REMTECH 2011

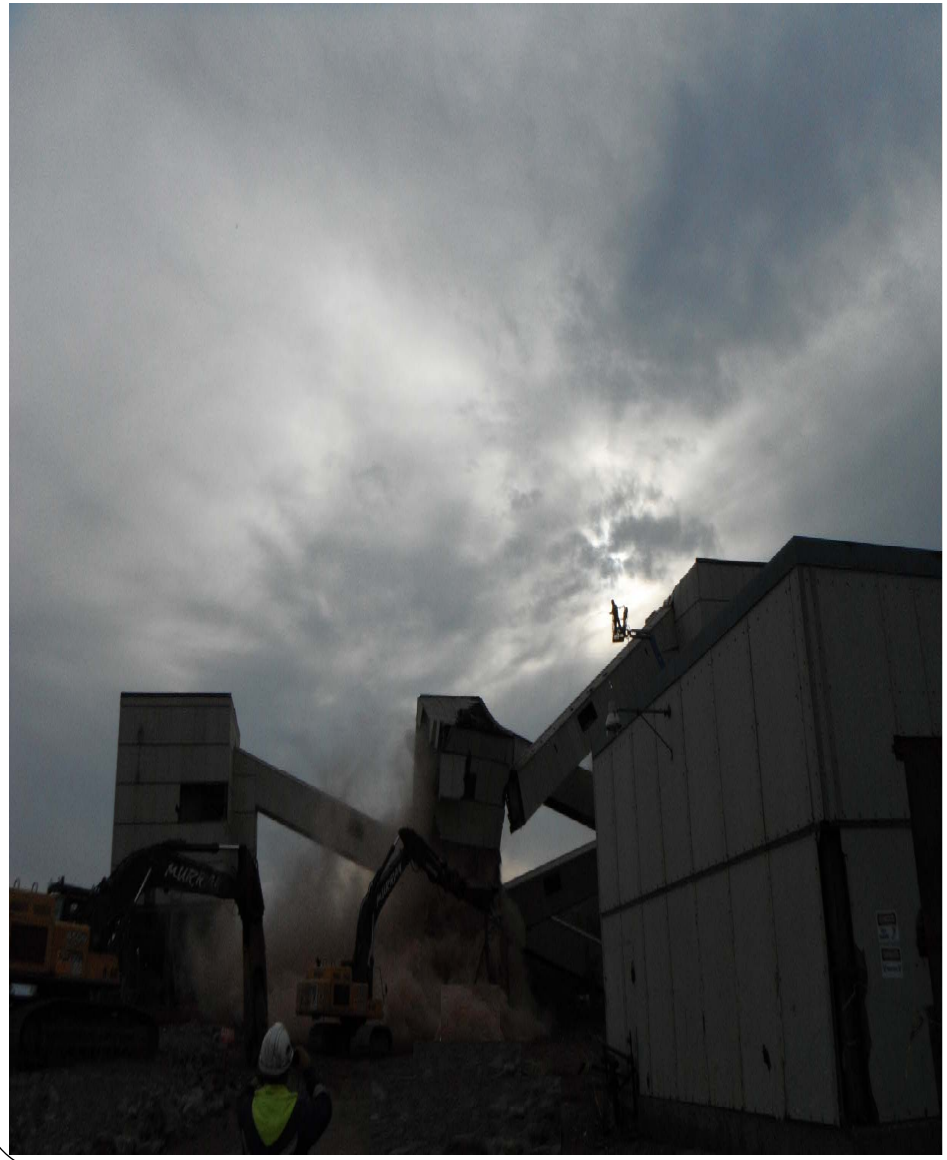
END OF LIFE FACILITY PRESENTATION

HAZARDOUS MATERIALS ABATEMENT

PREPARATION FOR DEMOLITION

QUANTUM MURRAY

INTRODUCTION



- QMLP offers services in emergency response, environmental remediation, demolition services, training, hazardous materials removal, waste services, brownfield developments and investment recovery from metals and equipment
- Our mission is to be the leader in providing innovative solutions for our global environmental challenge
- Strong Health and Safety
- Today we will be focusing on hazardous materials abatement in end of life facilities

FACILITIES

- Hazardous materials are found in a variety of facilities
- These must be identified and managed while the facility is operating for the health and safety of all individuals working at, visiting or occupying an area around the facility

FACILITIES CONT.

