Asbestos Awareness Information

Note: This information is to be used as resource material only. It is not to be used nor reproduced as training for asbestos removal purposes.

June 6, 2007
Asbestos - O.Reg. 278/05

New Changes effective November 1, 2005

Reason for the change:

- Original O.Reg. 838/90 has remained unchanged since 1990
- Air sampling by MOL combined with reduction of Occupational Exposure Limits in year 2000 have resulted in some changes in work classification.
- For example some type I working procedures are now type II and some type II are now type III
- Working procedures for Type I and II not changed greatly
Why Do Asbestos Workers Need Training?

1. Inhalation of Asbestos is Hazardous

2. Required by Law to Train Workers on:
   a) Health Effects
   b) Use of Protective Equipment
   c) Proper Working Procedures
Enforcement-Ministry of Labour

- Individuals $25,000
- Companies $500,000
- Criminal Code - Bill C45 charged if criminally negligent
Asbestos Information

- Found all over the world
- Mined from veins in host rock
- Separated into flexible fibres, sealed in plastic bags and sold to the consumer
- Fibres are released into the air from the soil, & water
Sprayed On Asbestos

- 200,000 X background level
- Phased out 1973
- Prevented beams from collapsing
What is ASBESTOS?

It's a mineral found in many rock formations. When separated from rock, ASBESTOS becomes a fluffy, fibrous material that has many uses.

3 most common TYPES of asbestos...

CHRYSOTILE
About 95% of all asbestos processed. Resists heat but not acid. Can be easily spun into asbestos cloth.

AMOSITE
Acid and heat-resistant. Used in bulk form for heat insulation and molded into pipe insulation.

CROCIDOLITE
Poor heat insulation, but highly resistant to acid. Used to make acid-resistant cement pipe and in electric battery cases.
Useful Properties of Asbestos

- Incombustibility
- Strength and flexibility
- Reinforcing Agent
Definition of a Friable Material

- A friable material can be crushed between the fingers to a powdered state when dry.
Significance of Friability

- The more friable a material is the more likely it will be released and be inhaled into the lungs.
- The type of work (type I, II, III) depends on the friability of the material and the quantity involved.
Slide Presentation
Showing examples of ACM at York University
Spray on fire proofing on ceiling beams:
Fire Rated door
Chrysotile: Friable
Pipe Elbows in Mechanical Rm:
Transite board for sound proofing
Floor Tiles:
Chrysotile 2% - typical
Decorative Ceiling Stucco:

5-15% - typical
Boiler Insulation: Chrysotile 20-30%
Asbestos Containing Ceiling Tiles

- Found in 50% of buildings built before 1983.

- 0.5-15% Chrysotile or Amosite.
The danger **VARIES** depending upon...

1. **Intensity of asbestos dust**
   Danger increases as the number of asbestos fibers in the air within a given space increases.

2. **Individual susceptibility**
   Some people are more likely to develop asbestos-related diseases than others.

3. **Fiber size and variety**
   Very fine, short fibers are most highly cancer-causing.

4. **Presence of other pollutants**
   - such as cigarette smoke can increase the risk of disease.
Asbestos related diseases:

- Asbestosis
- Mesothelioma
- Lung Cancer
- Other Cancers e.g. digestive tract
Respirators – Section 13 O.Reg. 278/05

- Provide written instructions for use & care
- Train workers in proper use of respirators
- Respirators must be fit tested
- Where practicable, each worker assigned their own respirator
- Respirators must be cleaned & inspected regularly
- Worn parts are to be replaced
- Store in a convenient, sanitary location
Half Face Respirator: PF10

- Acceptable for all type I and most II operations.
Full Face Respirator: PF50

- **Some Type II Operations:**
  - Accessing a ceiling where asbestos may be lying on the surface of a false ceiling.
  - Cutting non-friable materials using power tools equipped with a HEPA filter.
    - If material is not wetted: full-facepiece.
    - If material is wetted to control the spread of fibre: half-mask.
How do you ensure a good fit each time you don a respirator?
Positive Pressure User Seal Check

Cover exhalation valve and try to exhale.
Negative Pressure User Seal Check
Respirator Fit Testing

- Performed when a new respirator is issued to an employee.
- CSA: Medical Questionnaire
- Smoke test or fit testing equipment
- Respirators can not be assigned to workers with beards.
- Check the cartridge labelling to determine what it protects against.
How do you maintain your respirator?

