothelioma

2.3 ASBESTOS CONTROL METHODS/OPTIONS

Types of Asbestos Control Methods:

- Removal
- Encapsulation
- Enclosure
- Survey & Management Plan
Each control method requires exposure control plans and specific safe work procedures, in compliance with Regulation.

2.4 PERSONAL PROTECTIVE EQUIPMENT

Respirators

Asbestos fibres are hazardous when they are inhaled. Therefore, respirators are the most important pieces of equipment for anyone handling asbestos.

The minimum protection required is a NIOSH-approved half-face or full-face dual-cartridge respirator, fitted with P-100 filters.

All workers must be clean-shaven where the respirator seals with the face. Prior to use, a qualitative fit test (irritant smoke or Bitrex) must be performed by a qualified person. This test must be conducted annually, after maintenance has been performed on the respirator, or if the worker changes respirators.

Prior to each use, workers must conduct a negative and positive pressure fit-check.

In addition to Respirators, other PPE may be required.

- Disposable coveralls (hooded with elasticized cuffs)
- Work gloves
- Safety footwear (steel toed, seamless, laceless rubber boots)
- Hardhat
- Hearing protection
- Safety glasses
3.0 EXPOSURE CONTROL PROGRAM AND MODERATE RISK SAFE WORK PROCEDURE FOR CLEAN-UP OF ASBESTOS-CONTAMINATED DRYWALL WASTE

Under WorkSafeBC Regulation, an employer must create and communicate an Exposure Control Program for Asbestos. A sample Exposure Control Program is in Appendix A.

This substance-specific exposure control program details safety procedures and protocols that must be followed when cleaning up and disposing abandoned drywall (gypsum) board that has suspect or confirmed asbestos-containing drywall joint compound, texture coating, or any other plaster product adhered to it.

**IMPORTANT NOTE:** These safety procedures and protocols are not required for the cleanup or disposal of drywall (gypsum) board that does not have suspect or confirmed asbestos-containing drywall joint compound, texture coating, or any other plaster product adhered to it.

Through the preparation of this training program, EHS Partnerships Ltd. of Burnaby, BC conducted a qualified substance-specific risk assessment. The substance-specific risk assessment was conducted to evaluate worker exposure and environmental risks associated with cleaning up asbestos-contaminated drywall waste in volumes less than or equal to one (1) cubic meter.

Through the qualified risk assessment, EHS Partnerships Ltd. determined that the clean-up presents a Moderate Risk of a harmful exposure to the workers completing this type of work. Subsequently, EHS Partnerships Ltd. determined that Moderate Risk asbestos abatement work procedures would provide sufficient protection to workers conducting this type of clean-up and disposal work.

Additionally, a written Safe Work Procedure (Appendix B) was developed to provide municipal employees with information on the precautions that must be taken when cleaning up and disposing of asbestos-contaminated drywall waste that is illegally dumped throughout the municipalities of British Columbia.
Refer to the Exposure Control Program for general information regarding health and safety requirements associated with this type of work.

The remainder of this manual will focus on the safe work procedures that were developed specifically for the cleanup of asbestos-contaminated drywall waste in volumes less than or equal to one (1) cubic meter.

**General Practices**

No eating, drinking, or smoking is permitted in the asbestos removal area. Workers must fully decontaminate before performing any of these activities, or using the washroom.

PPE is to be worn at all times by all workers inside the asbestos cleanup area.

**Required Equipment/PPE**

- Traffic Control Equipment (appropriate Signage and Pylons)
- High Visibility Vests
- Disposable Tyvek Coveralls
- NIOSH Approved Half-Face or Full-Face Respirator w/ P-100 Filters
- NIOSH Approved Protective Gloves
- NIOSH Approved Protective Eye Wear (if using Half-Face respirator)
- NIOSH Approved Protective Foot Wear (Seamless Rubber Boots)
- Two Wash Buckets for each two employees
- Hand Soap
- First Aid Kit
- Duct Tape
- Asbestos Warning Tape
- Asbestos Waste Bags
- Disposable Hand Towels
- 6 Mil Polyethylene Sheeting
- Minimum of 4 Asbestos Hazard Signs
- Spray Canister Capable of Misting
- Shovel
- Hand Spade
- 5 micron filter sock
Personal Decontamination Area and Procedures

The barricaded work area will be constructed with a personal decontamination area, immediately adjacent to the asbestos clean-up area, limiting entry and egress to and from the work area. One entrance and exit will be used and maintained by all workers.

