Workers Compensation Board – 2019 Asbestos Awareness Presentation

OCTOBER 29, 2019

MEMBER OF
THE PINCHIN GROUP

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- Local Resources, National Experts
- 37 offices across Canada
- Regina and Saskatoon in SK

AGENDA

- This presentation is intended to give you awareness about:
  - What is considered an asbestos-containing material in Saskatchewan
  - Typical uses of asbestos/common types of asbestos-containing materials; friable versus non-friable
  - The health hazards associated with asbestos exposure
  - The different asbestos work classifications and a brief summary on the procedures

Nature of Asbestos and History in Building Materials

ASBESTOS: WHAT IS IT?

- Simple Answer: Asbestos is a mineral (rock)
- Complicated Answer: Asbestos is a naturally occurring silicate metamorphic mineral that forms a crystalline structure (asbestiform), which grows in a fibrous aggregate of high tensile strength, is flexible, long, and has crystals that readily separate.

Open pit asbestos mine in Thetford Mines, Quebec.

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PROPERTIES & USES OF ASBESTOS

- Used for many reasons, including:
  - Flexible, strong
  - Heat resistant
  - Electrical insulator
  - Resistant to water, many chemicals
  - Alters viscosity of liquids/slurries (plaster, asphalt, etc.)
- Over 3,000 products in North American use

ASBESTOS SPECIMENS

OTHER TYPES OF ASBESTOS

- Tremolite:
  - Amphibole asbestos, strong, flexible, heat-resistant
  - Used in paints, sealants, insulation (vermiculite), roofing, etc.
- Anthoplyllite:
  - Rarest types of asbestos. Can be found in vermiculite.
  - Not typically used in commercial applications.
- Actinolite:
  - Used in vermiculite, fireproofing, paints, sealants, drywall compound, etc.

WHAT IS CONSIDERED AN ASBESTOS-CONTAINING MATERIAL?

In Saskatchewan an asbestos-containing material is defined as follows:

- a friable material with an asbestos content of >0.5%
- a non-friable material with an asbestos content of >1%
- any amount of asbestos if in vermiculite

- Provincial criteria's vary.

FRIABLE MATERIALS (EASE OF FIBRE RELEASE; GREATER HAZARD)

- Friable: material that can be crumbled, pulverized or powdered easily (i.e. by hand pressure), or has become in such a state by other means

EXAMPLES OF COMMON FRIABLE ACM

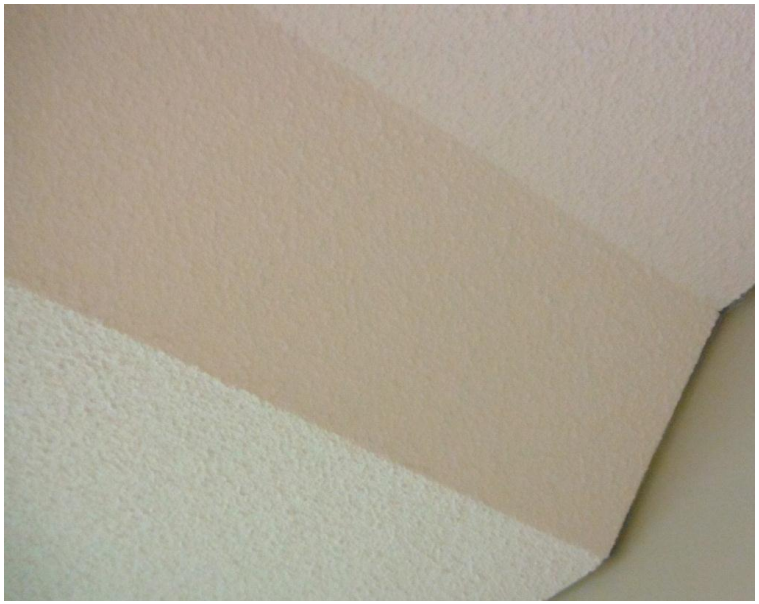
- Thermal insulation in butler building, 95% amosite.

EXAMPLES OF COMMON FRIABLE ACM

- Spray applied fireproofing on structural steel. (fibrous or cementitious)

EXAMPLES OF COMMON FRIABLE ACM

- Texture finishes (popcorn ceiling, stipple) on drywall, plaster, concrete etc.

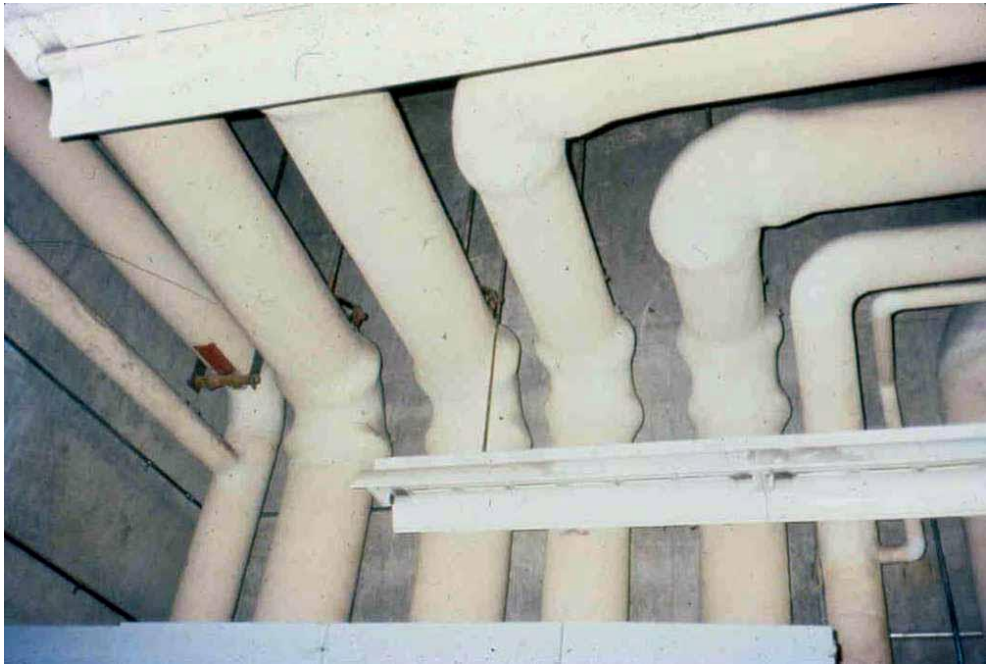


EXAMPLES OF COMMON FRIABLE ACM

- Parging cement on pipe elbows, valves, hangers, tees etc.

