Asbestos in The Building Trades -Hidden Hazards-

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The Road Ahead

- History and Uses
- Health Effects
- Regulations
- Remediation
- Responsibilities
- Resources

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Asbestos in Building Trades

Part 1 | Part 2 | Resources

Does the house you're working on contain asbestos?

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History and Uses

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What is Asbestos?

- Fibrous rock found naturally in the Earth's crust.
- Resistant to heat and chemicals.
- Fibrils are very small and not visible to the human eye – form large bundles.
- Flexible – used in many products, including consumer products.

What is Asbestos?

- Found in the veins in host rock.
- The class of asbestos depends on the type of rock that form the asbestos

What is Asbestos?

Three major types used in building materials:

- Chrysotile (white asbestos)
- Amosite (brown asbestos)
- Crocidolite (blue asbestos)

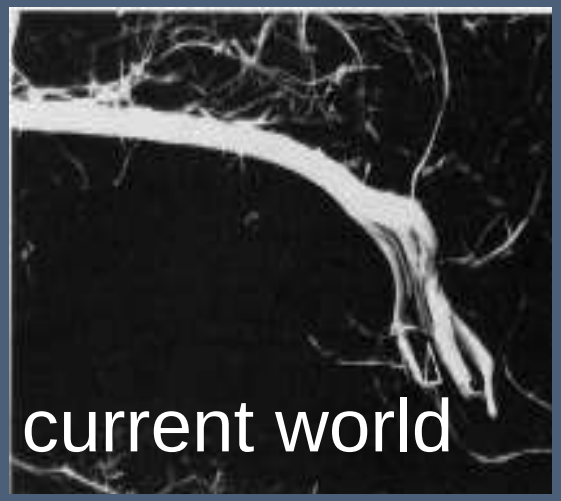
Others:

- Tremolite
- Actinolite
- Anthophyllite

Serpentine Asbestos

Chrysotile

- “White Asbestos”
- long, wavy and flexible fibres
- Accounts for about 90% of the current world consumption.



Chrysotile

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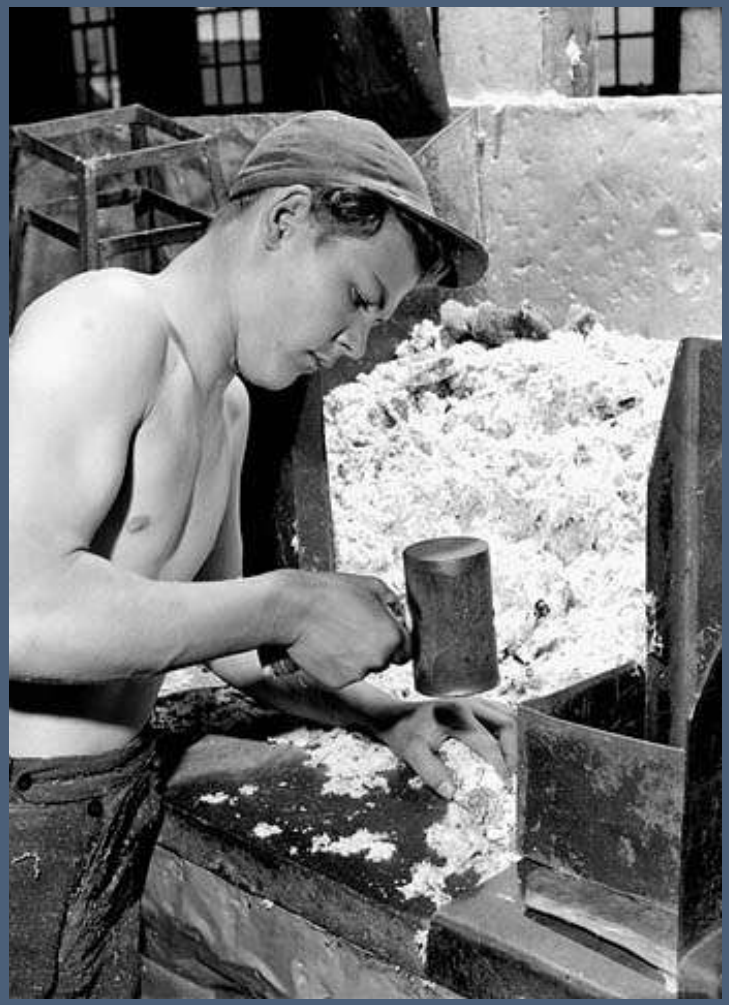
Amosite

Crocidolite

Asbestos Production

Asbestos is extracted by open pit mining



Asbestos Production

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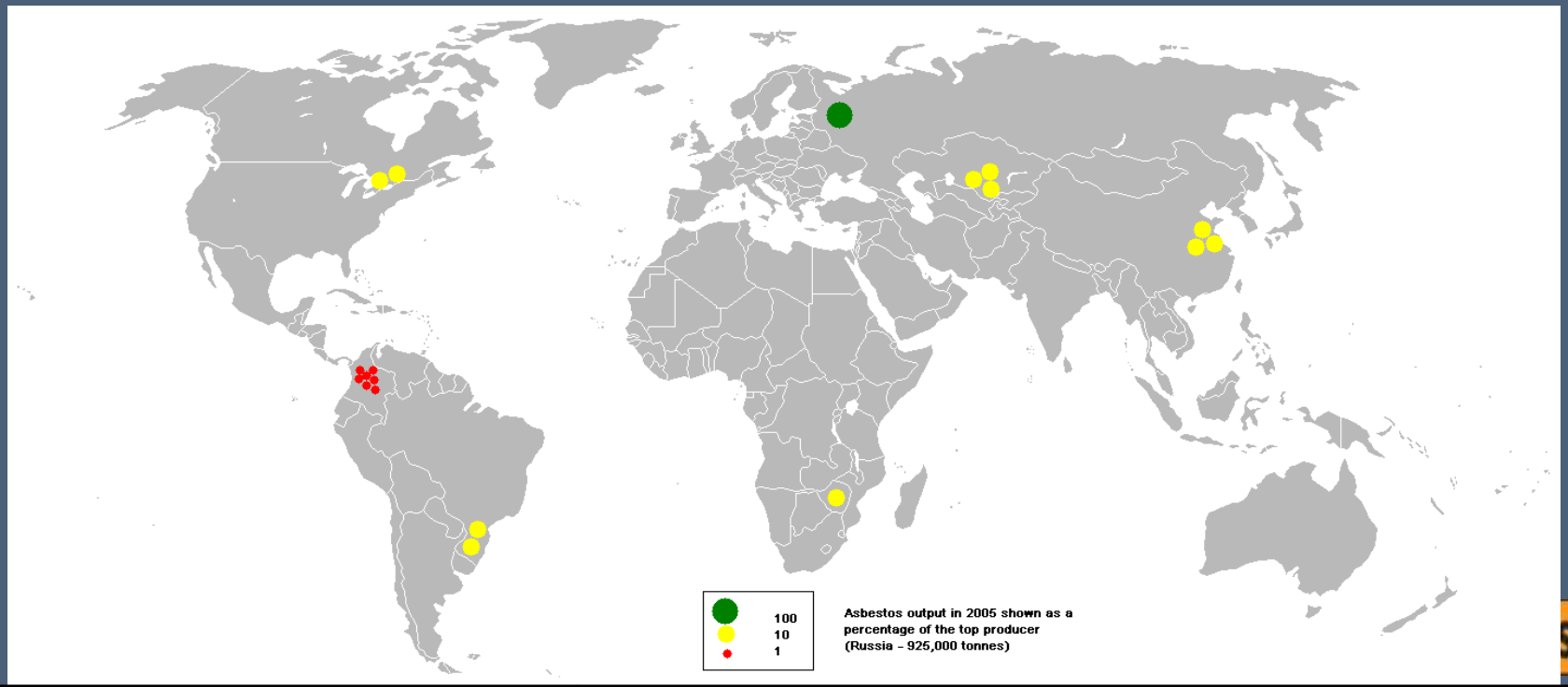
Asbestos Production

Areas of production:

- Canada (Chrysotile)
- The former Soviet Union
- USA
- China
- South Africa (Amosite)
- Australia (Crocidolite



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Asbestos in Canada

- The majority of the world's chrysotile was mined in Thetford, Quebec.

Useful Properties

- Resists burning.
- High tensile strength.
- Dampens noise.
- Resists corrosion.
- Resists biological growth.
- Insulates against the conduction of electricity.