- Decommissioning of facilities may be required for a number of reasons; full or partial decommissioning requirements for restructuring of facility, rebuilding, or reallocation of the land
- This has been completed at many facilities across Canada and for reasons such as regulatory requirements, operating costs, new technologies, and/or structural deficiencies

IDENTIFICATION OF MATERIALS

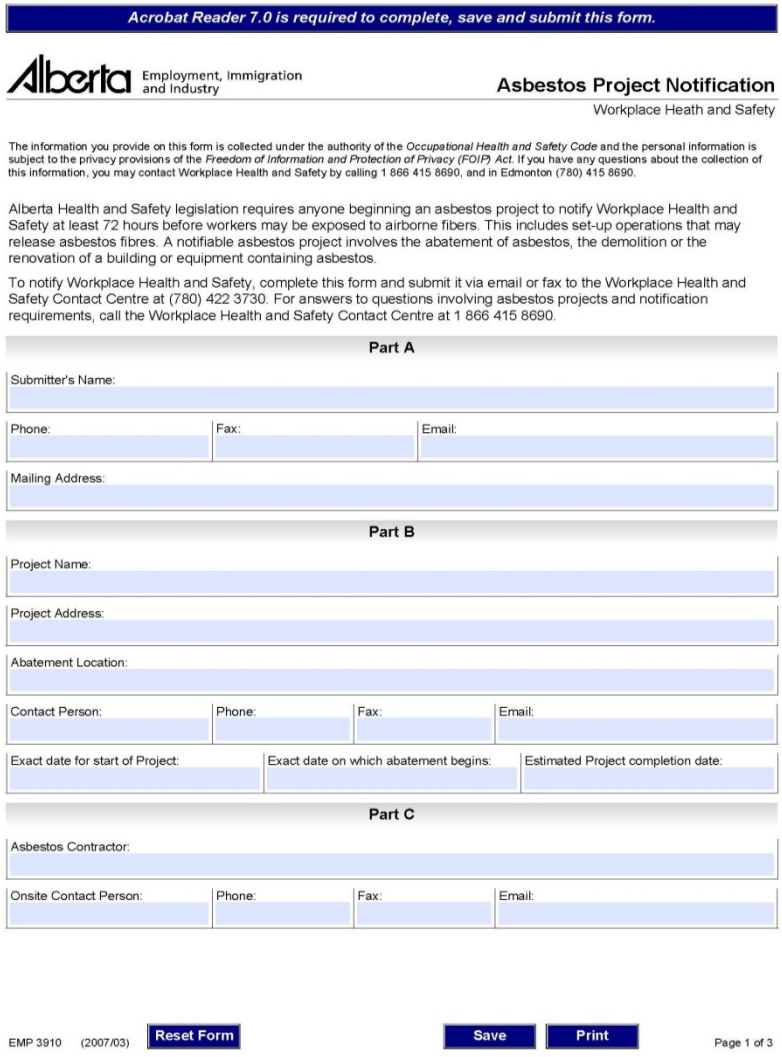
- Clients retain environmental consultants such as PHH ARC Environmental to identify various hazardous substances that may be present at their site
- This report is provided to the client so that they are aware of the risks as identified

IDENTIFICATION OF MATERIALS CONT.

- Clients would then retain contractors such as QMLP to undertake the removal of these identified materials to regulatory standards
- There are a variety of risks associated with the removal of various materials, once QMLP receives the hazardous materials assessment we begin to write a risk assessment for the safe removal of these identified materials

RISK ASSESSMENTS

- The hazardous materials assessment identifies the materials, but does not divulge detailed removal procedures
- QMLP uses innovated techniques to remove the materials safely and cost effectively to salvage and offer above average investment recovery



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Alberta Employment, Immigration and Industry

Asbestos Project Notification

Workplace Heath and Safety

The information you provide on this form is collected under the authority of the *Occupational Health and Safety Code* and the personal information is subject to the privacy provisions of the *Freedom of Information and Protection of Privacy (FOIP) Act*. If you have any questions about the collection of this information, you may contact Workplace Health and Safety by calling 1 866 415 8690, and in Edmonton (780) 415 8690.

Alberta Health and Safety legislation requires anyone beginning an asbestos project to notify Workplace Health and Safety at least 72 hours before workers may be exposed to airborne fibers. This includes set-up operations that may release asbestos fibres. A notifiable asbestos project involves the abatement of asbestos, the demolition or the renovation of a building or equipment containing asbestos.

To notify Workplace Health and Safety, complete this form and submit it via email or fax to the Workplace Health and Safety Contact Centre at (780) 422 3730. For answers to questions involving asbestos projects and notification requirements, call the Workplace Health and Safety Contact Centre at 1 866 415 8690.