EXAMPLES OF COMMON FRIABLE ACM

- Non-asbestos fiberglass straights with asbestos-containing parging cement elbows.

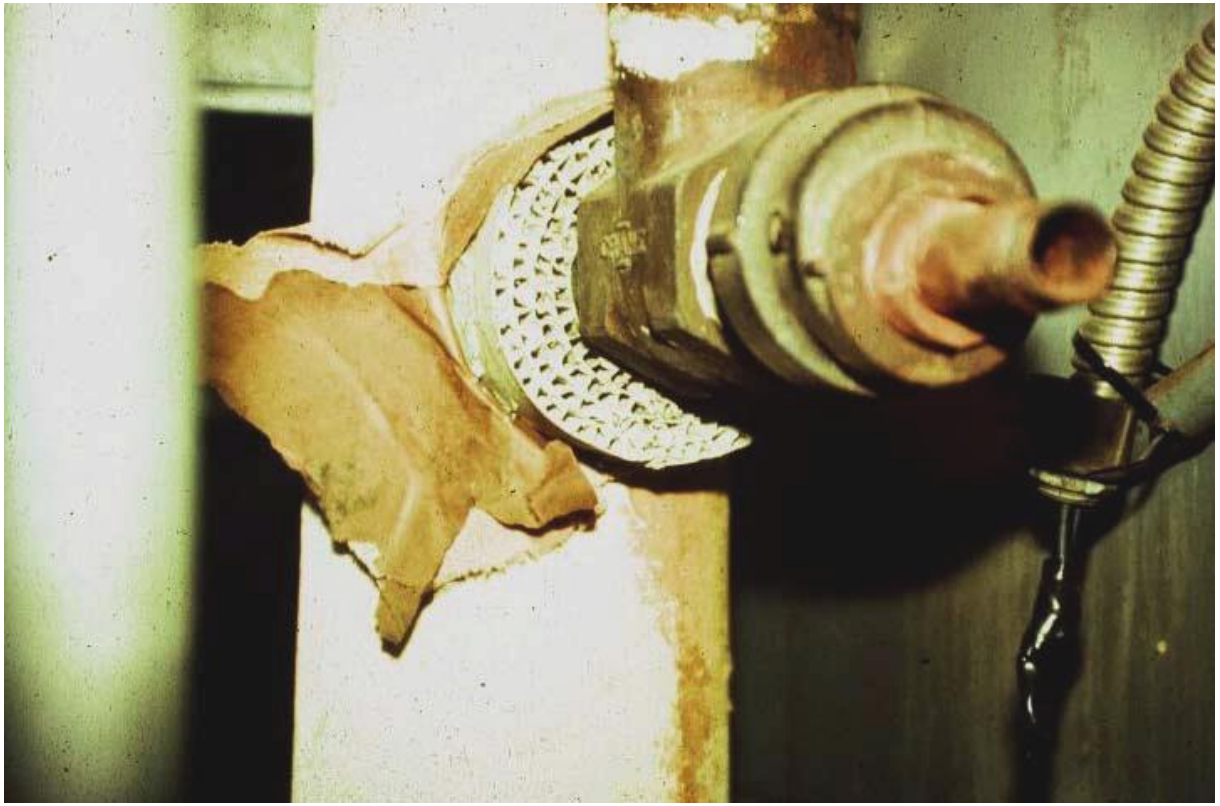


EXAMPLES OF COMMON FRIABLE ACM

- Preformed magnesia block, straight sections of piping as well as boilers

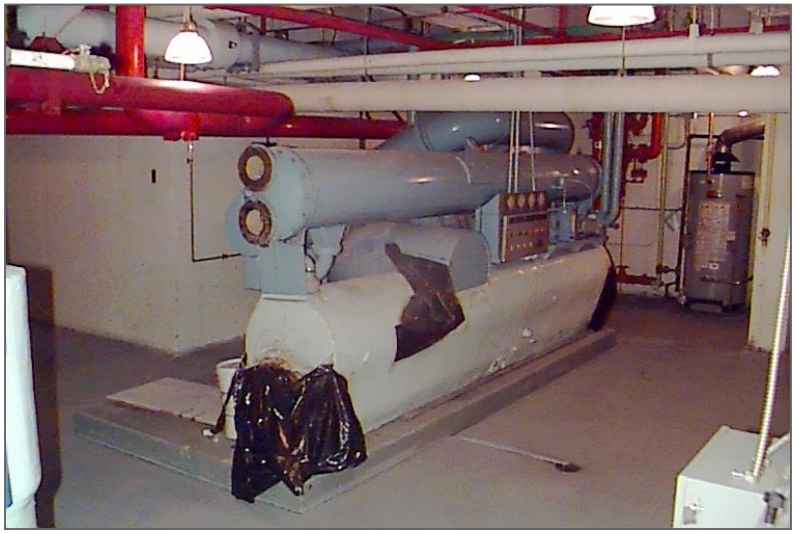
EXAMPLES OF COMMON FRIABLE ACM

- Aircell pipe insulation on piping.



EXAMPLES OF COMMON FRIABLE ACM

- Insulation on chillers, parging cement at duct work joints/seams.