Miscellaneous Asbestos Containing Materials (ACM)

- Incandescent light fixture backing
- Wire insulation
- Fume hoods
- Lab counters
- Elevator brake shoes
- Heating cabinet panels
- Fire dampers and flanges
- Diffuser back-plaster
- Emergency generators
- Fire-stopping
- Theatre curtains
- Welding blankets and screens
- Incinerators
- Cooling towers
- Duct tape
- Duct isolation joints

Asbestos Containing Building Materials

Table 1: Asbestos Materials in Commercial and Residential Buildings

Exterior	**Interior insulation**
• Asbestos cement pipes (e.g., drain pipes) • Roof felting • Asphalt shingles • Soffit boards • Stucco • Asbestos cement siding • Brick mortar • Window putty • Deck undersheathing • Asbestos cement shingles	• Spray-applied insulation (acoustic and fireproofing) • Vermiculite (blown-in) insulation (e.g., in attics) • Paper backing on fibreglass insulation
Flooring	**Heating (HVAC) and ducting**
• Vinyl sheet flooring and mastic • Vinyl floor tile and mastic • Poured flooring/leveling compound • Asphalt flooring	• Furnace duct tape • Furnace/boiler insulation • Pipe (mechanical) insulation • Hot water tank insulation • Mastic • Asbestos rope and gaskets • Asbestos cement board • Asbestos cardboard insulation
Walls & Ceilings	**Other**
• Drywall mud • Plaster • Asbestos cement board • Textured coatings • Ceiling tiles	• Fireplace box and mantel • Artificial fireplace logs and ashes • Fire doors • Insulation on electrical wiring • Fire blankets • Chalk boards • Heat reflectors • Penetration firestopping • Candescent light fixture backing (pot lights)

Asbestos Containing Building Materials

Sources of Asbestos in the Home

1. Roof felt and shingles
2. Roof gutters can be made of asbestos cement
3. Deck undersheeting
4. Asbestos can be found in stucco
5. Soffit boards can be made of asbestos cement or asbestos insulating board
6. Asbestos cement (transite) board siding and undersheeting
7. Downpipes can be made of asbestos cement
8. Window putty
9. Loose, blown-in insulation, such as vermiculite
10. Textured or stipple-coated walls and ceilings
11. Incandescent light fixture backing
12. Acoustic tiles
13. Artificial fireplace logs and ashes
14. Asbestos pad under the fireplace hearth
15. Backing behind recessed lighting
16. Insulation on electrical wires
17. Main panel and fuse box; each fuse wire has an individual asbestos flash guard
18. Pipe insulation
19. Heat reflector for wood stove
20. Furnace duct tape
21. Boiler and furnace insulation
22. Door and cover gaskets
23. Outlets and switches
24. Flooring: vinyl tiles and linoleum sheet flooring; flooring adhesive
25. Gypsum board filling compound, and patching and joint compound for walls and ceilings

Please note: This floor plan depicts a typical older home. Asbestos use has declined significantly; homes built before 1990 are more likely to contain asbestos products.

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Asbestos Containing Building Materials

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Asbestos Containing Building Materials

- Exteriors
  - asbestos cement materials
  - felts and mastics
  - stucco
  - brick and mortar
  - insulation

Asbestos Containing Building Materials

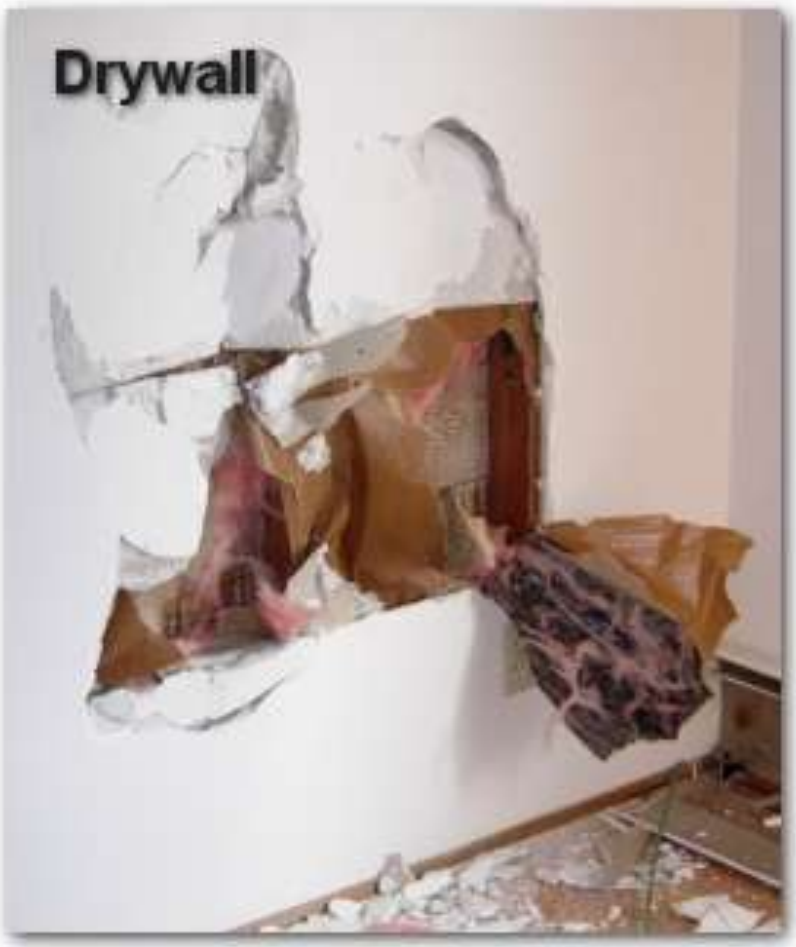
- Ceilings
  - t-bar ceiling tile
  - cement ceiling tile
  - acoustic and stippled finishes
  - plaster or drywall joints

Asbestos Containing Building Materials

Asbestos Containing Building Materials

- Walls
  - plaster
  - drywall joints
  - stippled finishes
  - thermal spray
  - cement panels

Asbestos Containing Building Materials



Asbestos Containing Building Materials

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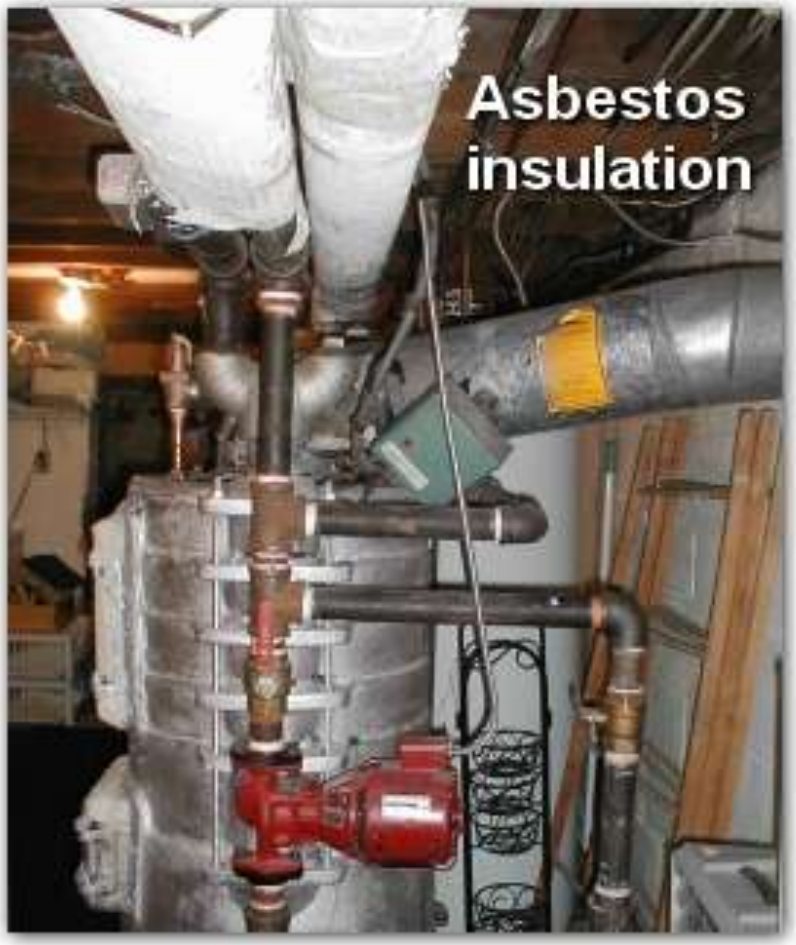
Asbestos Containing Building Materials

Asbestos Containing Building Materials

- Flooring
  - vinyl asbestos tile (VAT)
  - sheet vinyl flooring
  - floor leveling compounds

Asbestos Containing Building Materials

Asbestos Containing Building Materials



Asbestos Containing Building Materials

Industrial Uses

- Pipe insulation
- Insulating blocks
- Sprayed insulation
- Condensation control
- Roof shingles Asbestos cement board and pipe (Transite)
- Caulking compounds
- Floor tiles
- Joint cements
- Welding rods

Asbestos Cement Pipe

Pipe or Boiler Insulation

- Asbestos-containing material (ACM) was often used as thermal mechanical insulation.
- Can be pre-formed insulation sections, blocks or mudding compounds.
- Often used with fiberglass insulation.

Pipe or Boiler Insulation

What is Vermiculite?

- Vermiculite is a mica-like mineral that was used as insulation in many houses and commercial buildings between 1920 and the late 1980's.
- When heated, it expands like "popcorn" into a loose, lightweight material that is absorbent, fireproof, and a good insulator.
- Much of this vermiculite contained some asbestos when it was originally mined.

What is Vermiculite?