Part A

Submitter's Name:

Phone: | Fax: | Email:

Mailing Address:

Part B

Project Name:

Project Address:

Abatement Location:

Contact Person: | Phone: | Fax: | Email:

Exact date for start of Project: | Exact date on which abatement begins: | Estimated Project completion date:

Part C

Asbestos Contractor:

Onsite Contact Person: | Phone: | Fax: | Email:

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RISK ASSESSMENTS CONT.

- The risk assessment takes into account all of the regulatory requirements , the health and safety of all individuals, and the disposal and packaging requirements

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Part D

Owner of the Worksite:

Contact Person: | Phone: | Fax: | Email:

Prime Contractor:

Contact Person: | Phone: | Fax: | Email:

Part E

Hygiene Consultant:

Contact Person: | Phone: | Fax: | Email:

Part F

Type of Asbestos:

☐ Chrysotile % ☐ Amosite % ☐ Crocidolite % ☐ Other specify %

Classification of abatement: According to the Alberta Asbestos Abatement Manual

☐ High Risk ☐ Moderate Risk ☐ Low Risk

Days of Abatement:

☐ Mon. ☐ Tues. ☐ Wed. ☐ Thurs. ☐ Fri. ☐ Sat. ☐ Sun.

Scheduled hours of Abatement: From: To:

Check Equipment that will be onsite:

- ☐ DOP tested HEPA filtered negative air units with extra fuses
- ☐ Replacement HEPA filters
- ☐ Flexible or rigid duct
- ☐ DOP tested vacuum cleaners fitted with HEPA filters
- ☐ Electrical extension cords
- ☐ Portable ground fault circuit interrupter (CFCI)
- ☐ Garden hose
- ☐ Hand pump garden sprayer
- ☐ Barriers and warning signs
- ☐ Manometer, pumps and smoke generator
- ☐ Fire extinguisher
- ☐ Disposal bags for asbestos waste
- ☐ Wetting agent
- ☐ Small tools such as scrapers, nylon brushes, dust pans, shovels, etc.
- ☐ Scaffolds with railings
- ☐ Duct tape (or an alternative tape with similar or better adhesive qualities)
- ☐ Polyethylene sheeting having a minimum of 6 mil thickness
- ☐ Mops, rags, water and other supplies for clean-up
- ☐ Encapsulant
- ☐ First Aid Kit
- ☐ DOP tested negative air units and vacuums
- ☐ Glue spray
- ☐ Decontamination Unit

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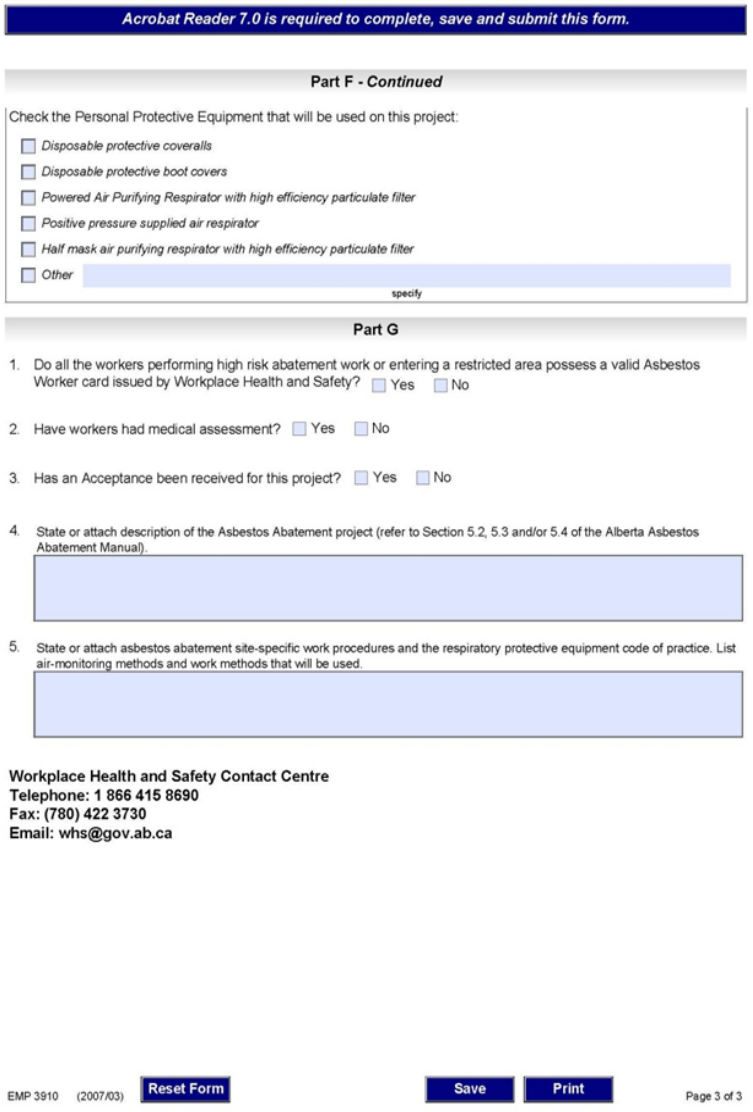
RISK ASSESSMENTS CONT.