- Clean it after each day of use
- Replace damaged parts
- Kept it in plastic bag
- Replace dust cartridges annually or when breathing resistance noticeable.
HEPA Vacuum

- Captures > 99.9% dusts to 0.12 um

Filter Replacement:
1. When full
2. Not usually replaced
3. When visibly dirty
4. Every year

Treat as type II work
Legislation (enforced by the MOL):

- Regulation respecting Asbestos (Ont.Reg.837)
  - Exposure limit for workers (0.1 fibres/cm³ air)
  - Respirator standard
  - Sampling standard

- Regulation respecting Asbestos on construction Projects and in Buildings and Repair Operations (Ont.Reg.278/05)
  - Classification of asbestos work and procedure
  - Exemptions and prohibition
  - Management program required from owners of buildings containing friable asbestos
O. Regulation 837:

“Every employer shall take all necessary measures and procedures ... to ensure that the time-weighted average exposure of a worker to any of the forms of airborne asbestos ... is reduced to the lowest practical level and in any case shall not exceed 0.1 fibres/cm3 of air.”
### Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations

**26 sections** (old regulation has 18 sections)

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Definitions (Section 1)

Reg.278/05 included definitions on:

“**Asbestos-containing material**” (ACM) means material that contains 0.5% or more asbestos.

“**building**” includes...vault, chamber and tunnel.

“**examine**” ...means to establish its asbestos content and to establish the type of asbestos...

“**homogeneous material**” means material that is uniform in colour and texture.

“**occupier**” has the same meaning as in the *Occupiers’ Liability Act*. 
Section 2

This Regulation applies to...

- Every project (includes its owner, constructor, employer and worker engaged in or on the project)
- Repair, alteration or maintenance work of buildings, machinery, vehicles or equipment in which ACM may be disturbed
- Buildings in which ACM has been used and the owner of the building
- Demolition

Regulation does not apply to an owner of a private residence (or residential building with less than four dwelling units) occupied by an owner of the owner’s family
Sample Testing and Collection (section 3)

- Established standard for asbestos testing and analysis
- Bulk samples shall be randomly collected by a competent worker and are representative of each area of homogeneous material
- No. of samples to be collected:
  - thermal insulation patch, <6 ft or 5 sq.ft ▶ min. 1
  - Thermal insulation, any size, ▶ min. 3
  - Surfacing materials (e.g., spray-on, plaster etc.)
    - Less than 90m² (980 sq.ft) ▶ min. 3
    - 90-450 m² (980-4900 sq.ft) ▶ min. 5
    - ≥ 450m² (4900 sq.ft) ▶ min. 7
  - Other materials, any size, ▶ min. 3

* If a sample contains ≥0.5% asbestos, (a) no need to analyze other samples from the same area of same material; and (b) the entire area of same material is deemed to be ACM
Restrictions (section 4)

Nobody shall:

- apply **sprayed asbestos** \( \geq 0.1\% \) asbestos that can become friable
- apply asbestos **pipe or boiler insulation** with \( \geq 0.1\% \) asbestos that can become friable
- apply **liquid sealant** to friable ACM if
  - The material has visibly deteriorated; or
  - The material’s strength and adhesion to the underlying materials and surfaces are insufficient to support the sealant
Information for workers (section 5)

- Whenever a worker (includes contractors*) is to disturb asbestos or is to do work in closed proximity to ACM and may disturb it, the constructor or employer shall **advise the workers regarding:**
  - Location of all ACM
  - Whether the ACM is friable or non-friable
  - For sprayed-on friable material, for each location, the type of asbestos ...

*section 8(3)(c)
Demolition or Requesting Tender or Arranging Work (section 6, 10)

- Remove asbestos (to the extent practicable) prior to demolition of building, equipment, machines with ACM
- Before requesting tenders or contracting any work, shall examine whether material that is to be disturbed contains asbestos or not
- Provide report to constructor, contractor and subcontractor stating:
  - Whether material is or is not ACM
  - Condition of material, whether friable or non-friable
  - drawings, plans and specifications, as appropriate, to show the location of the ACM
Asbestos Inventory and Management Program (Section 7,8)

Owners of buildings with ACM shall,

- Prepare a record (i.e. inventory or survey record) of
  - Location of ACM (must include ceiling tiles by Nov.1, 2007)
  - Indicate if material is friable or non-friable
  - For friable asbestos, indicate the type of asbestos
- Update record at least once every 12 months and whenever new information is available
- Clean up any deteriorated or fallen ACM; repair or remove remaining material
- Give occupiers (e.g., tenants) written notice of information in the record that relates to the area occupied by the person
- Establish and maintain a program (for training purpose) dealing with,
  - Hazards of asbestos exposure
  - Use, care and disposal of PPE
  - Personal hygiene when doing work, and
  - Measures and procedures prescribed by the Regulation