What is Vermiculite?

Where is Vermiculite Insulation Found?

- Concrete block wall (CMU) insulation
- Fire separations
- Stove pipe insulation
- Cold rooms and refrigerators
- Attic insulation

Where is Vermiculite Insulation Found?

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Where is Vermiculite Insulation Found?

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Where is Vermiculite Insulation Found?

A demolition worker was exposed to asbestos when he punched a hole in the ceiling of a house and was “showered” with vermiculite insulation from the attic. The worker was not wearing a respirator. The vermiculite insulation contained 1 to 3 percent asbestos that was not identified when the home was originally tested for asbestos.

Recap: Where is Asbestos Found?

Health Effects

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WORKING TO MAKE A DIFFERENCE

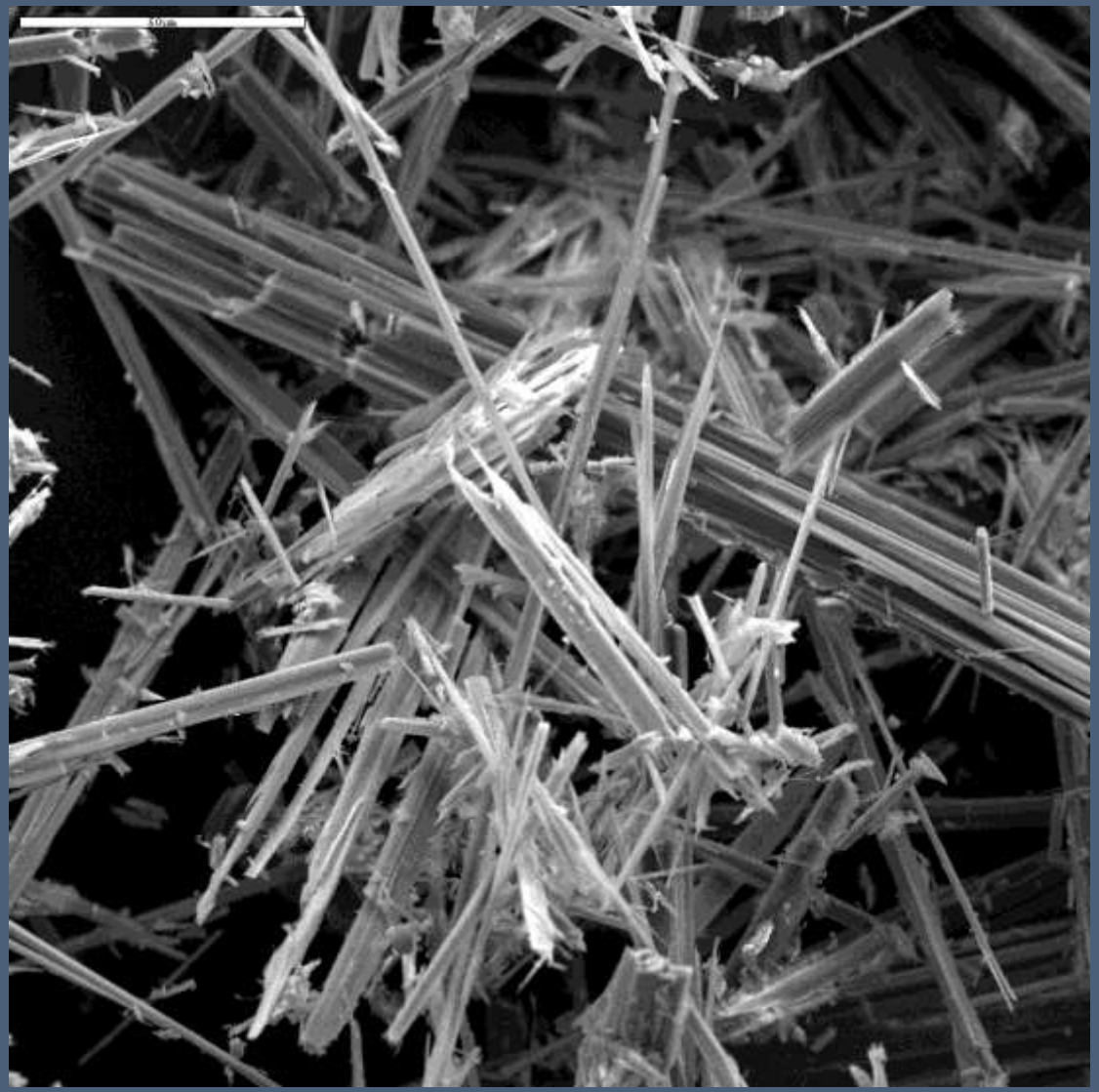
Who Knew?

- The hazardous effects of asbestos may have been recognized as early as the 1st Century AD.
  - slaves wearing and weaving asbestos cloth
- Asbestosis - identified in 1920/1930
- Link to lung cancer –
  - reported in the UK in 1934
  - firmly established in 1955
- Link to mesothelioma - established in 1960

Health Hazards

- Asbestos fibres are hazardous when inhaled.
- Asbestos fibres can remain airborne for several hours.
- The smaller the fibre, the longer it takes to settle.
- Fibre-related disease can result.

What is an Asbestos Fibre



By definition, an asbestos fibre is longer than 5 µm and has a length to width ration greater than 3:1

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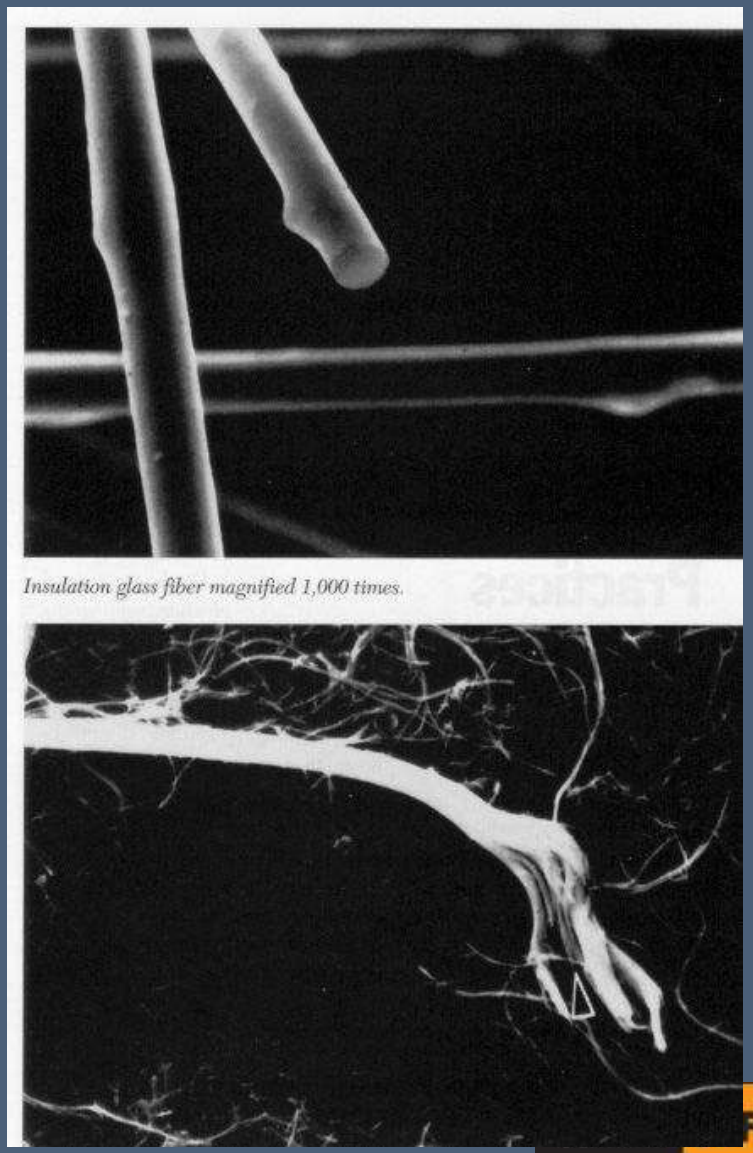
Fibre Breakage

- Man-made fibres such as fiberglass cannot be split along their length, but instead become shorter when broken down.
- When disturbed, an asbestos fibre can be split into thinner and thinner fibres.



Insulation glass fiber magnified 1,000 times.

Asbestos Related Diseases

- Asbestosis (10 to 20 years after exposure)
- Lung Cancer (15 to 25 years after exposure)
- Mesothelioma (30 to 45 years after exposure – in some cases as few as 5 years)
- Exposures must be very high to get asbestosis – much lower for cancers.