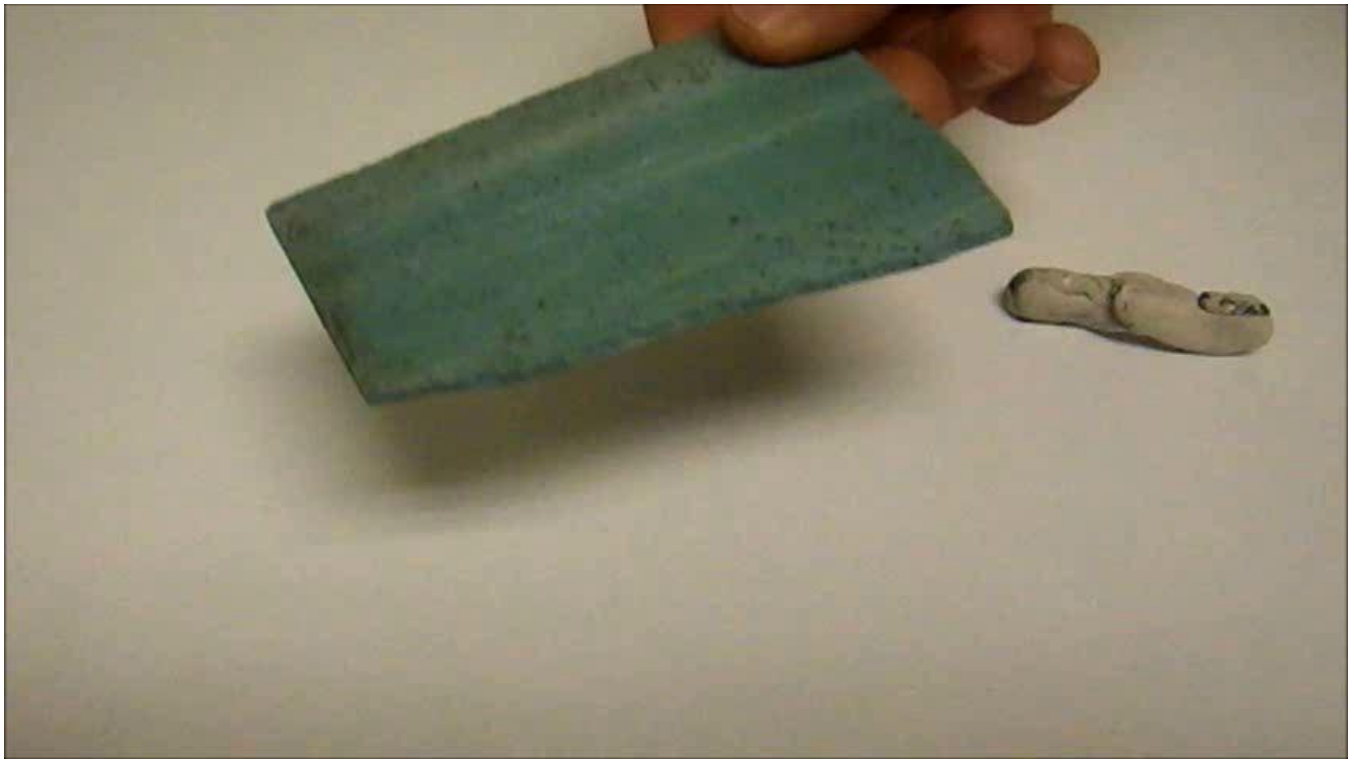


EXAMPLES OF COMMON FRIABLE ACM

- Vermiculite loose-fill insulation – asbestos as an accidental contaminant

NON-FRIABLE MATERIALS (LESS FIBRE RELEASE; LOWER HAZARD)

- Non-Friable: material that maintains its integrity, does not readily become crumbled/powdered unless subjected to more aggressive forces (i.e. power tools)

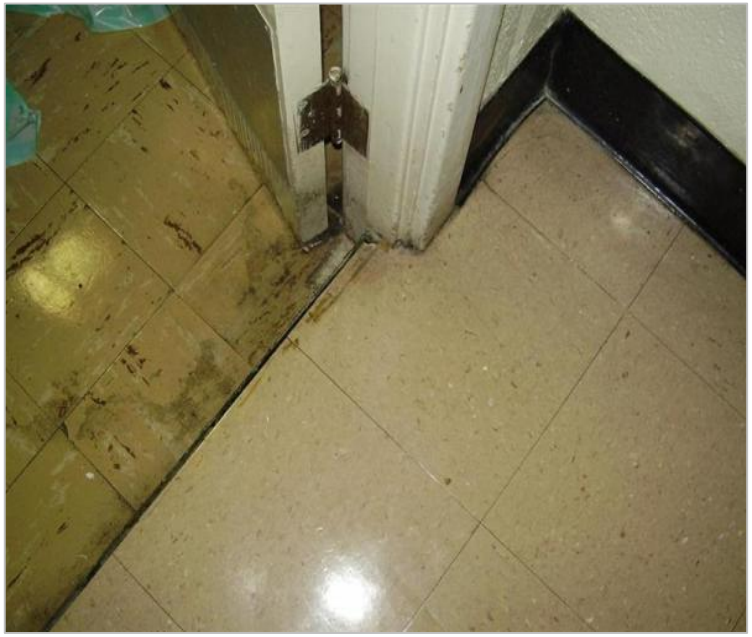


EXAMPLES OF COMMON NON-FRIABLE ACM

- Various asbestos-cement (transite) products – board, pipe, siding, shingles etc.