Section 9 – Employer (who is not an owner) shall advise the owner if the workers discover ACM in the building.
Unexpected Discovery  (section 10(7))

- If during work, a material that is discovered that was not in the report and may be asbestos, the constructor or employer shall immediately notify, orally and in writing,
  - A MOL inspector, the owner, the contractor, and JHSC or rep if any
  - Stop work until sample is analyzed or unless the material is treated as if it is asbestos
  - Written notice shall include: name and address of person reporting, owner and supervisor in charge; location where the work is carried out, description of work, start and end date of work.
Type 1 or Low Risk Operation
(Section 12, O.Reg.278/05)

- Installing or removing non-friable ACM or < 7.5 m² (82 sq.ft.) of ceiling tiles, without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- Breaking, cutting...these materials if,
  - the material is wetted and
  - using only non-powered hand-held tools
- Removal of < 1 m² (11 sq.ft.) dry wall with asbestos joint compounds.
Type 2 or Moderate Risk Operation

- Removing of all or part of a false ceiling with likelihood of ACM on top.
- Removing or disturbing \( \leq 1 \text{ m}^2 (11 \text{ sq.ft.}) \) friable ACM.
- Enclosing friable ACM.
- Taping or sealing mechanical insulation.
- Removing or installing \( \geq 7.5 \text{ m}^2 (82 \text{ sq.ft.}) \) ceiling tiles without being broken, cut...
- Breaking, cutting...these materials if,  
  - the material is not wetted and using only non-powered hand-held tools; or  
  - Using power tools equipped with HEPA dust collector.
- Removing \( \geq 1 \text{ m}^2 (11 \text{ sq.ft.}) \) of drywall with joint asbestos compound.
- Cleaning and removing filters used in air handling equipment in a building with sprayed fireproofing that is ACM.
- Removing insulation with ACM using glove bag.
- Any operations that may cause asbestos exposure and that is not classified as Type 1 or 3.
Type 3 or High Risk

- Removing or disturbing >1m² of friable ACM.
- Spray application of a sealant to friable ACM.
- Cleaning or removal or air handling equipment, including rigid ducting, in a building with friable sprayed asbestos.
- Repair, alteration or demolition of kiln or furnace or similar structure with ACM.
- Use of power tools (e.g., drill) with no HEPA dust collector on non-friable ACM.
- Repair, alteration or demolition of plant utilizing asbestos in process.
Section 11 – Notify MOL of Type 3 and certain Type 2 operations

- Before starting a Type 3 operation or a Type 2 operation using glove bag in which 1 sq.m. or more of insulation is to be removed, notify MOL orally (telephone or electronically) and in writing,
  - name and address of: person reporting, owner and supervisor in charge;
  - location where work will be carried out;
  - description of work;
  - start and end date of work.
Section 12 – Classification and dispute resolution

• “Work on ceiling tiles, drywall or friable ACM is classified according to the **total area** on which work is done consecutively in a room or enclosed area, even if the work is divided into small jobs.”

• If there is a disagreement in classification,
  – A party notify an inspector...
  – The same party inform the other party
  – Work shall cease while waiting
  – Inspector investigates and gives decision in writing
Sample Requirements for TYPE 2 ASBESTOS WORK (O.Reg.278/05, sec.15,16)

Preparation of the Work Area:

1. Warning signs* posted in sufficient numbers (*indicating asbestos dust hazard and access to area is restricted to persons wearing protective clothing and equipment)
2. Ventilation system serving the area disabled for work disturbing friable asbestos
3. Ventilation ducts sealed off for work disturbing friable asbestos

Enclosure:

1. Work area enclosed by walls or polyethylene (work involving false ceiling, removing >1 m² friable asbestos) if practicable
2. Floor covered and taped beyond enclosure (6 ml plastic)
3. Overlap door constructed
5. Take water sprayer into enclosure.

Vacuuming:

1. HEPA vacuum
2. One or 2 vacuum hoses inside of enclosure, depending on the size of the enclosure
3. Friable material removed by vacuuming
Examples of Type II work
Workers inside enclosure

- Place appropriate asbestos work notification sign
- Worker wears tyvek suit with hood and respirator
- Place ladder, waste disposal bag, vacuum hose and appropriate tools inside enclosure
Enclosure

- Use 6 ml polyethylene to build enclosure
- Tape plastic on the floor
- Tape and seal enclosure from the ceiling to the floor
After asbestos work is completed

- Wet clean enclosure with water sprayer
- Wet wipe all tools and equipment (e.g., ladder, tools, waste bags etc.) before taking them outside of the enclosure.
Waste Disposal