Asbestosis

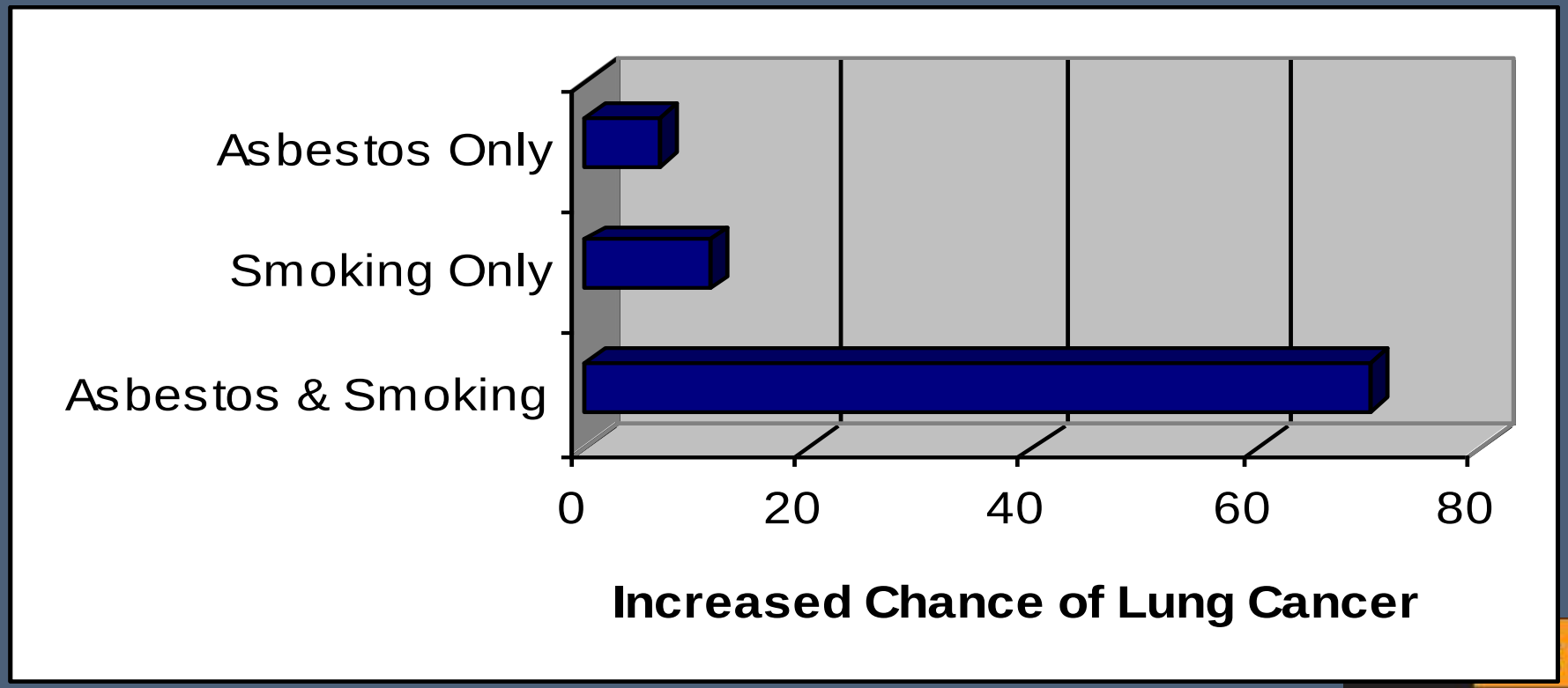
- Asbestosis is a serious scarring condition of the lung that normally occurs after heavy exposure.
- The disease is progressive. As the amount of scar tissue increases, the lungs become more rigid, making it difficult to breathe.
- Air transfer in the lungs is decreased due to the scar tissue.
- In severe cases can be fatal.

Lung Cancer

- Typically, cancer from asbestos exposure does not develop until 20 or more years after first exposure.
- Lung cancer represents 5-15% of asbestos related lung problems.

Lung Cancer

- Asbestos exposure, combined with smoking, increases the risk of lung cancer as much as 70 times.



Mesothelioma

- Mesothelioma is a cancer which affects the lining of the lungs (pleura) and the lining surrounding the lower digestive tract (peritoneum). It is almost exclusively related to asbestos exposure.
- It is extremely rare and always fatal, usually within months of diagnosis.
- A dose response relationship has not been identified.

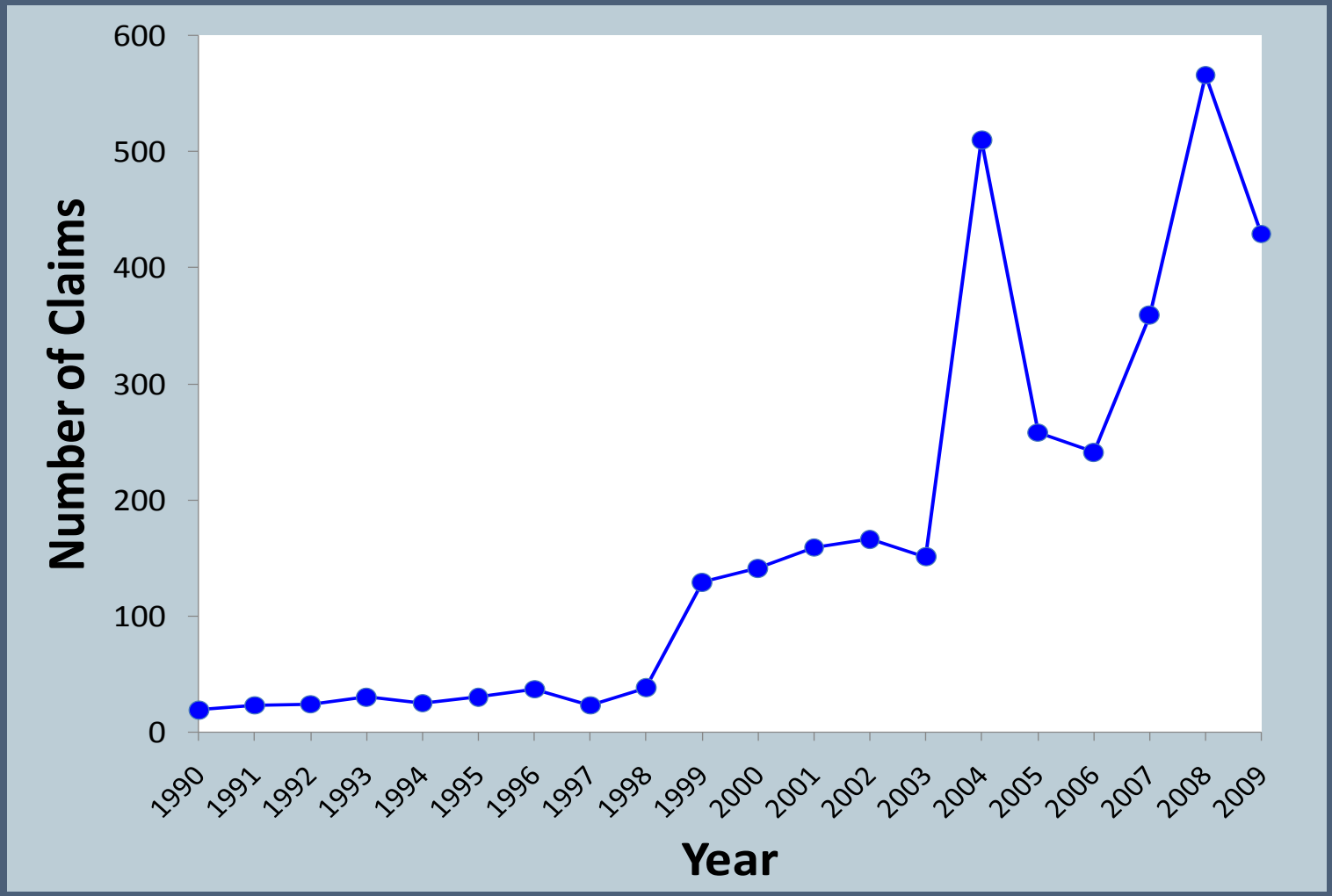
Mesothelioma

- Length of exposure to asbestos in mesothelioma patients ranges from two months to 50 years.
- The period between exposure and disease onset ranges from 15 to 55 years, with an average of 40 years before disease development.