Wash pails within the personal decontamination area (no more than two workers per set of two wash pails) will be used by all personnel and equipment exiting the work area.

Each time the worker leaves or enters the work area he/she will have to use appropriate PPE and will have to follow specific safety procedures and protocols detailed below.

**Personnel Exiting the Work Area (Personal Decontamination)**

1. One entrance and exit will be used and maintained by all workers.

2. Each time the worker leaves the work area he/she will damp wipe his/her disposable coveralls to remove visible debris, *within the work area*.

3. Still within the work area, the worker will remove coveralls and place in a 6 mil labeled polyethylene bag and dispose of as asbestos waste. *DO NOT REMOVE RESPIRATOR AT THIS TIME.*

4. Still wearing the respirator, the worker will proceed to a designated “personal decontamination” area provided.

5. In the personal decontamination area, thoroughly clean the outside of the respirator with water.

6. Remove the respirator.

7. Thoroughly wash hands and face with soap and water.
8. Wash and rinse the inside of the respirator.

9. Respirator filters will be taped over while respirator is not in use to prevent possible release of entrapped asbestos fibres. If this is the last use of the filter cartridges, they must be disposed of as asbestos waste.

10. Exit the “clean area”.

**Clean-up and Decontamination of tools**

Tools and materials must be thoroughly rinsed in a bucket of water and inspected (to ensure there is no asbestos contamination) before being removed from the authorized work zone. Any remaining pieces of debris shall be wiped off the tools using a damp cloth. Following this clean up, tools must be rinsed in the second bucket of clean water and placed outside the asbestos clean-up area.

If the object is too large to be washed in a bucket of water, such as a shovel, use a wet cloth to wipe the object down until visually clean. Inspect thoroughly for asbestos contamination and repeat if necessary until all material has been removed from the item.

**Disposal of Asbestos-contaminated Drywall**

Asbestos-contaminated drywall will be placed in a labeled asbestos waste disposal bag. Properly sealing disposal bags of asbestos waste will follow these directions:

1. The workers shall clean-up the area and place all asbestos contaminated waste (including PPE, rags and sponges used in work area) into a labeled ‘Asbestos Waste’ disposal bag. Gently squeeze the bag to expel the air.

2. Twist tightly the unused top portion of the bag into a tail and seal with duct tape at the base of the tail.
3. Take the leftover twisted tail section of the bag and bend it around to make a loop and attach it to the base of the tail using the duct tape.

4. Place the first bag into the second bag and repeat the sealing procedure.

**Written Safe Work Procedure for Cleaning Up Asbestos-Contaminated Drywall in Volumes Equal, or Less Than 1 Cubic Meter**

1. Ensure traffic control is in place in accordance with the British Columbia Ministry of Transportation and Highways Traffic Control Manual and Municipal procedures.

2. Cordon off the work area using a combination of asbestos warning signs, tall pylons or sawhorses, and asbestos barrier tape to restrict access to the work areas by unauthorized personnel.

3. The barricaded asbestos work area will be constructed with a personal decontamination area immediately adjacent, limiting access to and from the asbestos work area.

4. Place 6 mil polyethylene sheeting drop sheets on the ground within the personal decontamination area and immediately adjacent to the asbestos clean-up area.

5. Don Personal Protective Equipment:
   a. Disposable Tyvek Coveralls with elastic at wrists and ankles
   b. High Visibility Vests
   c. NIOSH Approved Half-Face or Full-Face Respirator w/ P-100 Filters
      i. Perform positive and negative pressure fit check
   d. NIOSH Approved Protective Gloves
   e. NIOSH Approved Protective Eye Wear (if using Half-Face respirator)
   f. NIOSH Approved Protective Foot Wear (Seamless Rubber Boots)
   g. Hearing Protection (if required)
   h. Duct tape around wrists and cuffs of coveralls.
6. Before starting any work that is likely to disturb the asbestos-containing drywall, mist water onto the waste. During the work, continuously mist water onto the waste pile that is being cleaned up.