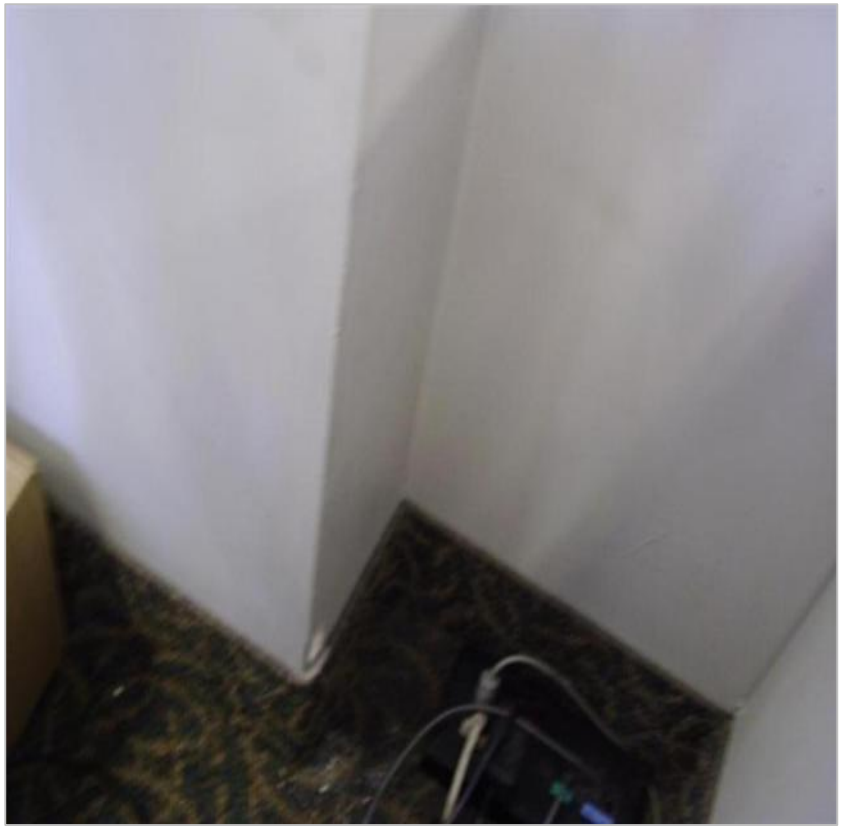
EXAMPLES OF COMMON NON-FRIABLE ACM

- Vinyl floor tiles and mastic – 9”x9”, 12”x12”