Fatal Injuries and Diseases (2000 – 2009)

Motor Vehicle Accidents	313
Other Injuries	620
Asbestos Diseases	465
Other Occupational Diseases	155
Total	**1,553**

Number of Asbestos Exposure Claims by Year (1990 – 2009)



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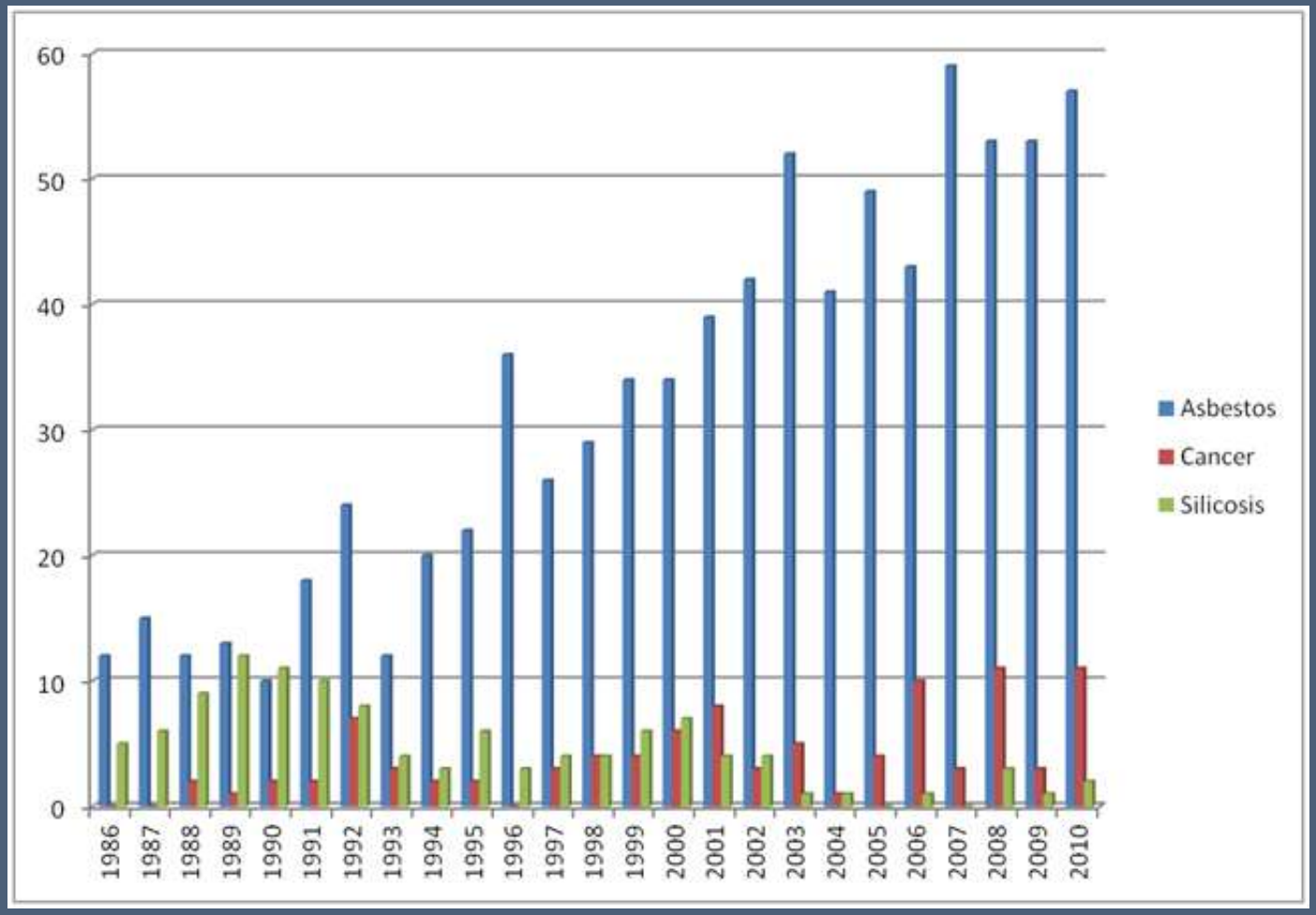
Accepted Fatal Claims for Asbestos and Silica (1986 – 2010)



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Persons at Risk

- Homeowners and family members
- Neighbours
- Demolition contractors
- Restoration contractors
- City/Municipal inspectors
- Insurance adjustors
- Recycling facilities
- Waste transfer facilities
- Regulators

Regulations

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20.112 Hazardous Materials

Section 20.112 of the *OHS Regulation* states:

Before work begins on the demolition or salvage of machinery, equipment, buildings or structures, the employer or owner must

a) inspect the site to identify any asbestos, lead, or other heavy metal or toxic, flammable or explosive materials that may be handled, disturbed or removed,
b) have the inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances,
c) ensure that any hazardous materials found are safely contained or removed, and
d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

Guideline 20.112 Hazardous Materials - Asbestos

- What does “any asbestos” mean?
- What is an asbestos survey or inspection?
- Where do you find asbestos in commercial and residential buildings?
- How do you collect building product samples and how many samples should be collected?
- How are asbestos samples analyzed?
- What do asbestos survey reports look like?
- Who is qualified to perform an asbestos survey?

Asbestos Inventory or Survey

A written report that locates and describes, as far as reasonably practicable:

- The amount and condition of all asbestos-containing materials in a building or structure
- Where renovations or demolition are planned

The employer must ensure that a qualified person:

- Collects representative samples of suspected asbestos-containing materials
- Prepares a written (or computerized) inventory of all asbestos-containing materials in the workplace

This inventory must be kept at the workplace and be kept current

Definition of “Asbestos-Containing Material”

The Occupational Health and Safety Regulation now defines asbestos-containing material as:

- Containing 0.5% or more asbestos as determined by polarized light microscopy, electron microscopy, and/or gravimetric analysis
- Vermiculite-containing insulation materials which contain any asbestos – even less than 0.5%

What about Surveys?

- Surveys must be updated to reflect the new definition of asbestos-containing material
- Additional building materials may need to be added to the employer's inventory
- Suspect materials previously identified as containing < 1% or trace amounts of asbestos need to be re-evaluated to:
  - include them in the inventory, or
  - re-analyze them determine if they contain greater or less than 0.5 % asbestos
- Vermiculite insulation containing any asbestos must be added to the asbestos inventory

How Many Samples must be Collected?

For a two storey 1960's - 1970's house that has asbestos in:

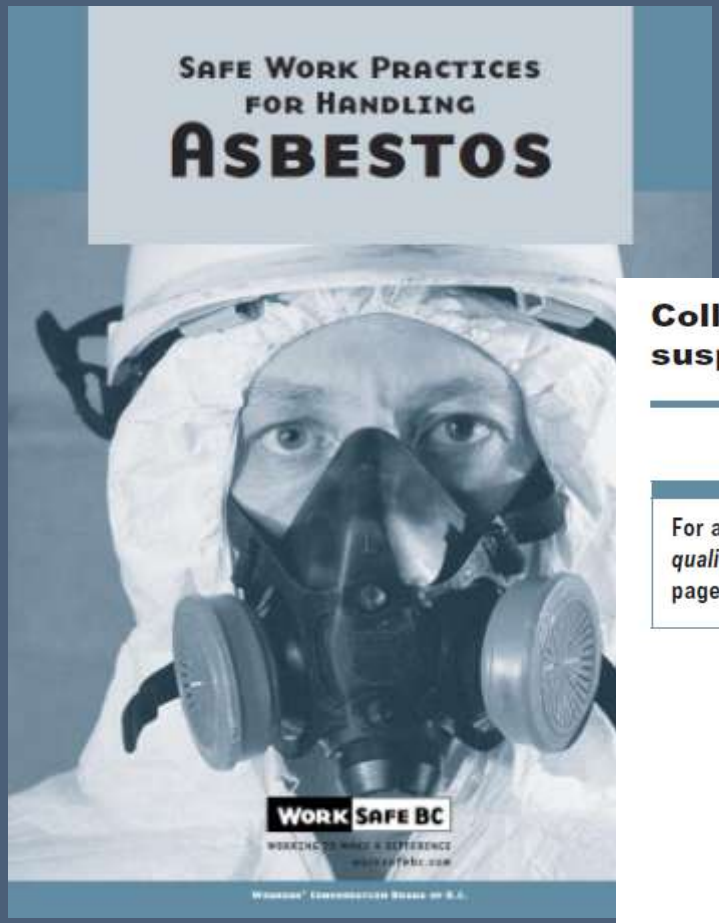
- drywall joint compound
- textured ceilings
- vermiculite attic insulation
- linoleum and vinyl tile floorings, and
- furnace duct tape,

a total of 18 to 25 bulk samples would be considered as reasonable.

Table 2: Bulk Material Sample Collection Guide

Type of material	Size of area of homogeneous material	Minimum number of bulk material samples to be collected *
Surfacing materials, including textured coatings, drywall mud, plasters and stucco	less than 90 square metres (approx. 1,000 square feet)	At least 3 samples of each type of surfacing material
	between 90 square metres and 450 square metres (approx. 5,000 square feet)	At least 5 samples of each type of surfacing material
	greater than 450 square metres	At least 7 samples of each type of surfacing material
Sprayed insulation and blown-in insulation, including sprayed fireproofing and vermiculite insulation (including vermiculite insulation within concrete masonry units – CMUs).	less than 90 square metres (approx. 1,000 square feet)	At least 3 samples
	between 90 square metres and 450 square metres (approx. 5,000 square feet)	At least 5 samples
	greater than 450 square metres.	At least 7 samples
Flooring, including vinyl sheet flooring (and backing) and floor tiles	Any size	At least 1 sample per flooring type in each room (and 1 from each layer of flooring)
Mechanical insulation, including duct taping, pipe insulation, elbows and boiler/tank insulation	Any size	At least 3 samples per house or mechanical or boiler room
Mastics and puttys, including duct mastic (around penetrations) and window putty	Any size	At least 3 samples per house or mechanical or boiler room
Roofing materials, including felting and shingles	less than 90 square metres (approx. 1,000 square feet)	At least 1 sample (each layer of material must be sampled)
	between 90 square metres and 450 square metres (approx. 5,000 square feet)	At least 2 samples (each layer of material must be sampled)
	greater than 450 square metres	At least 3 samples (each layer of material must be sampled)
Asbestos cement (transite) board and pipe	Any size	At least 1 sample
Other materials	Any size	At least 1 sample per type of material

Bulk Sample Collection



Collecting bulk samples of materials suspected of containing asbestos

For a definition of *qualified person* see page 9.