7. Clean up dust and waste by shovel or hand.

8. Double-bag the waste into asbestos waste bags over the 6 mil polyethylene sheeting drop sheet.

9. Visually inspect the barricaded work area thoroughly to ensure all asbestos-containing material and dust/debris has been fully removed.

10. Immediately upon finishing the work, complete the following tasks:
   
   a. Rinse tools in bucket of water, inspect; wipe with wet cloth if necessary. Rinse in second bucket, set aside.
   b. Damp wipe disposable coveralls; remove and place in asbestos disposal bag.
   c. Exit the asbestos clean-up area.
   d. Wet drop sheet.
   e. Fold drop sheet and barrier tape to contain any remaining dust.
   f. Place into an asbestos waste bag.
   g. Double bag the waste into a second asbestos waste bag and set aside.
   h. Clean the outside of the respirator and remove.
   i. Thoroughly wash hands and face.
   j. Wash and rinse the inside of the respirator.
   k. Tape over the respirator filters or dispose of as asbestos waste.

11. Transport asbestos waste as a hazardous waste and in accordance with the requirements of the Transportation of Dangerous Goods Act and Regulations.
ASBESTOS CONTAINING DRYWALL DISPOSAL

Moderate Risk Site Control Diagram

Personal Decontamination Area, containing:

- 6 mil Poly drop sheet(s)
- Two Wash Buckets per two employees, filled with water
- Hand Soap
- Asbestos Waste Bags
- Duct Tape
- Disposable Hand Towels
- 5 micron Filter Sock

Asbestos Clean-up

CHECKLIST FOR ASBESTOS CONTAMINATED DRYWALL DISPOSAL

- Is proper signage installed at all entrances into the restricted work area?
- Are the containment barriers set up (pylons and hazard ribbon/tape)?
- Is the decontamination area stocked, clean and tidy?
- Is proper signage installed at all entrances into the restricted work area?
- Is the decontamination area clean and tidy?
- Are workers wearing the required respiratory protection?
- Are the workers wearing disposable coveralls and boot covers?
- Are the workers wearing any other necessary PPE required for the project?
- Is equipment in good working order?
- Are wet removal methods being used?
- Is the waste being bagged regularly?
- Is the asbestos waste being double bagged in labeled disposal bags?
There are six key steps to cleaning up discarded drywall:

1. Set up safe work zone for workers and public; set up Personal Decontamination area
2. Don appropriate PPE
3. Clean up Drywall following established Safe Work Procedure
4. Clean and decontaminate tools
5. Exit work area, remove final PPE
6. Take Asbestos waste to a temporary storage area or dispose of in approved landfill location

Step 1: Set up safe work zone for workers and public

- Ensure Traffic Control is in place, if required, in accordance with the BC Ministry of Transportation and Highways Traffic Control Manual, or the Municipalities’ procedures, as appropriate.
- Cordon off the work area using a combination of asbestos warning signs, tall pylons, asbestos barrier tape and asbestos hazard signs, to restrict access to the work areas by unauthorized personnel. A minimum of one meter around the asbestos should be cordoned off, if possible.
- Establish a personal decontamination area immediately adjacent to the asbestos clean up area, through the use of pylons, tape and signs.
Gather required materials, place at edge of divider between asbestos clean up area and personal decontamination area:

- Two wash buckets for every two workers, filled with water
- Hand Soap
- Wet Wipes
- First Aid Kit
- Duct Tape
- Asbestos Waste Bags
- Disposable Hand Towels
- 6 Mil Polyethylene Drop Cloth
- Spray Canister capable of misting water, filled with water
- Shovel
- Hand Spade
- 5 micron Filter Sock
Step 2: Don appropriate PPE

- Prior to entering into the asbestos clean-up area, all workers will don the appropriate PPE:
  - Disposable, hooded Tyvek coveralls, with elastic at wrists and ankles.
  - High Visibility Vests (if in traffic)
  - Hard Hat (if required)
  - NIOSH-Approved Half-Face or Full-Face Respirator w/P-100 Filters; complete positive and negative pressure test
  - NIOSH-Approved Protective Gloves
  - NIOSH-Approved Protective Eye Wear (if using ½ face respirator)
  - Hearing Protection (if required)
  - Seamless, Steel-Toe Rubber Boots
  - Duct Tape to seal around wrists and ankles
Step 3: Clean up Drywall following Safe Work Procedure
(see Appendix B for Written Safe Work Procedure)

- Ensure material is misted with water.