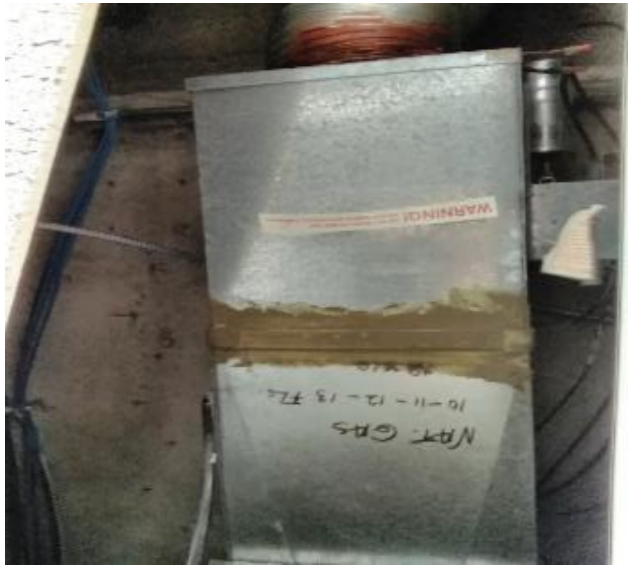
EXAMPLES OF COMMON NON-FRIABLE ACM

- Drywall joint compound on drywall finishes



EXAMPLES OF COMMON NON-FRIABLE ACM

- Duct Mastics
- Asbestos on the left, non-asbestos on the right

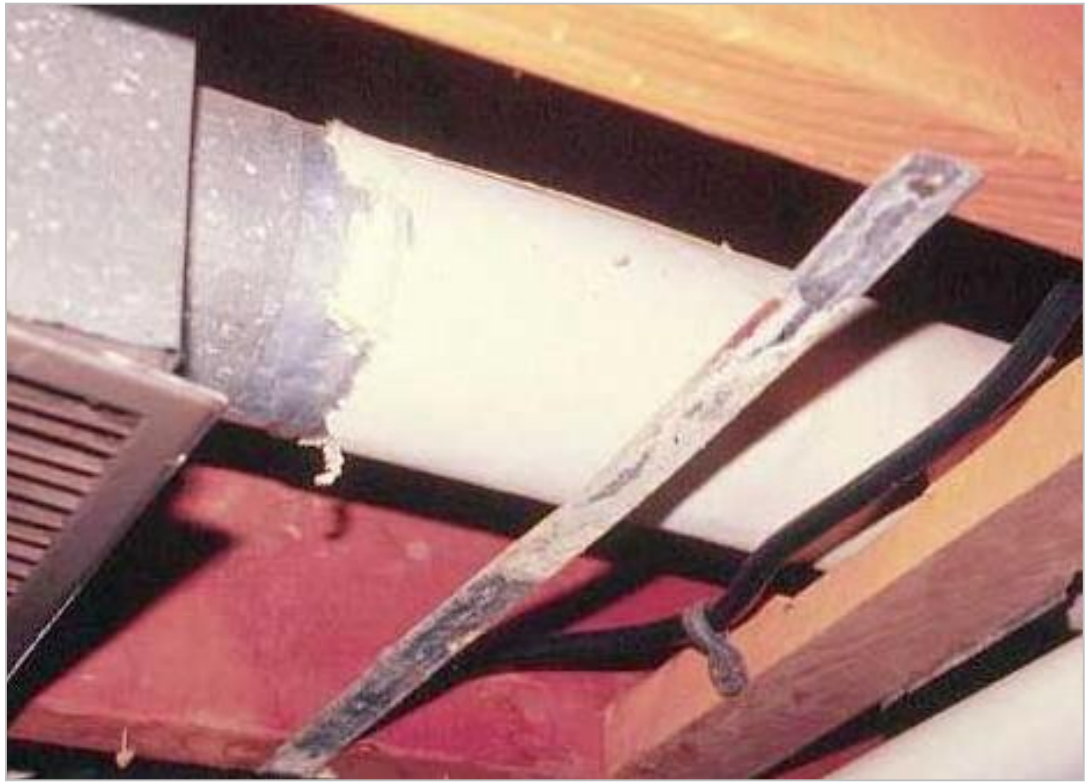


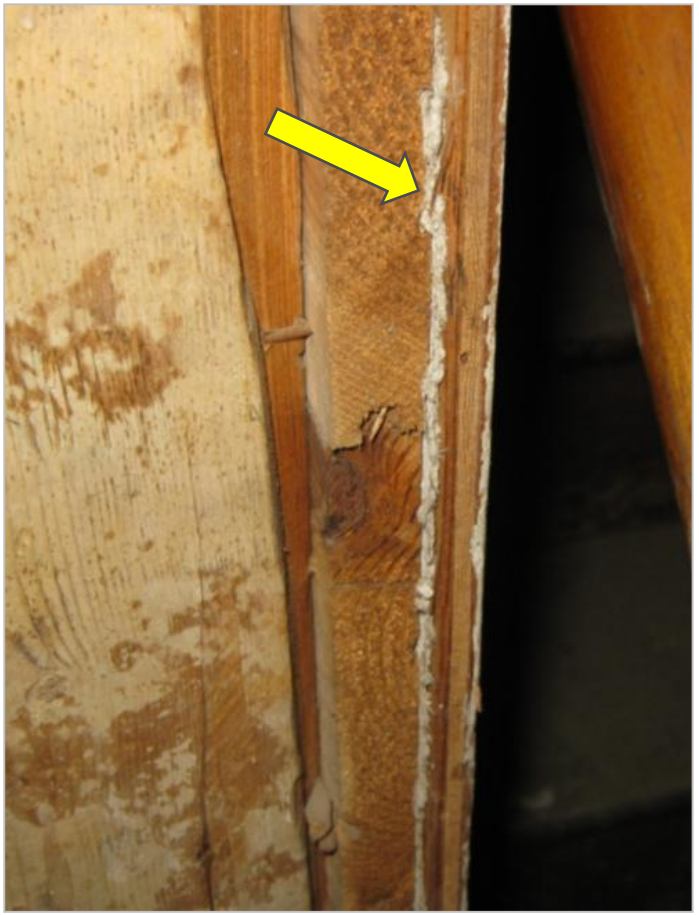
EXAMPLES OF COMMON NON-FRIABLE ACM

- Vibration dampers on ducting

EXAMPLES OF COMMON NON-FRIABLE ACM

- Asbestos paper products: on ductwork, behind wall finishes, under flooring, etc.





EXAMPLES OF COMMON NON-FRIABLE ACM

- Roofing products (tar/felts)

EXAMPLES OF COMMON NON-FRIABLE ACM

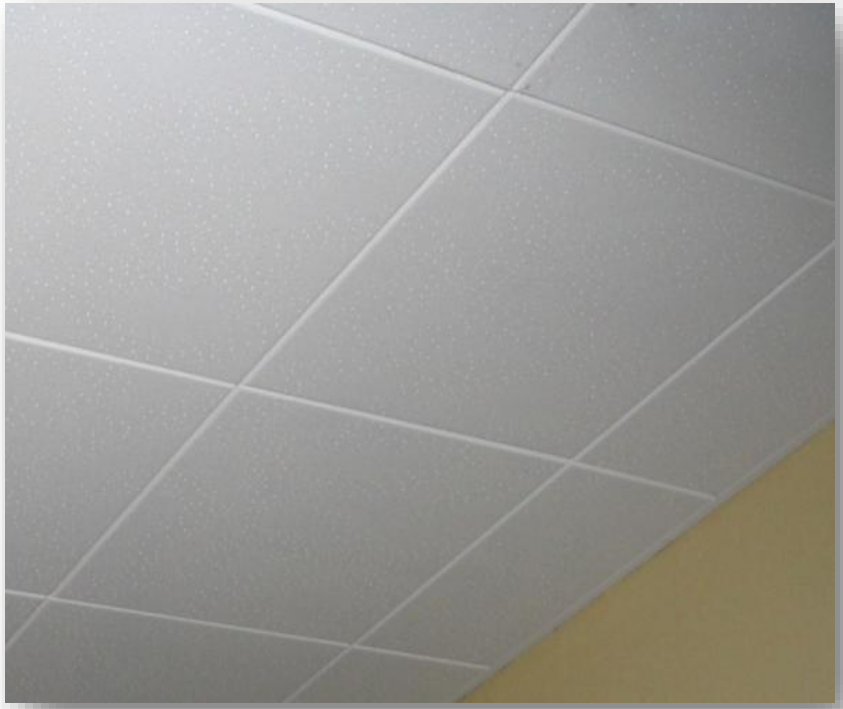
- Caulking

NON-FRIABLE WHILE IN PLACE AND INTACT, CONSIDERED POTENTIALLY FRIABLE DURING REMOVAL

- Plasters applied to lath or wire mesh backings

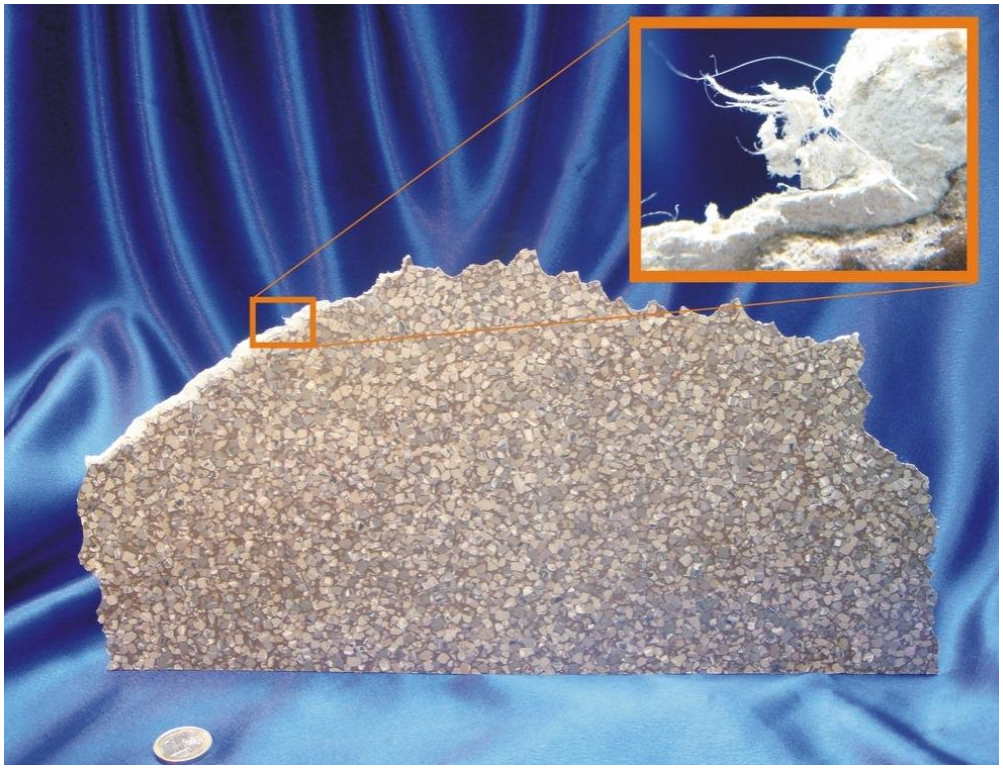
NON-FRIABLE WHILE IN PLACE AND INTACT, CONSIDERED POTENTIALLY FRIABLE DURING REMOVAL

