Environmental Abatement Council of Canada
Canadian Chapter of the EIA

Asbestos in Soil

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Who is

Environmental Abatement Council of Canada
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- The Environmental Abatement Council of Canada (EACC) is an Organization serving the environmental abatement industry.
- Our members represent our industry as a whole including contractors, consultants, engineers, suppliers, government officials and others with an interest in the environmental abatement industry.

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What are the objectives of EACC

- The betterment and promotion of the environmental abatement and hazardous materials industry.
- To promote high standards of conduct among our members.
- To collect and disseminate information regarding the management of hazardous materials including regulations.

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What are the objectives of EACC

- To collect and disseminate information regarding the health effects associated with exposure to specific hazardous materials.
- To promote and educate industry, government, media, the public and any other group or individual in the safe handling of hazardous materials.
- To render any other services to its members that are incidental to, or conducive to, the attainment of the above objectives.

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What are some of the projects currently underway at EACO

- EACC is actively working on a Number of different initiatives including:
  - Lead on Construction – Developing assessment and remediation protocols
  - Development of guidelines for the assessment and remediation of vermiculite in construction projects

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What are some of the projects currently underway at EACC

- Promotion of the hazardous materials worker trade designatior in the construction industry.

  253H Hazardous Material Worker Schedule of Training July 2009-EN.pdf


Ontario

Apprenticeship Training Standard
Schedule of Training

Hazardous Materials Worker

Trade Code: 253H

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Asbestos in Soil

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Sources of Asbestos in Soil

- Naturally Occurring Asbestos (NOA)
- Asbestos Contamination

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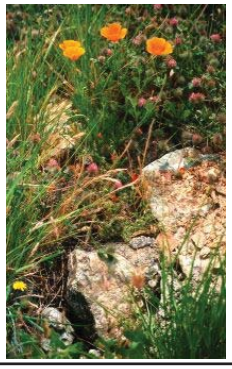
Naturally Occurring Asbestos

- Naturally occurring asbestos exists in several parts of the Province, mainly in the North East (Kirkland Lake and Cochrane) and in the South East (Kaladar Township)



Northern Ontario

- Northern Ontario was a significant producer of serpentine (chrysotile asbestos) from 1949 to approximately 1975 where Johns Manville owned and operated several claims.

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Southeastern Ontario

- Southeastern Ontario was a producer of Amphibole asbestos (Actinolite and Tremolite) from a deposit in the Kaladar area.

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Asbestos Contamination

- By far, the most likely source of asbestos in soil that we will encounter in our work
- Many sources of contamination including:
  - Improper building demolition
  - Sub-surface asbestos-cement (AC) piping
  - Illegal construction waste dumping

Asbestos Contamination

- Improper Building Demolition
  - Can lead to a mixture of friable and non-friable products in the soil
  - Depending on the size of the building that was demolished, can create a significant debris field
  - Difficult to assess without history of site

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Improper Building Demolition

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Asbestos Contamination

- Asbestos Cement (AC) piping
  - Extremely common on brownfield sites where buildings were supplied with municipal water and sewage services
  - AC piping was the product of choice for water distribution systems across North America
  - Also used as electrical duct-bank conduit sleeve in poured cement
  - Careless excavation of site by untrained personnel can lead to extensive contamination

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AC Piping

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Illegal dumping of construction waste

- More common in rural areas
- Many stories of waste from building demolition in the city being transported to a farmers field and dumped or buried
- Not uncommon for warehouses to be rented and filled and abandoned.
- And other construction sites…

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Illegal Dumping

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The issues

- **ONTARIO REGULATION 278/05**
- Designated Substance — asbestos on construction projects and in buildings and repair operations
  - Defines an asbestos-containing material as a material that contains 0.5% or greater asbestos by dry weight
  - The analytical method specified in the regulation (EPA 600/R93/116) is the method for the determination of Asbestos in bulk Building Materials – not soil

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So what is a representative sample?

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Representative?

This pile turned into…

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What now?

This

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Representative Sampling

- Taking representative samples is difficult and decisions need to be made in the field.
- Composite or non-composite samples?
- Include visible chunks or not?

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Representative Sampling

- How Deep

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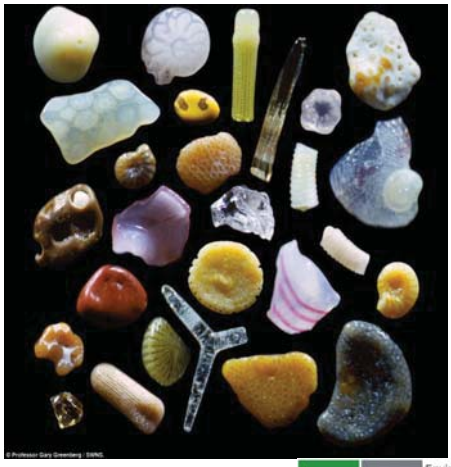
Analytical Challenges

- Why is soil difficult to analyze?
  - Soil is non homogeneous – made up of rocks and pebbles and smaller bits of rocks and pebbles with some organic mixed in.
  - Grain size is a huge issue for analysis.



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Analytical Challenges

- Analysis of rocks and pebbles can be problematic

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Analytical Methods

- Obtaining a representative sub-sample in the lab is important
  - Sample needs to be a smaller sub-set of the samples collected on site, but only is sufficient quantity for analysis.
  - About a package of oatmeal - for size comparison

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Analytical Challenges

- Even the presence of sand-sized quartz crystals are a problem

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Non-homogeneous nature

- Samples from outdoors sites tend to be non-homogeneous over the large areas.
  - How many samples do you collect on a section of road bed?

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Analytical Approaches

- Sieving

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Analytical Approaches

- Milling

Analysis

- Once you have a sample to analyze, what is your objective?
  - Legally defensible?
  - Cheap?
  - Quick?
- Most of the time, clients want the cheapest, quickest, legally defensible analysis.
- How much asbestos is ok?
- Quantitative or Qualitative analysis? Does it really matter how much asbestos is in the soil?

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Remediation

Concrete with AC pipe - crushed + building demolition waste

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Remediation

- No mechanized methods exist that are safe
- Continued working of the contaminated soil increases the likelihood that the AC products will be broken down further and an exposure created
- Solutions?

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Remediation

- Spread pile approx 24” deep and 30 feet wide
- Don PPE and walk the pile, picking up loose debris
- Work the pile again and repeat until no visible traces of AC products are present
- Collect representative samples from surface, 12” and from bottom, using a shovel
- Perform qualitative analysis (presence/absence) only on samples
- Cross your fingers.

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Waste Disposal

- Clean waste - $ 40 per ton?
- Asbestos-contaminated soil - $ 600 per ton
  - Must be disposed of at a licensed landfill, authorized to accept asbestos waste.
- Can be transported in bin with bladder bag

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Questions?

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