- Place suspected asbestos-containing drywall into asbestos disposal bags.
• Make a final check of the asbestos clean-up area for any further asbestos-containing waste, place in asbestos disposal bags.

• Follow procedure for sealing and double-bagging disposal bags.

Instating a Goose Neck Seal on the Waste Bags
ASBESTOS CONTAINING DRYWALL DISPOSAL

Steps 4 & 5: Clean and Decontaminate Tools and PPE, exit work area

1. Rinse tools in bucket of water, inspect; wipe with wet cloth if necessary. Rinse in second bucket, set aside.
2. Damp wipe disposable coveralls; remove and place in asbestos disposal bag.
3. Exit the asbestos clean-up area.
4. Wet drop sheet.
5. Fold drop sheet and barrier tape to contain any remaining dust.
6. Place into an asbestos waste bag.
7. Double bag the waste into a second asbestos waste bag and set aside.
8. Clean the outside of the respirator and remove.
9. Thoroughly wash hands and face.
10. Wash and rinse the inside of the respirator.
11. Tape over the respirator filters or dispose of as asbestos waste.
12. Filter water through 5 micron filter sock prior to discarding; dispose of the filter sock as asbestos waste.

Step 6: Transport Waste to Temporary Storage or to a Designated Landfill.
4.0 HANDS-ON TRAINING EXERCISE

practical learning
Site Conditions
Exercise: Divide into groups of six or less

Each group shall . . .

1. Secure the work area.
2. Set up the two stage decontamination area.
3. Demonstrate donning of PPE and work area entry procedures.
4. Demonstrate waste (drywall) cleanup procedures.
5. Complete final cleaning.
6. Demonstrate waste bagging procedures.
7. Demonstrate waste bag decontamination procedures.
8. Demonstrate personal decontamination and work area egress procedures.
9. Dismantle the work area.
# APPENDICES

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APPENDIX C

MODERATE RISK ABATEMENT TOOLS AND SUPPLY CHECKLIST

Asbestos Abatement Tools and Supplies Checklist:

☐ Traffic Control Equipment
☐ High Visibility Vests
☐ Disposable Tyvek Coveralls (hooded with elastic wrists and ankles)
☐ NIOSH-Approved Half-Face or Full-Face Respirator w/ P-100 Filters
☐ NIOSH-Approved Protective Gloves
☐ NIOSH-Approved Protective Eye Wear (if using Half-Face respirator)
☐ NIOSH-Approved Protective Foot Wear (Seamless Rubber Boots)
☐ Two Wash Buckets for each two employees
☐ Hand Soap
☐ First Aid Kit
☐ Duct Tape
☐ Pylons/Sawhorses/Traffic Cones
☐ Asbestos Warning Tape
☐ Minimum of 4 Asbestos Hazard Signs
☐ Asbestos Waste Bags
☐ Disposable Hand Towels
☐ 6 Mil Polyethylene Sheeting
☐ Spray Canister Capable of Misting
☐ Shovel/Hand Spade
☐ 5 Micron Filter Sock
WORK SITE RESPIRATOR FIT CHECK PROCEDURE

Respirators are to be worn only by those who have been trained in respirator use and have been fit-tested. Qualitative Fit Testing using irritant smoke or Bitrex is required on an annual basis for all workers who use respirators.

Before each use, the worker must:

1. Inspect the respirator seals, valves and straps and put on the pre-adjusted personal half-face or full-face respirator.
2. Perform a check on the operations and fit of the unit as follows:

**Positive Pressure Test**

After putting on the air purifying respirator with the HEPA filters, the wearer closes off the exhalation valve with their hands and exhales gently into the face piece.

If properly sealed the mask will bulge slightly, any air leaks around the face piece seal indicates the seal is not adequate. The wearer readjusts the respirator and repeats the procedure until a seal has been achieved.

**Negative Pressure Test**

After the positive pressure test is completed, the wearer closes off the openings to the HEPA filters by covering them with their palms. The wearer then inhales gently so the face piece collapses slightly. The mask if properly sealed will collapse slightly.

**Note:** If a proper seal cannot be achieved during either test, the wearer must not proceed with the job until a proper fit has been achieved.