- Risk assessments for asbestos within the Province of Alberta are required to be filed with Workplace Health and Safety on a Notice of Project form. This is required to be filed 72 hours prior to the commencement of any asbestos removal being undertaken. Risk assessments should be completed with the cooperation of management and on-site personnel for a plan to be executed with great efficiency.



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Part F - *Continued*

Check the Personal Protective Equipment that will be used on this project:

- ☐ *Disposable protective coveralls*
- ☐ *Disposable protective boot covers*
- ☐ *Powered Air Purifying Respirator with high efficiency particulate filter*
- ☐ *Positive pressure supplied air respirator*
- ☐ *Half mask air purifying respirator with high efficiency particulate filter*
- ☐ *Other* specify

Part G

1. Do all the workers performing high risk abatement work or entering a restricted area possess a valid Asbestos Worker card issued by Workplace Health and Safety? ☐ Yes ☐ No
2. Have workers had medical assessment? ☐ Yes ☐ No
3. Has an Acceptance been received for this project? ☐ Yes ☐ No
4. State or attach description of the Asbestos Abatement project (refer to Section 5.2, 5.3 and/or 5.4 of the Alberta Asbestos Abatement Manual).
5. State or attach asbestos abatement site-specific work procedures and the respiratory protective equipment code of practice. List air-monitoring methods and work methods that will be used.

Workplace Health and Safety Contact Centre
Telephone: 1 866 415 8690
Fax: (780) 422 3730
Email: whs@gov.ab.ca

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RISK ASSESSMENTS CONT.

- Link to NOP form is http://employment.alberta.ca/SFW/2874.html#asbestos
- Separate risk assessments and job procedures are then written for the removal of other hazardous materials. Such things as lead, PCB's, mercury, hydrocarbons, and chemicals are written in the same process as the asbestos procedures. However these procedures do not need to be filed with Workplace Health and Safety

RISK ASSESSMENTS CONT.

- A number of parameters must be taken into account when completing a risk assessment.
- Safety is the number one priority when working with hazardous substances, reassessments and review of the risk assessments will be required as new hazards are encountered

RISK ASSESSMENTS CONT.

1. Are all chemicals known?
2. How does it need to be handled?
3. What type of training will be required to handle this material?
4. What environment or setting do we need to access to complete the clean up?
5. What training is required to access this environment?
6. Is the area operational?
7. What types of lockouts or tag outs may be required?
8. Is this in a closed system?
9. Can this material be neutralized?
10. How does it need to be packaged?
11. Where does it need to be sent?

RISK ASSESSMENTS CONT.

- **Through safe and effective management, containment and removal, this will ensure that the risk to human health and the environment is eliminated.**