- Acoustic ceiling tiles, mixture of asbestos and non-asbestos quite frequently.



NON-FRIABLE WHILE IN PLACE AND INTACT, CONSIDERED POTENTIALLY FRIABLE DURING REMOVAL

- Vinyl sheet flooring, asbestos in paper backing.



Health Hazards of Asbestos Exposure

ASBESTOS EXPOSURE

- Inhalation of airborne fibres is the primary issue. Generally chronic exposures are needed for one to experience health effects
- Exposure to airborne asbestos should be kept to a minimum, however, it is naturally occurring and we come in contact with it in our daily lives with no evidence of hazard:
    - Everyone breathes asbestos fibres daily (several thousand fibres per day)

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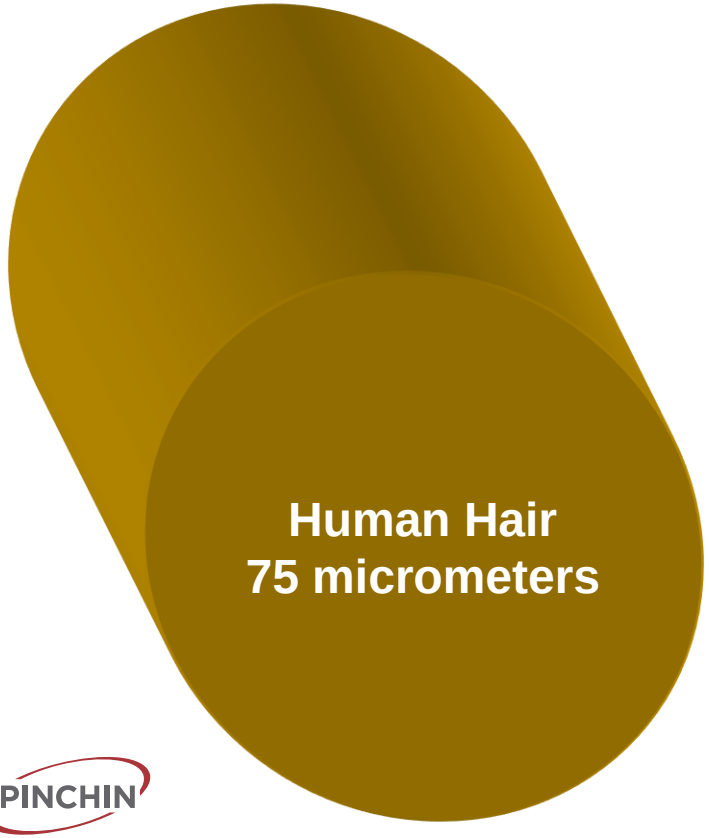
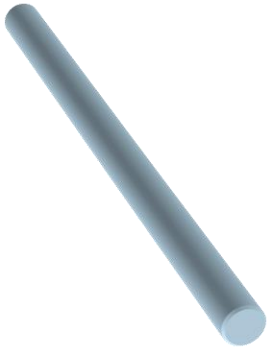
COMPARATIVE ASBESTOS FIBRE SIZE

- The dimensions of airborne asbestos fibres and their bio-persistence in the lungs are the principal factors in the hazards of inhaled asbestos

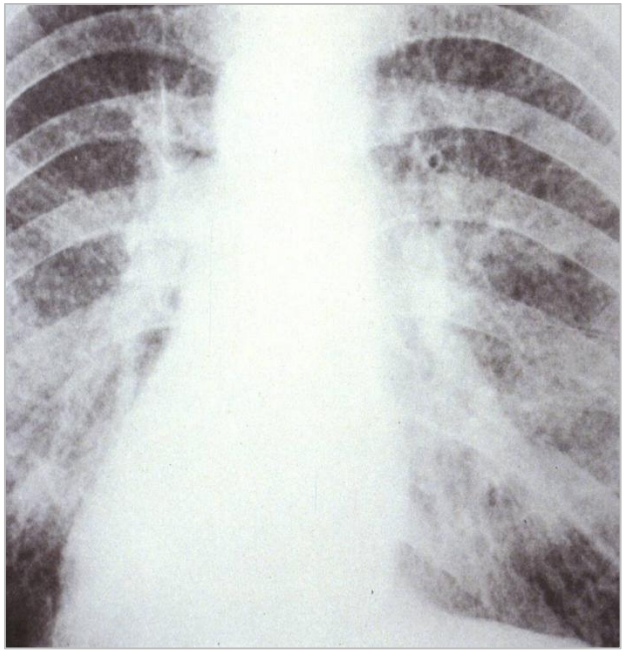




Glass Fibre typically 5 To 15 micrometers

Asbestos Fibre typically 0.4 micrometers or thinner

THE PRIMARY ASBESTOS-RELATED DISEASES



- Asbestosis
  - Scarring of lungs; irreversible damage
  - Requires extended and very high levels of exposure (fewer cases seen nowadays)
- Lung Cancer
  - Caused by various agents, asbestos being one
  - Smoking + asbestos exposure dramatically increases risk
- Mesothelioma
  - Cancer of the lining of chest cavity, or less often abdominal cavity lining
  - Most prominent asbestos disease today (doesn't require the extremes of exposure to develop this disease compared to asbestosis; has the longest lag time so it is from exposures further in the past; also evidence of genetic factor)