Bulk samples of materials suspected of containing asbestos must be collected by a qualified person and sent for laboratory analysis to determine their content. The qualified person will do the following:

- Use appropriate moderate-risk activity precautions and work area preparations.
- Sample materials when the immediate area is not in use and all unprotected workers have been moved to a safe location.
  Note: Only the persons doing the sampling may be present in the immediate area.
- Spray the materials with a light mist of water to prevent the release of fibres during sampling.
- Avoid disturbing the materials more than necessary.
- Take a representative sample from within the materials suspected of containing asbestos by penetrating the entire depth of the materials (since the materials may have been applied in more than one layer or covered with paint or another protective coating).

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Personal Protective Equipment

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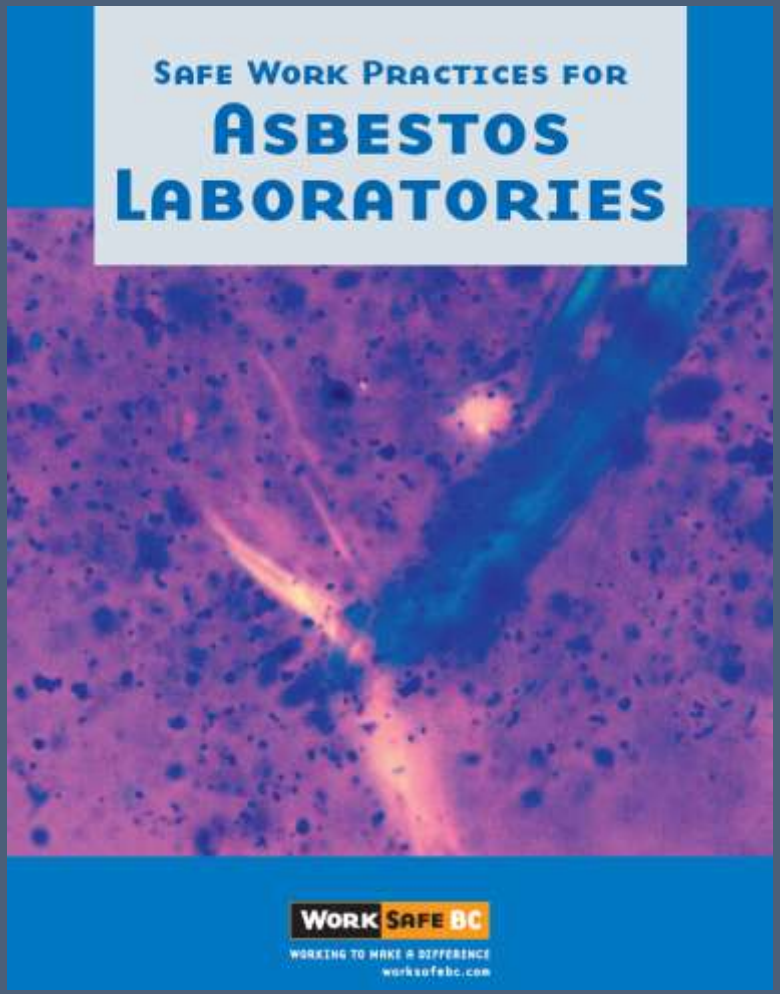
Asbestos Sample Analysis

Asbestos bulk samples should be analyzed by an accredited asbestos laboratory.

If the laboratory is not accredited, it must be a participant in a quality control program.



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Asbestos Inspection Results (Example)

Project Name:	Chan Residence	**Date of Survey:**	15 Oct 07
Address:	123 Anystreet, North Vancouver, B.C.	**Survey Company:**	Bob's Asbestos Consulting
Description:	Residential (house); One Storey Rancher with an Attic	**Surveyor:**	Bob Smith
Previous Renovations?	Yes, Bathroom and Kitchen (10 years ago)	**Age of Structure:**	45 Years
Laboratory Name:	Asbestos Laboratories Inc	**Analysis Method(s):**	NIOSH Method 9002 EPA/600/R-04/004

Area or Room (directions when facing house)	**Building Materials**	**Sampling Location**	**Material Collected (sample #)**	**Asbestos Type and Percentage**	**Approximate Quantity of Asbestos**
Entry	Walls and ceiling are drywall; floor is ceramic tile	Right Wall	Drywall Mud (1)	Chrysotile 1-3%	All walls and ceiling
Hallway	Walls are drywall; ceiling is textured; floor is carpet (concrete beneath)	Ceiling	Texture Coat (2)	Chrysotile 1-3%	All walls and ceiling
Living Room	Walls are drywall; ceiling is textured; floor is carpet (concrete beneath)	Ceiling	Texture Coat (3) Drywall mud (4)	Chrysotile 1-3% Chrysotile 1-3%	Ceiling All walls
Dining Room	Walls are drywall; ceiling is textured; floor is carpet (concrete beneath)	Left Wall	Drywall Mud (5)	Chrysotile 1-3%	All walls and ceiling
Kitchen	Walls and ceiling are drywall; floor is linoleum	Right Wall Floor	Drywall Mud (6) Linoleum (7)	None None	None
Bathroom	Walls and ceiling are drywall; floor is ceramic tile	Left Wall	Drywall Mud (8)	None	None
Right Bedroom	Walls are drywall; ceiling is textured; floor is carpet (concrete beneath)	Ceiling	Texture Coat (9)	Chrysotile 1-3%	All walls and ceiling
Left Bedroom	Walls are drywall; ceiling is textured; floor is carpet (concrete beneath)	Rear Wall	Drywall Mud (10)	Chrysotile 1-3%	All walls and ceiling
Attic	Insulation is fibreglass batt with vermiculite beneath	Left Attic Right Attic	Vermiculite (11) Vermiculite (12) Vermiculite (13)	Actinolite 0.7% Actinolite 1% Actinolite 1%	Entire Attic
Exterior	Exterior is wood; roof is composition shingles; aluminum frame windows	Roof	Shingle (14)	None	None
Furnace		Ducting	Tape (15)	Chrysotile 30%	All Ducting
Crawl Space	Pipe Insulation	Below kitchen	Pipe wrapping (16)	Chrysotile 35%	All crawl space piping

Asbestos Inventory or Survey

A Phase I Environmental Assessment is NOT the same as a Hazardous Materials Survey!!!

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Who is Qualified?

- Certified Industrial Hygienist (CIH)
- Registered Occupational Hygienist (ROH)
- Certified Safety Professional (CSP)
- Canadian Registered Safety Professional (CRSP) or Professional Engineer (P. Eng.)
- Other acceptable combination of education, training and experience. This should include completion of recognized training courses in asbestos inspection and extensive occupational health and safety experience within the asbestos abatement industry.

Professional Accreditation?

Contact with Accrediting agencies

- The Canadian Registration Board of Occupational Hygienists maintains contact information on persons with an ROH designation and can be accessed at www.crboh.ca.
- A list of persons with CIH can be found on the American Board of Industrial Hygiene web site at www.abih.org.
- Lists of persons with CRSPs, which are issued by the Board of Canadian Registered Safety Professionals, are available at www.bcrsp.com.

Where Do You Get Training?

Recognized education and training courses in the field of asbestos consultation and abatement include:

- "Building Inspection and Management Planning for Asbestos" course offered by the Continuing Education section of the University of California (Berkeley) Center for Occupational & Environmental Health, and conducting workplace inspections, and
- "AHERA Building Inspector" course offered under the EPA Asbestos Hazard Emergency Response Act (AHERA)

Asbestos Remediation

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Risk Activity Definitions

Low risk work activity

- A work activity that involves working with or in proximity to asbestos-containing material, if the material is not being cut, sanded, drilled, broken, ground down or otherwise fragmented, or otherwise disturbed. There must be no potential for the release of asbestos fibres

Risk Activity Definitions

High risk work activity

- A work activity that involves working with or in proximity to asbestos-containing material if a high level of control (e.g. air-tight enclosure) is necessary to prevent worker exposure to airborne asbestos fibre

Risk Activity Definitions

Moderate risk work activity

- A work activity, other than a high risk work activity, that involves working with or in proximity to asbestos-containing material that is being cut, sanded, drilled, broken, ground down or otherwise fragmented, or otherwise disturbed, and it is necessary to use personal protective equipment or engineering controls to prevent worker exposure to airborne asbestos fibre

Low Risk Requirements

Low-risk work activities require:

nothing, besides work procedures. The use of PPE or engineering controls to prevent worker exposure to airborne asbestos fibres isn't required because asbestos is not being disturbed.