PROJECT TEAMS

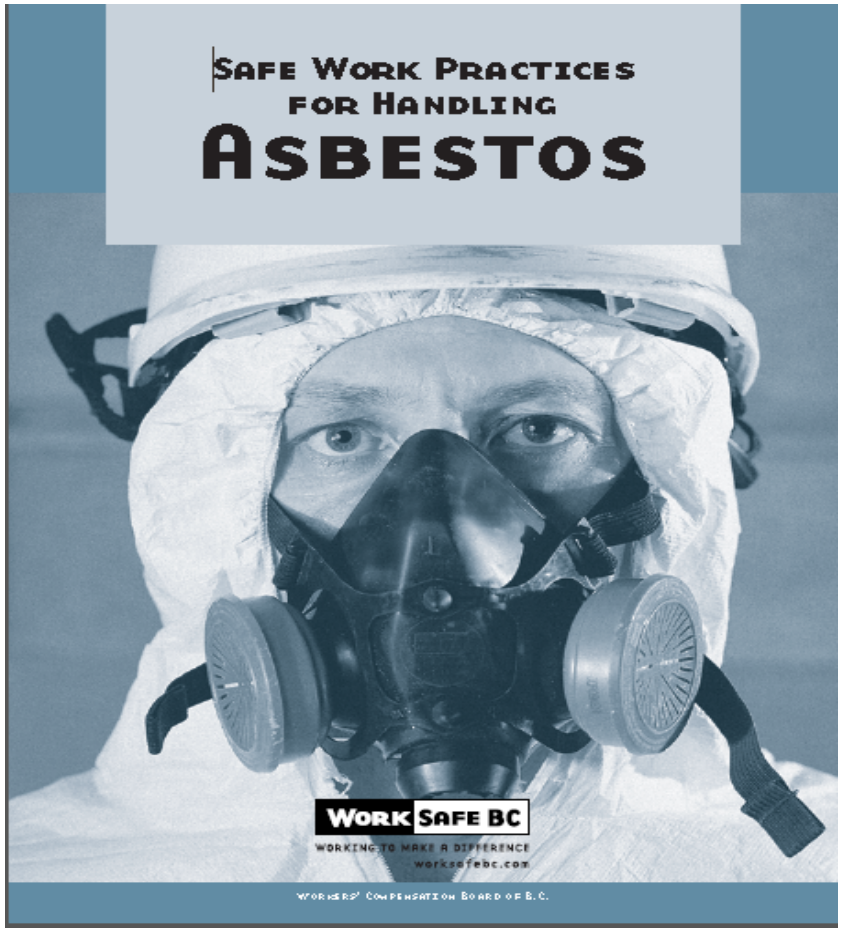
- The selection of a strong project team early on in the project helps in the successful partnership on the project
- The owner, consulting group, and prime contractor must work together to achieve a common goal
- Advantages can be gained by all parties through proper project planning these include:

1. Types of Contracts
2. How will the team operate
3. Innovated solutions to decommissioning the facility
4. Problem solving for project initiatives

HAZARDOUS MATERIALS REMOVAL

- While constructing facilities , we make the best environmental, cost effective decisions that are available for that time
- The unfortunate thing is that at times unbeknownst to the construction team the materials turn out to be hazardous and require continuous management

ASBESTOS REMOVAL

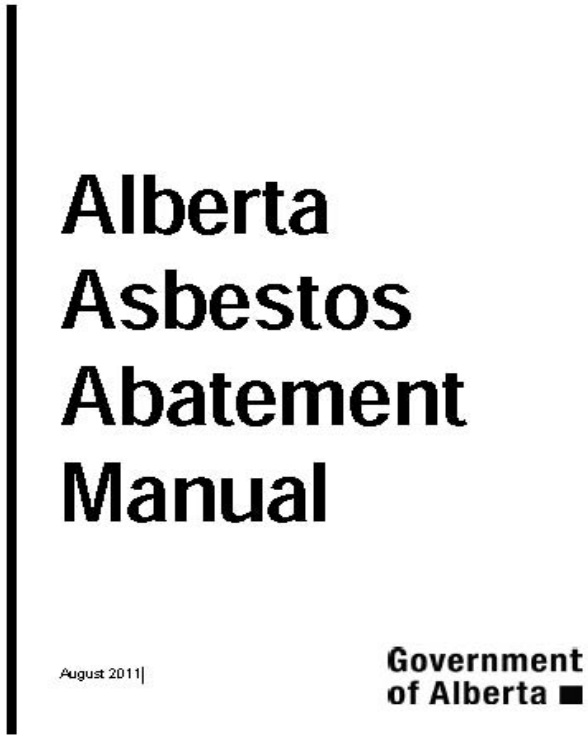


- An excellent example of this is asbestos. A great product for insulating, cost effective, virtually indestructible, and easy to utilize
- The provinces across Canada have varied legislation for the removal of asbestos. British Columbia, Alberta, and Ontario have specific and detailed guidelines for removing asbestos containing materials

ASBESTOS REMOVAL CONT.

- Removal is classified in three different groups: Type I or Low Risk, Type II or Moderate Risk, and Type III or High Risk
- The class or classification governs the guideline of procedures to be followed. As these are guidelines they can be modified based upon air monitoring results and procedures

ASBESTOS REMOVAL CONT.