- Double bag the waste with labeled asbestos bag
- Dispose of appropriately as asbestos waste
CHECKLIST TYPE 2 ASBESTOS WORK (cont’d)

9. Personal Protective Equipment:
   1. Respirator fit checked
   2. Protective clothing worn
   3. Protective footwear (optional if slippery)

10. Wet any asbestos to be disturbed (unless wetting creates a hazard) ◊

11. Eating, drinking, smoking or chewing are not allowed in the area ◊

At the Completion of Work Procedure:

1. Vacuum or wet clean (e.g. by damp mopping or water mist spraying) inside of enclosure. ◊

2. Vacuum or damp wipe footwear, clothing, ladder etc. before leaving enclosure and work area. ◊

◊ Requires for Type 1 procedure
3. **Waste Disposal**:  
   1. Dispose of polyethylene, all single use items and any waste containing asbestos as Asbestos Waste in specially labelled garbage bags. Seal bags with tape.  
   2. Clean outside of disposal bags. Insert into a second bag or cardboard box. Seal and label outer bag/box “ASBESTOS WASTE”  
   3. Place immediately in Asbestos Waste Dumpster. Asbestos waste is not to be retained in work areas.  

4. Hands and face wiped with wet toweling before leaving.  
5. Warning signs are removed.  
6. Respirator to be washed, wiped dry and inspected after each use.  
7. FAM readings taken during procedure. 

**Time of Completion:**

**Completed by:**
Glove Bag Procedure – Section 17

- Use an approved glove bag (available from FS Stores, e.g. Safety Strip)
- Inspect the glove bag before using it and at regular intervals during use.
- Do not use it if it is impossible to maintain proper seal or if there is a possibility of the bag becoming damaged during its use (e.g. hot pipe temperature).
- If damage is found stop work, wet the inside of the glove bag, place it in an asbestos waste bag (e.g. the yellow bags in FS Stores). Vacuum area with HEPA filter before continuing work.
Glove Bag Procedure (Con’t)

- Working Procedure:
- Separate work area by walls or barricades.
- Disable ventilation and seal ducts serving work area
- Cover surfaces below work area with drop sheets
- When work is complete wet inside of the glove bag, remove air from glove bag using HEPA filter.
- Place glove bag in an asbestos waste bag.
- Wipe down pipe with an encapsulant (available from FS Stores)
- Clean work area by damp wiping or with HEPA vacuum.
Type 3 Asbestos Work

Note: Type 3 work is not done by York Employees. This work is contracted out as it requires specialized training.

Type 3 work requires:
- By Nov. 1, 2007; abatement workers must received approved* training
- Building enclosure
- Installing change room, shower room, clean room
- Special (supplied air) respirator for certain Type 3 work
- Disabling mechanical ventilation serving area (for indoor work)
- Installing a ventilation system with HEPA exhaust unit, monitor regularly by a competent person to maintain a negative pressure of 0.02 inches of water, relative to area outside the enclosure
- Regular inspection of work area by a competent worker
- Conducting clearance air testing (for indoor work)

Exemptions for:
- breaking, cutting...non-friable ACM without HEPA dust collector (only requires enclosure)
- Pre-demolished building (clearance test and negative pressure testing exempted)
- Outdoor work

* Approved by the Ministry of Training, Colleges and Universities
Type 3 Asbestos Work—Clearance Air Testing  (Section 18 (16), O.Reg. 278/05)

- Conducted by a competent person when the enclosure is dry
- By using specific air sampling and analysis method (PCM or TEM)
- By forced air sampling
- By specific number of samples and air volume (PCM: 2-5 samples/enclosure; TEM: min of 5 inside and 5 outside enclosure)
- Level must not exceed 0.01 fibres/cc of air for PCM (for TEM the average concentration of asbestos fibres inside is statistically less than outside)
- Can use the same sample for TEM if PCM failed
- Repeat cleaning if enclosure fails the clearance air test
- Post (for at least 14 days) results and provide a copy to the JHSC within 24 hours of receipt of test results
- Keep test results for at least 1 year after receipt
Air sampling
Use of Equivalent Measure or Procedure (section 23)

In the case in which a constructor or the employer may vary a procedure,
- The procedure affords at least equal protection for the health and safety of workers,
- Gives written notice of the varied procedure in advance to the JHSC or rep for the workplace
Commencement

• This Regulation: *Asbestos on Construction Projects and in Buildings and Repair Operations (O.Reg.285/05)* comes into force on Nov. 1, 2005 except for (a) including non-friable asbestos containing materials in management program and inventory and (b) provide approved training program for asbestos abatement workers on Type 3 operation, which will be in effect Nov. 1, 2007