Low Risk Requirements

Low-risk work activity examples:

- Repairs to asbestos containing drywall that doesn't touch the ACM (asbestos containing materials), i.e. mud, filler.
- Installing a screw, hanger on drywall that has ACM
- Replacing a single VAT (vinyl asbestos tile) without breaking it.
- Moving asbestos containing waste that has contained in cleaned, sealed bags and then double bagged.

High Risk Requirements

High risk work activities require:

specific procedures and containment to ensure the safety of workers and others who may be affected by the activities; such as (but not limited to):

- site specific hazard assessment
- site specific exposure control plan
- site specific written work procedures
- an enclosure to contain airborne debris

High Risk Requirements (cont'd)

High risk work activities require :

specific procedures and containment to ensure the safety of workers and others who may be affected by the activities; such as (but not limited to):

- negative pressure in the enclosure to prevent the air escaping
- high level respiratory protection
- high level body protection (clothing, boots, goggles, etc)
- showers for worker decontamination
- worker and area monitoring
- first aid

High Risk Requirements (cont'd)

Examples of High Risk Activity include:

- removing, encapsulating, or enclosing materials containing FRIABLE asbestos during repair, alteration, maintenance, demolition or dismantling of any part of a building structure, machine or piece of equipment.
- removing asbestos-containing textured materials from ceilings or walls
- using power tools (without water or dust controls) to cut or drill through asbestos containing materials

Moderate Risk Requirements

Moderate risk work activities require:

specific procedures and containment to ensure the safety of workers and others who may be affected by the activities; such as:

- negative pressure in the enclosure to prevent the air escaping
- high level respiratory protection
- high level body protection (clothing, boots, goggles, etc)
- showers for worker decontamination
- worker and area monitoring
- first aid

Low Risk Requirements

Moderate risk work activity examples:

- Using hand tools to cut, shape, drill, grind or remove non-friable manufactured products containing asbestos e.g. AC pipe.
- Collecting bulk asbestos samples for analysis
- Removing asbestos tape or paper on ductwork
- Removing VAT or other **non-friable** materials
- Backing mounting screws out of AC boards and removing the boards intact

Responsibilities

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Due Diligence

- Due diligence in all cases includes a review of the surveyor or consultant's experience as well as their accredited credentials.
- A deficient asbestos risk assessment or work classification may be an indication that the person selected was not qualified.

Owner Due Diligence

- The owner has a responsibility to maintain his/her property in a manner that ensures the health and safety of workers.
- The owner must give the contractor information necessary to identify and control hazards to the health and safety of workers on his/her property.

Employer Due Diligence

- Employers are responsible for selecting qualified persons, as defined in the Regulation, and ensuring that the provided work procedures are implemented.
- The employer must exercise due diligence in the selection of the qualified person. This is especially necessary if the person being engaged does not hold a certification or other proof of training.

POP QUIZ!!!

Who decides what risk category a specific job falls under?

POP QUIZ!!!!!

THE QUALIFIED PERSON

POP QUIZ!!!

Who conducts the risk assessment and creates the exposure control plan?

THE QUALIFIED PERSON

POP QUIZ!!!

Who decides what equipment and work procedures are needed and used?

THE QUALIFIED PERSON

POP QUIZ!!!

Who is responsible when it all goes sideways and the sh*t hits the fan?

THE EMPLOYER

(usually)

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Resources

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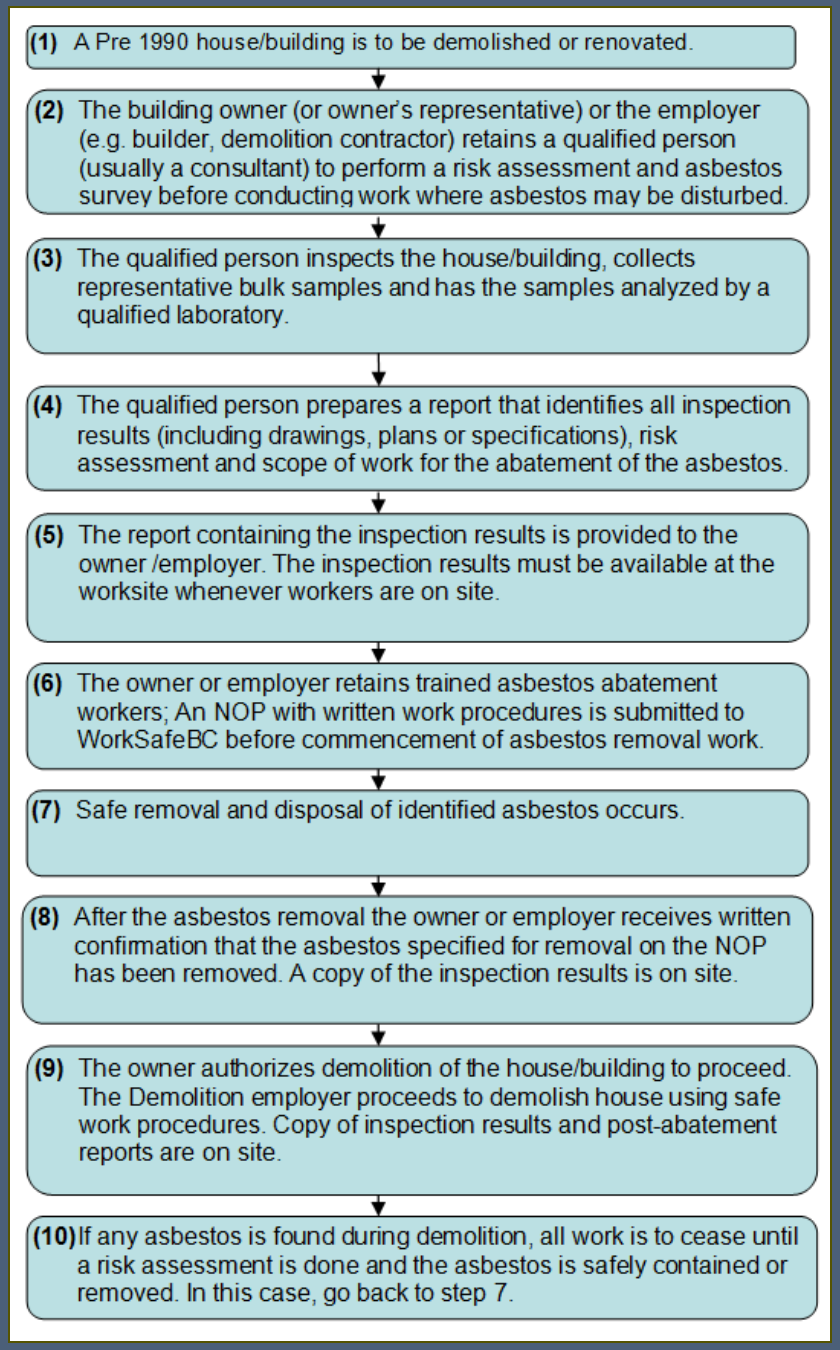

Ten Steps to Compliance with asbestos abatement requirements of section 20.112 for a pre-1990 house/ building demolition

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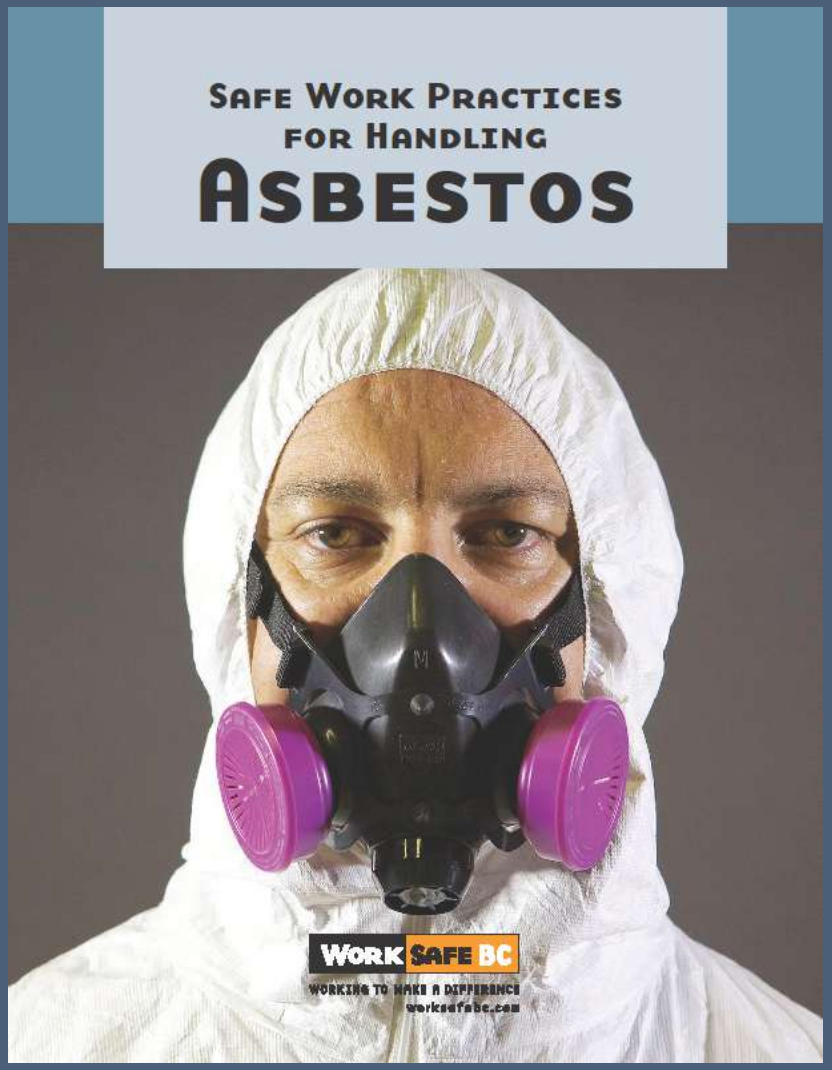