- The guidelines utilized in the following examples are from the Alberta Asbestos Abatement Manual August 2011
- This can be found online http://employment.alberta.ca/documents/Asbestos-Abatement-Manual.pdf

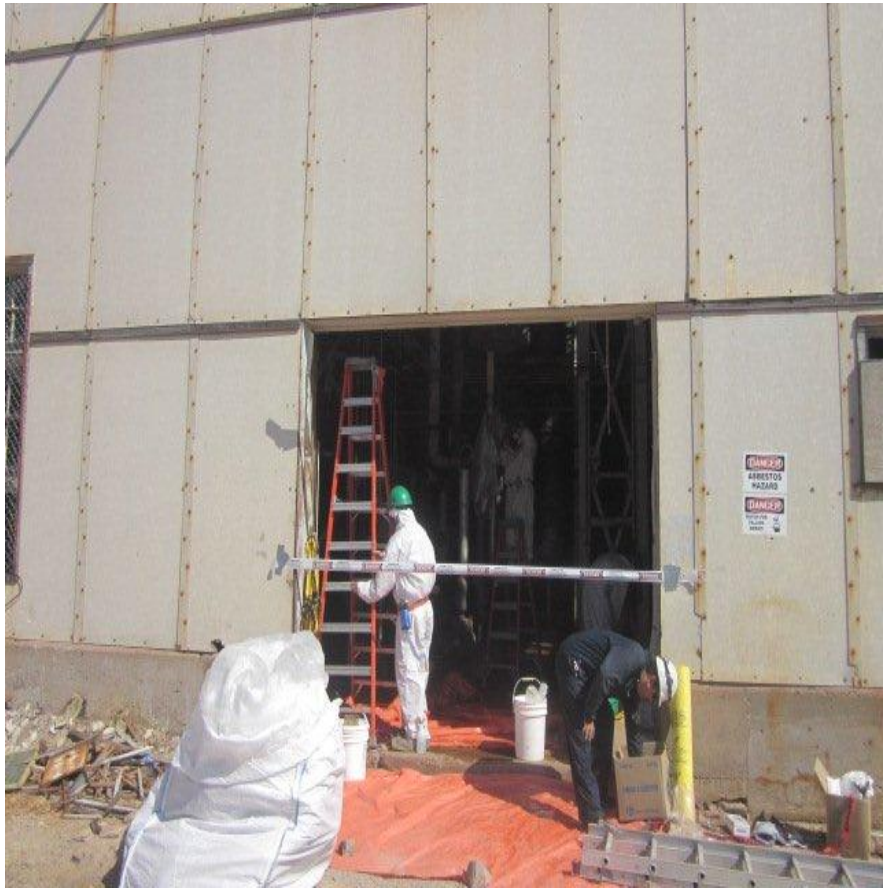
SPECIALIZED PPE

- Tyvek Suits to protect clothing, boots, respiratory equipment, and gloves are required
- Atmospheres and conditions are taken into account while choosing PPE

RESPIRATORS

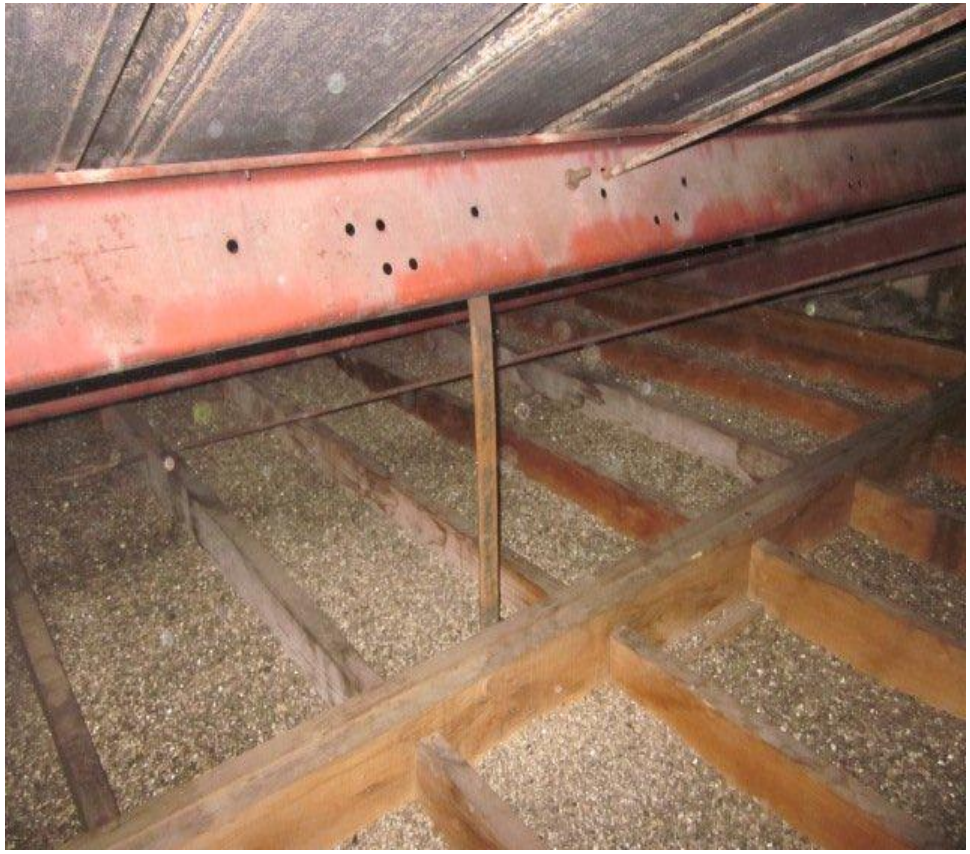
- Half Mask – Protection Factor 10
- Powered Air Purifying Respirator (PAPR) – Protection Factor 1,000
- Pressure on Demand – Protection Factor 10,000
- Fit Testing and negative pressure tests