THE PRIMARY ASBESTOS-RELATED DISEASES

- Lag times of 20-50 years
  - This made it more difficult to establish a connection between asbestos exposure and the diseases
  - Also means that cases of these diseases seen today are from exposures in the 1960s-1980s
  - Although practices have changed, there are still present-day exposure risks: workers involved in renovations, maintenance, etc., or even bystanders

ONTARIO ROYAL COMMISSION STUDY ON ASBESTOS IN BUILDINGS

- “Royal Commission on Matters of Health and Safety Arising from The Use of Asbestos in Ontario”
- Established in 1981, to study asbestos risk to workers and building occupants (particularly school children)
- Considered all aspects of asbestos hazards including buildings in use, renovation and demolition.

ROYAL COMMISSION FINDINGS REGARDING ASBESTOS IN BUILDINGS

- “While asbestos has caused serious health problems…we conclude that it does not pose a significant problem for the general occupants of a building, except…
  - the occupant is in immediate vicinity of work (that disturbs friable asbestos)…
  - the occupant is within range of air circulation of such work...
  - significant quantities of friable…insulation have fallen onto building surfaces and are being disturbed.”

ONTARIO ROYAL COMMISSION ON ASBESTOS CONCLUSIONS

- “We will conclude that it is rarely necessary to take corrective action in buildings in order to protect the general occupants of those buildings. On the other hand, construction, demolition, renovation, maintenance, and custodial workers in asbestos-containing buildings may be exposed to significant fibre levels and may, during their work, cause elevated levels for nearby occupants.”

Asbestos Abatement

OPTIONS IN ASBESTOS CONTROL

- When asbestos materials are identified some plan of action must be taken
- The four basic approaches are:
  - Removal - asbestos is completely removed and properly disposed of
  - Encapsulation - asbestos is coated with a bonding agent called a sealant
  - Enclosure - asbestos is separated from the building environment with barriers
  - Management Plan - Operations and Maintenance Plan is put into effect to monitor ACMs

REMOVAL

- Advantages
  - eliminates source
  - ends need for surveillance
- Disadvantages
  - costly & complicated
  - replacement with substitute material may be necessary
  - high potential for worker exposure

- The most expensive control option up front (but cheapest in the long run) and may require interruption of building activities

ENCLOSURE

- Widely used in industrial settings
- Cladding on piping, vessels, etc
- Advantages:
  - Can be a rapid and uncomplicated control method
- Disadvantages:
  - Asbestos remains
  - May deteriorate behind enclosure
  - Management and inspections required

ASBESTOS MANAGEMENT PROGRAM

- Identifying the asbestos and managing it in place
- Elements of the Program
  - Building survey for friable and non-friable ACM
  - Assessment of materials (condition, accessibility etc.)
  - Selection of appropriate remedial measures
  - Notification of occupants and workers
  - Training for workers?
  - Re-assessment of ACM at least annually.
  - Management plans require commitment from all workers

ASBESTOS PERSONAL PROTECTIVE EQUIPMENT RESPIRATORS

- Air Purifying Respirator (APR)
  - Powered Air Purifying Respirator (PAPR)
- Supplied Air Respirator (SAR)
  - Self-Contained Breathing Apparatus (SCBA)

ASBESTOS PERSONAL PROTECTIVE EQUIPMENT DISPOSABLE SUITS, BOOTS, GLOVES ETC.

ABATEMENT CLASSIFICATIONS

- Low risk
- Moderate risk
- High risk

TYPICAL LOW RISK ACTIVITIES

- Removal of non-friable ACMs with hand tools
  - Vinyl floor tiles
  - Drywall joint compound
  - Asbestos cement (Transite) products - boards, pipe, shingles, siding
  - Mastics, sealants etc.
  - Built-up roofing
  - Caulking

LOW RISK MEASURES AND PROCEDURES – A BRIEF SUMMARY

- Ensure all workers are adequately trained.
- Use barrier tape to isolate the work area.
- PPE to include a half-mask respirator with P100 filters and disposable coveralls (may include more site specific PPE as well).
- Control spread of dust as appropriate (i.e. Drop sheets)
- Use amended water to control dust (unless a hazard is created or causes damage).
- Waste is removed frequently by HEPA vacuuming, wet wiping and placing waste into asbestos bags.
- At completion, clean drop sheets and dispose of as asbestos waste.
- Do not use compressed air, eat, drink, chew or smoke in work area
- Ensure hands and face are washed at the completion of work. Outside the work area should include a bucket of clean tepid water for decontamination purposes.

TYPICAL MODERATE RISK ACTIVITIES

- Removal of non-friable ACMs with power tools (equipped with HEPA filtration)
- Removal or repair of minor amounts of friable ACMs.
- Glove-bag removal of pipe insulation.

MODERATE RISK MEASURES AND PROCEDURES – A BRIEF SUMMARY

- Ensure all workers are adequately trained.
- Work will include the use of a glove-bag for pipe insulation removal or a partial containment.
- Barrier tape to be used for glove-bag work. Asbestos warning signs to be placed on containments.
- PPE to include a half-mask respirator with P100 filters and disposable coveralls (may include more site specific PPE as well).
- Soak materials with amended water to control dust (unless a hazard is created or causes damage).
- As waste is created place into asbestos bags.
- Clean work area by HEPA vacuuming and wet wiping.
- Apply fiber lock to all surfaces once removal is completed.
- Ensure hands and face are washed at the completion of work. Water to be available for decontamination purposes.

