



## HEALTH RISKS OF ASBESTOS

### The Issue

Asbestos was a popular material used widely in construction and many other industries. If asbestos fibres are enclosed or tightly bound in a product, for example in asbestos siding or asbestos floor tiles, there are no significant health risks. Asbestos poses health risks only when fibres are present in the air that people breathe.

### Background

Asbestos is the generic name for a variety of fibrous minerals found naturally in rock formations around the world. Because asbestos fibres are strong, durable and non-combustible, they were widely used by industry, mainly in construction and friction materials. Commercial asbestos fibres belong in two broad mineralogical groups: serpentine (chrysotile) and amphibole (tremolite, actinolite and others).

- Amphibole asbestos often contains more iron and resists acid and extremely high temperatures. Because of this, it has been heavily used in industrial furnaces and heating systems. However when inhaled, amphibole fibres stay much longer in the lungs than chrysotile fibres and they are more likely to inflict damage and cause disease, including cancer. Accordingly, amphibole asbestos has been drastically controlled and largely replaced.
- Chrysotile is the only serpentine asbestos that is found in almost all asbestos-based products available today and is the main form of asbestos still mined. Chrysotile is different from the amphiboles both structurally and chemically. It is generally accepted that chrysotile asbestos is less potent and does less damage to the lungs than the amphiboles.

How much asbestos is in a product does not indicate its health risk. If the asbestos fibres are enclosed or tightly bound in a compound, there is no significant health risk. One of the main problems with asbestos came from sprayed or "friable" (easily broken up) amphibole asbestos used in buildings until the 1970s. People working in construction, maintenance or in the renovation of older buildings should be particularly careful when handling this asbestos.

### Sources of Asbestos

#### Occupational

The risks are greatest for workers in industries which produce and use asbestos, such as mining and milling. In the past, workers in these environments were exposed to 100 - 1,000 times more asbestos than today's workers. Today's strict standards limit workers' exposure and the ban of most uses of amphibole asbestos have reduced the risks.

During renovations and repairs to older buildings, construction workers, tradespeople and other building maintenance workers may be exposed to very high concentrations of asbestos fibres. The environment and work methods of these occupations are more difficult to control than fixed workplaces, but most tradespeople are trained in the proper handling of asbestos-containing materials.

#### Environmental

Negligible levels of asbestos fibres are found in the soil, water and air, both naturally and from man-made sources. Asbestos concentrations in the air in rural areas are about ten times lower than those in larger cities, which are about 1,000 times lower than levels accepted in today's asbestos-related jobs. With such low exposure, environmental risks are negligible.



Due to natural erosion, high concentrations of chrysotile asbestos fibres may be found in some raw water supplies. Conventional water treatment methods can substantially reduce asbestos levels and there is no evidence that swallowed chrysotile fibres are a health hazard.

### Buildings and Homes

Because it is a valuable reinforcing, insulating and fire-proofing material, asbestos was used widely in construction materials such as insulation board, asbestos cement, and floor and ceiling tiles. These products are very dense and do not release significant amounts of fibres under normal use. However, fibres may be released if these products are cut or damaged.

Asbestos fibre concentrations in the air in buildings are usually about the same as in the air outside, and are not a significant risk. However, levels may be higher if friable asbestos materials are disturbed.

There is also concern about vermiculite insulation which may contain small amounts of amphibole asbestos, principally tremolite or actinolite. These amphibole fibres may cause health risks if disturbed. However, there is currently no evidence of risk to your health if the insulation is sealed behind wallboards and floorboards, isolated in an attic, or otherwise kept from exposure to the home or interior environment.

## The Health Risks of Asbestos

Asbestos poses health risks only when fibres are present in the air that people breathe. How exposure to asbestos can affect you depends on:

- the concentration of asbestos fibres in the air

- how long the exposure lasted
- how often you were exposed
- the size of the asbestos fibres inhaled
- the amount of time since the initial exposure.

When inhaled in significant quantities, asbestos fibres can cause asbestosis (a scarring of the lungs which makes breathing difficult), mesothelioma (a rare cancer of the lining of the chest or abdominal cavity) and lung cancer. The link between exposure to asbestos and other types of cancers is less clear.

Smoking, combined with inhaled asbestos, greatly increases the risk of lung cancer.

## Minimizing Your Risk

Construction and maintenance workers should avoid creating asbestos dust from scraping, brushing, rubbing or cutting damaged insulation. Insulation damage should be reported to the appropriate authority, such as the Occupational Health and Safety Manager. If you work in this area, determine whether asbestos is present before beginning work and take appropriate precautionary measures.