LOW RISK ASBESTOS REMOVAL



- Low risk asbestos removal is completed without a containment air monitoring is recommended and for liability issues occupational should be done until sufficient air monitoring results have been completed that show no fibre levels during removal

MODERATE REISK ASEBSTOS REMOVAL

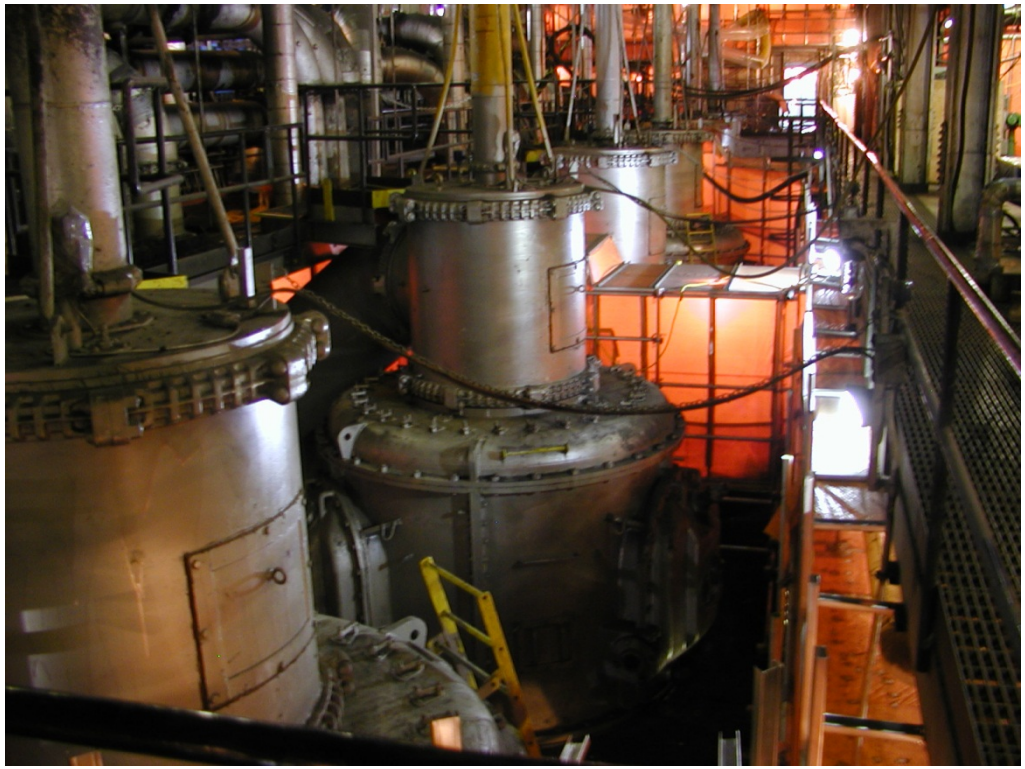


- Moderate risk asbestos removal can be done with or without a containment depending on what is to be removed. Again air monitoring is recommended by the guidelines, we would recommend air monitoring for all projects that fall into this category

HIGH RISK ASBESTOS REMOVAL

- High Risk is done with a containment and air monitoring is required at all times will completing this type of work.
- There is two types of air monitoring done while abatement is ongoing.
- The first is occupational air monitoring.
- The second is ambient air monitoring.

HIGH RISK ASBESTOS REMOVAL CONT.



- Negative Air Units create a negative pressure draw
- GFCI power is utilized due to amended water requirement to keep fibre levels low

HIGH RISK ASBESTOS REMOVAL CONT.

- High risk containments are generally restricted areas
- Workers must undergo periodic testing as required.
- Additional worker risk to heat stress, trips, falling, etc.