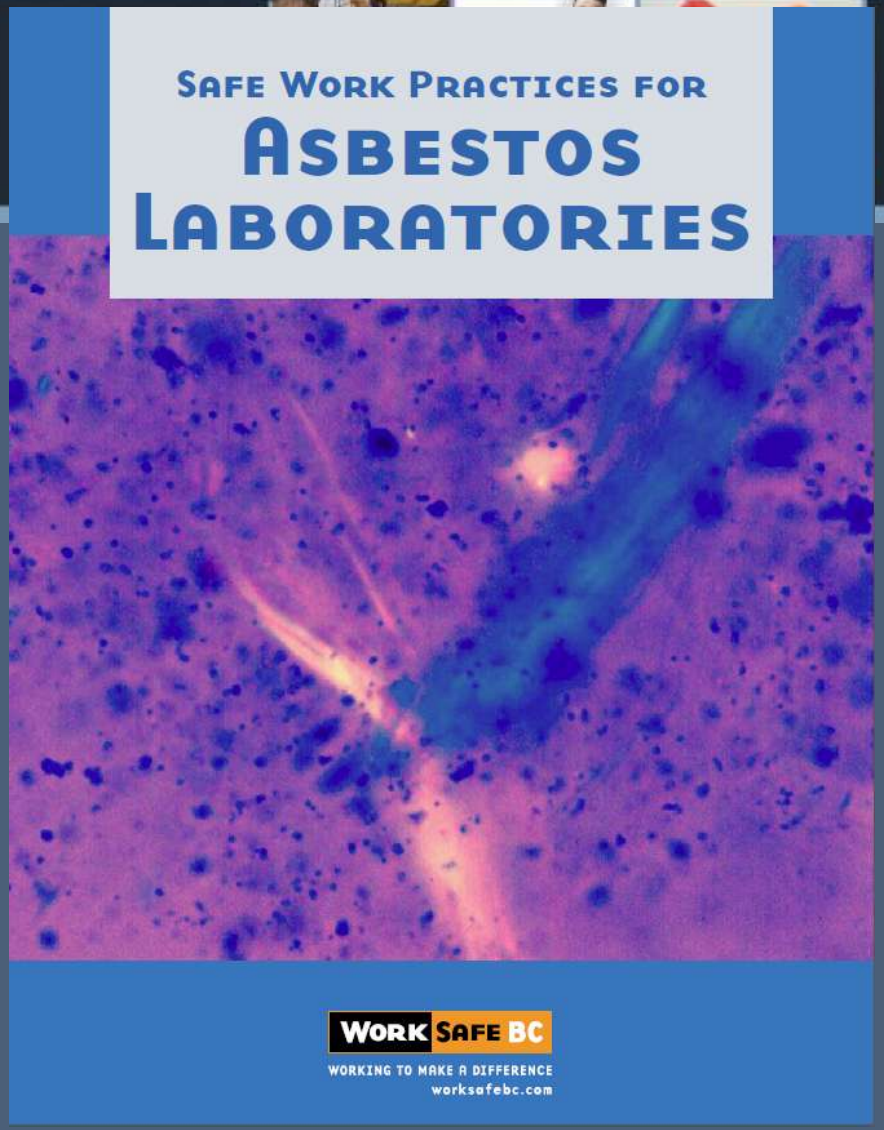

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2. Asbestos hazards when renovating older homes, PH71, WorkSafeBC
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DEFINITIONS

GENERAL REQUIREMENTS

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CONCRETE FORMWORK AND FALSEWORK

Guidelines Part 20 - Demolition

G20.112 Hazardous materials - Asbestos

Issued June 18, 2008

Regulatory excerpt

Section 20.112 of the *OHS Regulation* ("*Regulation*") states:

> Before work begins on the demolition or salvage of machinery, equipment, buildings or structures, the employer or owner must
>
> (a) inspect the site to identify any asbestos, lead, or other heavy metal or toxic, flammable or explosive materials that may be handled, disturbed or removed,
>
> (b) have the inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances,
>
> (c) ensure that any hazardous materials found are safely contained or removed, and
>
> (d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

Purpose of guideline

Demolition and salvage work involve the taking apart and destruction, in whole or in part, of buildings, structures, equipment, and machinery. These processes have the potential to create harmful exposures to hazardous materials. *Regulation* section 20.112 names several types of hazardous materials which must be identified and either safely contained or safely removed prior to demolition or salvage work. Asbestos is one of these materials.

The purpose of this guideline is to explain the hazards associated with the uncontrolled release of asbestos. It also provides

WorkSafeBC Bulletins – Dangers of Asbestos in Houses

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WORKSAFE BULLETIN

The dangers of exposure to asbestos in vermiculite attic insulation

A demolition worker was exposed to asbestos when he punched a hole in the ceiling of a house and was "showered" with vermiculite insulation from the attic. The worker was not wearing a respirator. The vermiculite insulation contained 1 to 3 percent asbestos that was not identified when the home was originally tested for asbestos.

What is vermiculite?

Vermiculite is a mica-like mineral that was used as insulation in many houses and commercial buildings (sometimes marketed as "zonolite") between 1920 and the early 1990s. When heated, it expands like "popcorn" into a loose, lightweight material that is absorbent, fireproof, and a good insulator. Much of this vermiculite contained some asbestos when it was originally mined.

If your house is more than 15 years old and insulated with vermiculite, the insulation may contain asbestos.

Vermiculite insulation

How do I find out if the vermiculite insulation in my house contains asbestos?

You can have a sample of the insulation collected and sent to a laboratory for testing. ***You should not do this yourself***—have the sample collected by a qualified surveyor or consultant, experienced in conducting asbestos hazard assessments. Ask to see his or her qualifications ***before*** any samples are collected.

The amount of asbestos in vermiculite is small (typically 1 to 3 percent) and can be difficult to detect. Samples should be sent only to laboratories that use proper testing methods for vermiculite. A qualified consultant will know which laboratories can accurately test vermiculite samples.

Asbestos fibres from vermiculite insulation

Should I be worried about my health if I have vermiculite insulation in my house?

Asbestos in vermiculite insulation is only a health hazard if the vermiculite is disturbed and the asbestos becomes airborne. There is no real risk if the vermiculite is sealed behind walls or isolated in an attic. However, inhalation of asbestos fibres can cause mesothelioma (a fatal cancer of the lining of the lungs or other organs), lung cancer, or asbestosis (a permanent scarring of the lungs that restricts breathing).

Typical vermiculite insulation in an attic

Page 1 of 2

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WORKSAFE BULLETIN

Are you exposing your family to deadly asbestos fibres?

During the renovation of a kitchen, a contractor removed asbestos-containing linoleum flooring without taking any precautions. Asbestos dust drifted throughout the house, and family members were exposed to the asbestos fibres. The entire house had to be decontaminated.

What is asbestos?

Asbestos is a potentially deadly fibrous mineral that's very tough and resistant to chemicals and heat. Up until 1990, it was regularly used in ceiling texture, drywall mud, flooring, and attic insulation. If these materials are disturbed (such as when they are drilled, sawed, sanded, or broken up during renovations or demolition), workers and family members can breathe in asbestos fibres. If people breathe in enough asbestos fibres, their lungs can suffer permanent damage, and they may get lung cancer.

Asbestos-containing vermiculite attic insulation

How do I find out if my house contains asbestos?

Have samples of suspected building products collected and sent to a laboratory for testing. **You should not do this yourself**. Have the samples collected by a qualified surveyor or consultant who is experienced in conducting asbestos hazard assessments. Ask to see his or her qualifications **before** any samples are collected. Remember, all asbestos—including hidden asbestos—must be identified!

Asbestos fibres in vermiculite attic insulation

How do I protect myself and my family?

For safety, all asbestos-containing materials must be removed by workers trained in asbestos removal and wearing protective clothing and a respirator. Unless you're trained and qualified, don't try it yourself. You are responsible if unprotected workers are exposed to asbestos while working in your home!

It is the homeowner's responsibility to check the qualifications of the asbestos consultant and the abatement or demolition contractors **before** any work involving asbestos begins.

Protected worker removing asbestos flooring

For more information

For information on asbestos in houses, go to WorkSafeBC.com and search for *asbestos*.

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Questions?