Public and commercial building owners should keep an inventory of asbestos-containing materials to inform users, authorities and contractors.

Homeowners should receive expert advice before removing materials that may contain asbestos. If you think your home may contain asbestos, check regularly for signs of wear or damage. However, you can't always tell just by looking at a material. If in doubt, have it analyzed by a qualified professional, who can be found by looking up experts in "asbestos abatement /removal".

If you must handle small amounts of damaged asbestos-containing materials, follow these steps.

- Keep other people and pets away, and seal off the work area.
- Wet the material to reduce dust, making sure it is not in contact with electricity.
- If possible, do not cut or damage the materials further and do not break them up.
- Clean the work area afterwards using a damp cloth, not a vacuum cleaner, and seal the asbestos waste and cloth in a plastic bag. Check with your local municipality on how to dispose of asbestos-containing waste.
- Wear appropriate protective clothing, including a single-use respirator approved by the National Institute for Occupational Safety and Health (NIOSH).
- Wash or dispose of clothing and shower after finishing the job.

## Government of Canada's Role

Health Canada has encouraged provincial occupational health authorities to adopt stringent workplace exposure limits for asbestos. The sale of pure asbestos and certain high risk consumer products that are composed of or contain asbestos fibres is strictly regulated under the Hazardous Products Act. In addition, the emissions of asbestos into the environment from mining and milling operations are subject to the Canadian Environmental Protection Act



## Need More Info?

For more information on asbestos and vermiculite visit, the following Web sites:

It's Your Health article Vermiculite Insulation Containing Asbestos at:  
[http://www.hc-sc.gc.ca/iyh-vsv/prod/insulation-isolant\\_e.html](http://www.hc-sc.gc.ca/iyh-vsv/prod/insulation-isolant_e.html)

Health Canada's Home Insulation Web site at:

[http://www.hc-sc.gc.ca/cps-spc/house-domes/decor/construct/vermiculite/index\\_e.html](http://www.hc-sc.gc.ca/cps-spc/house-domes/decor/construct/vermiculite/index_e.html)

The Canada Mortgage and Housing Corporation publication About Your House, Asbestos at:

[http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose\\_ce03.cfm](http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_ce03.cfm)

Natural Resources Canada publication on Chrysotile Asbestos at:

[http://www.nrcan.gc.ca/mms/pdf/chry\\_e.pdf](http://www.nrcan.gc.ca/mms/pdf/chry_e.pdf)

Health Canada's Consumer Product Safety Web site at:

[http://www.hc-sc.gc.ca/cps-spc/index\\_e.html](http://www.hc-sc.gc.ca/cps-spc/index_e.html)

To report a product-related death or injury, or a safety-related issue with a consumer product contact your local Regional Product Safety Office at:

[http://www.hc-sc.gc.ca/cps-spc/contact/index\\_e.html](http://www.hc-sc.gc.ca/cps-spc/contact/index_e.html)

Health Canada's Environmental Contaminants Web site at:

[http://www.hc-sc.gc.ca/ewh-semt/contaminants/index\\_e.html](http://www.hc-sc.gc.ca/ewh-semt/contaminants/index_e.html)

US Environmental Protection Agency's Asbestos Web site at:

<http://www.epa.gov/asbestos/index.html>

Agency for Toxic Substances and Disease Registry (ATSDR) at:

<http://www.atsdr.cdc.gov/>

For information on general safety tips and guidelines for working with different types of insulation and other materials, visit:

Natural Resources Canada publication, Keeping the Heat In, Chapter II, Part IV, Health and Safety

Considerations at:

[http://oee.nrcan.gc.ca/keep\\_heat\\_in/chapter\\_2/chapter\\_2\\_4.cfm?PrintView=N&Text=N](http://oee.nrcan.gc.ca/keep_heat_in/chapter_2/chapter_2_4.cfm?PrintView=N&Text=N)

For specific information on safety precautions and acceptable respirator masks when working with asbestos, go to:

Canadian Centre for Occupational Health and Safety (CCOHS)

Respirator page

Tel: 1-800-263-8466

(toll-free in Canada and USA)

<http://www.ccohs.ca/oshanswers/prevention/ppe/respslct.html>

For more information on workplace safety, visit the Workplace Hazardous Materials Information System (WHMIS) Web site at:

[http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/index\\_e.html/index.htm](http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/index_e.html/index.htm)

For additional articles on health and safety issues go to the It's Your Health Web site at:

[www.healthcanada.gc.ca/iyh](http://www.healthcanada.gc.ca/iyh)

You can also call toll free at

1-866-225-0709

or TTY at 1-800-267-1245\*