CONTAINMENTS

- Need to be checked and maintained to ensure they are sealed
- Smoke bombing can be done to show holes
- Negative pressure maintained at 5 Pascal and monitored by Magnehelic Gauge

DECONTAMINATION

- Air monitoring to be done here to ensure no cross contamination
- High Risk areas have shower decontamination
- In general low and moderate risk utilize wash out stations
- Respiratory Maintenance

HAZARDOUS MATERIALS REMOVAL CONT.

Another alternative when completing demolition on a project in Alberta is attempting to file a variance under section 34 of the act. To do this it must meet the six criteria:

1. Asbestos content of the specific material is less than 5% Chrysotile
2. The material is not friable (easily crumbled by hand pressure)
3. Demolition will be done by machine

HAZARDOUS MATERIALS REMOVAL CONT.

4. Water will be used for dust control (this criteria may be waived if freezing will create a hazard to workers, however dust control must still be considered)
5. Material is problematic to remove and removal would create more of a hazard to workers
6. Alternative work procedures will provide equivalent or better protection to workers.

HAZARDOUS MATERIALS REMOVAL CONT.

- Common hazardous materials that are found in institutional and commercial type of buildings are Polychlorinated Biphenyls (PCBs), mercury, and chlorofluorocarbons (CFCs)
- Proper procedures, training, techniques, and personal protective equipment (PPE) is required for these removals as well
- In all projects there may be different chemicals to deal with.

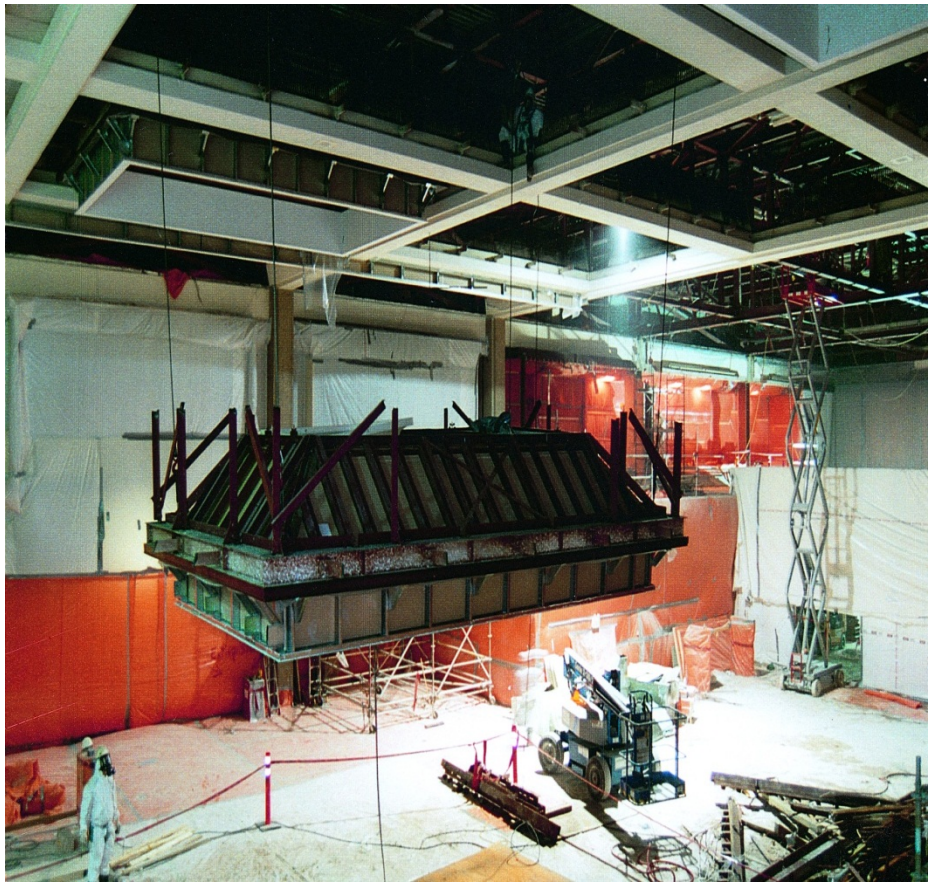
HAZARDOUS MATERIALS REMOVAL CONT.

- Chemicals and unknown products need to be classified if possible to remove the products safely and efficiently. These products also must be identified for proper shipping under the Transportation of Dangerous Goods Act (TDG) and for allocating the waste to the appropriate facility for disposal, burial, and/or destruction

FACILITIES DECOMISSIONING

- Once the hazardous materials removal has been completed, the demolition permitting process can be completed
- The demolition processes that did not happen in conjunction with or were necessary to complete the abatement are now undertaken

QUESTIONS



- A strong cohesive project team is necessary for a successful project
- Contact Information:

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