TYPICAL HIGH RISK ACTIVITIES

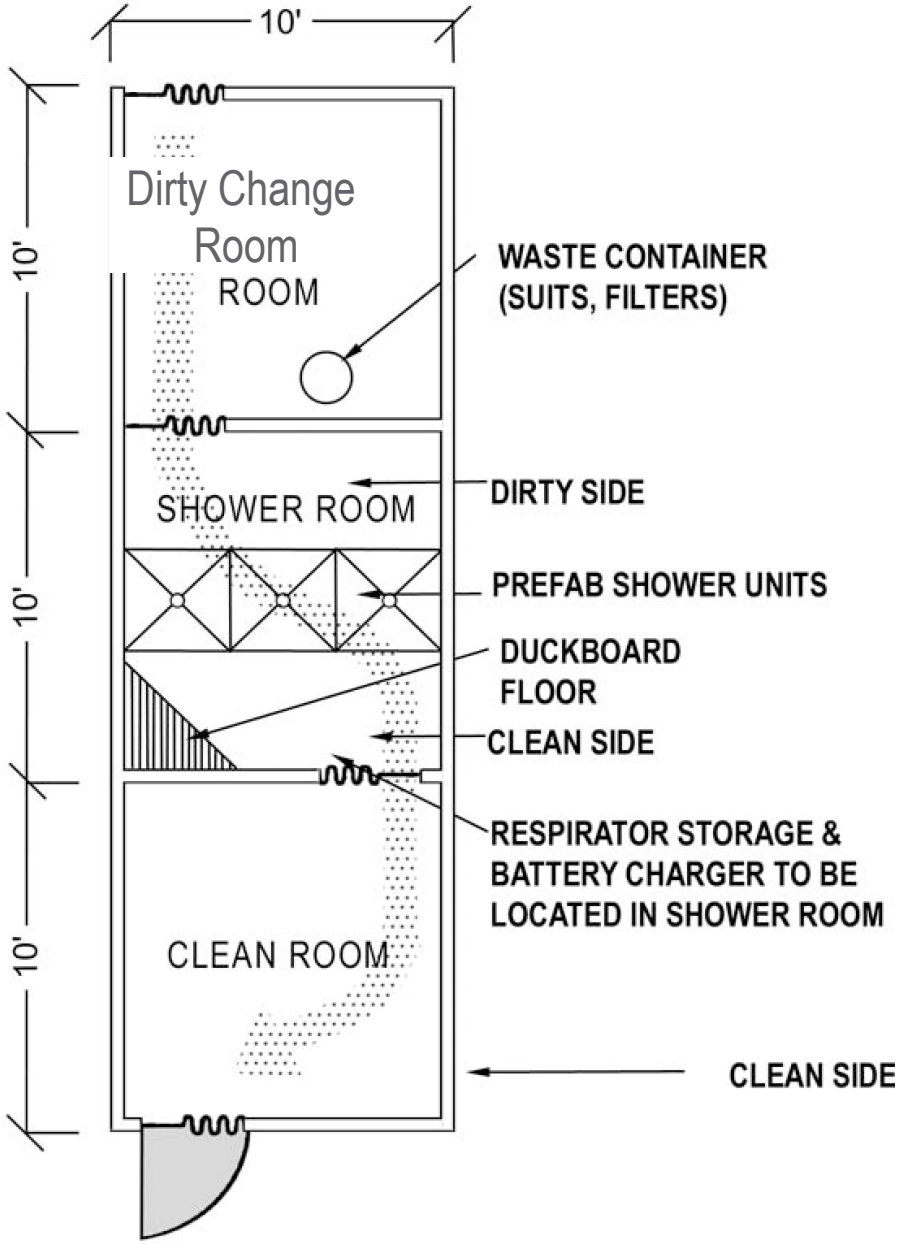
- Removal of anything but minor amounts of friable materials
  - Fireproofing, thermal insulation
  - Acoustic ceiling tiles
  - Mechanical insulations (boilers, tanks etc.)
  - Pipe insulations too big for glove-bag use
  - Vermiculite from block walls or attic spaces
  - Texture finishes from drywall or concrete
  - Vinyl sheet flooring

HIGH RISK MEASURES AND PROCEDURES – A BRIEF SUMMARY

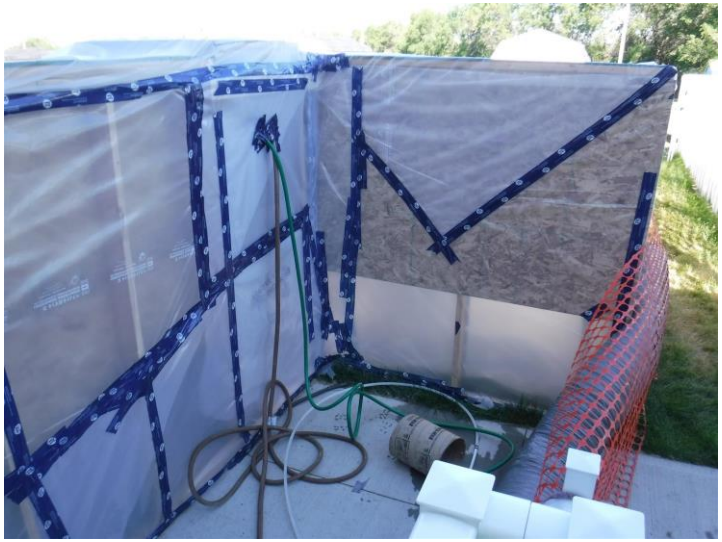
- Ensure all workers are adequately trained.
- Submit Notice of Project for any High Risk work.
- Work will include setting up a full containment with a decontamination unit.
- Containment will be under negative pressure until completion to prevent fiber migration.
- Asbestos warning signs to be placed on containments.
- PPE to include a PAPR respirator with P100 filters, may require supplied air dependent on fiber levels during work.
- Soak materials with amended water to control dust (unless a hazard is created or causes damage).
- As waste is created place into asbestos bags.
- Clean work area by HEPA vacuuming and wet wiping.
- Apply fiber lock to all surfaces once removal is completed.
- Workers will decontaminate in shower when leaving work area.
- Complete air clearance sampling prior to containment removal.

PHOTOS OF HIGH RISK CONTAINMENTS

TYPICAL WORKER DECONTAMINATION ENCLOSURES



PHOTOS OF HIGH RISK CONTAINMENTS



THANK-YOU. QUESTIONS?

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