

Asbestos: towards zero exposure

Asbestos-related disease is the single largest cause of work-related death in Canada.

Researchers at the Institute for Work & Health estimate the yearly cost of lung cancer and mesothelioma caused by asbestos exposure in Canada is \$2.35 billion (based on 2011 cancer statistics). Researchers say these estimates are conservative. Seventy-one per cent of accepted occupational cancer fatality claims in Ontario from 1997 to 2010 were the direct result of exposure to asbestos.

More shocking still, most asbestos-related illnesses and deaths are never reported to or recognized by compensation systems. Affected workers and their families suffer in silence and die, often unaware their illness was caused by workplace exposure decades earlier.

For asbestos-related diseases, the time between initial exposure and the diagnosis of illness is often between 10 and 50 years. Asbestos use peaked in the 1970s and continued into the 1980s, before its use was strictly regulated in Canada. It's no surprise then we are experiencing an asbestos-related disease epidemic. Many predict this suffering is far from subsiding.

What is asbestos?

Asbestos is a naturally occurring fibrous mineral categorized into two main types:

- **Chrysotile** asbestos fibers are curly and form together as spirals. Also known as serpentine and white asbestos, this type was widely used and is the most common found in buildings today.
- **Amphibole** asbestos fibers are straight and needle-like. There are several types of these fibers, including amosite (brown asbestos) and crocidolite (blue asbestos).

These fibres have been used over the years to manufacture thousands of asbestos containing materials (ACMs). These items range from floor tiles and thermal/electrical insulation to automotive brakes and cement pipes.

How are workers (and others) exposed?

Most ACMs were used in the construction of homes, hospitals, schools, apartment buildings, office towers and other structures built from the 1930s through the 1980s. They were

also used in ships, aircraft, railway cars and vehicles.

As associated health hazards became more widely recognized, workers, their representatives and many others mobilized for its control, and eventual ban. Many manufacturers were also motivated by the need to limit legal liability. The production and use of ACM here and in other developed countries decreased accordingly and significantly.

Consequently, health risks to workers, their families and others today mostly relates to the deterioration, maintenance, removal, renovation and other sources of agitation in buildings constructed prior to 1990.

Canada also mined and exported asbestos to developing nations until the Quebec government cancelled a loan in 2012 destined to prop up the industry.

The mere presence of ACM in a workplace or building may not pose a risk to health. However, if ACMs are disturbed, microscopic fibres can be released into the air. When inhaled they can become trapped in the lungs where, over time, these fibers can accumulate and lead to serious health issues.

Asbestos containing materials fit into two categories that relate to the risk of fibres becoming airborne — friable and non-friable.

Friable ACM is easily crumbled, pulverized or powdered by hand pressure. Though friable asbestos products are now banned in Canada, they remain prevalent in older buildings. Examples include:

- insulation on steam pipes and mechanical systems including boilers, heaters and vessels,
- sprayed fireproofing material on ceilings, walls, beams and other structural supports, and
- sprayed acoustical soundproofing and decorative material.

For **non-friable ACM**, asbestos fibres are bound by cement, vinyl or other material and cannot be reduced to powder or dust by hand. These materials, however, **can become friable when agitated** by cutting, grinding, sanding or some other mechanical force. They can also become friable through normal wear and tear as materials break down over time or as a result of demolition.

Examples include:

- reinforced cement products including roofing, shingles, sheet walls and panels,
- cement moulded products (pipes),
- floor tiles, the backing on vinyl sheet flooring, and adhesives used for installing floor tile, and
- automobile brake pads and linings, clutch mechanisms and other friction products.

Who is exposed?

More than 152,000 Canadians are regularly exposed to asbestos in their workplace — 52,000 in Ontario. The 2017 *Burden of Occupational Cancer in Ontario* report found occupational exposure to asbestos is estimated to cause each year 630 lung cancers, 140 mesotheliomas, 15 laryngeal cancers and about 5 ovarian cancers.

The largest at-risk group are those in construction-related trades as well as workers who perform demolition, asbestos abatement and remediation along with regular maintenance, repair and renovation work in older commercial, industrial, institutional and residential buildings.

Workers in shipyards and power plants, auto mechanics, along with teachers, health care workers, maintenance personnel, custodians, firefighters and others working in older buildings are also at risk.

Family members and others can be exposed if fibres collected on workers' clothing are transported to the family car or home.

What are the specific risks to health?

The International Agency for Research on Cancer (IARC), **classifies all forms of asbestos as Group 1 substances, or, "carcinogenic to humans."**

Symptoms and the onset of disease can occur 10, 20, even 50 years after initial exposure — commonly known as a latency period.

An indicator that harmful asbestos exposure has occurred is the development of **pleural plaques**. Affected workers may not experience symptoms, but scarring within the lining of the lungs can be visible through x-rays and CT scans.



Information Bulletins for health, safety and environmental representatives

RESOURCE LINES

Asbestosis is caused when fibres lodge in the lungs and result in scarring and inflammation. Symptoms can include shortness of breath, coughing, excess phlegm and fatigue.

This disease is progressive and reduces lung function. It is irreversible and can be fatal. It can also contribute to other fatal illnesses.

Exposure to asbestos fibres can increase the risk of developing **lung cancer**.

Mesothelioma is a rare and deadly cancer of the lining of the lung or the abdominal cavity almost exclusively caused by asbestos.

Studies have also found evidence linking asbestos exposure with various other cancers including **larynx and laryngeal cancers**, along with **stomach, ovary, gastrointestinal and colorectal cancers**.

Is there any safe level of exposure?

The World Health Organization (WHO), a body of the United Nations, says unequivocally there is **no safe level of exposure to asbestos**. The United States government's Occupational Safety and Health Administration (OSHA) is among many other organizations which comes to the same conclusion.

Health Canada has updated its health information with, "The Government of Canada recognizes that breathing in asbestos fibres can cause cancer and other diseases." Ontario occupational health and safety law still allows workers to be exposed.

What to do if asbestos exposure is suspected?

If you work in a building or structure built prior to 1990 assume ACM is present.

Speak to a supervisor or employer along with the joint health and safety committee (JHSC) or worker representative. Assumptions must be confirmed or denied. All workers in Ontario have the right to know if asbestos is present in the workplace.

All workers in Ontario also have the right to refuse work they believe is likely to endanger their immediate or long term health or that of another worker (some workers do have restrictions on this right).

How is asbestos/ACM regulated?

As of December 30, 2018 under regulations passed by the Canadian government, Canada joins over 55 countries that have banned the import, use, sale, manufacture and export of asbestos and products with asbestos. The regulations however maintain exclusions for asbestos use including for a chlor-alkali plant until 2029, military equipment and nuclear facilities and reuse of mining residues and road materials.

In Ontario, among many general duties, the *Occupational Health & Safety Act (the Act)* requires employers and supervisors to identify workplace hazards and take every precaution reasonable in the circumstances for the protection of a worker.

Asbestos and ACM is regulated under *the Act* through two regulations: Regulation 490/09 *Designated Substances* and Regulation 278/05 *Asbestos on Construction Projects and in Buildings and Repair Operations*.

Regulation 490/09 calls on employers to take all necessary measures and procedures by means of engineering controls, work practices and hygiene facilities and practices to ensure that a worker's airborne exposure to asbestos is reduced to the lowest practical level and does not exceed 0.1 fibres per cubic centimeter of air (f/cc). Studies show even this allowable exposure level will lead to a lifetime toll of five excess lung cancer deaths and two asbestosis deaths per 1,000 exposed workers. The employer must accomplish this without requiring workers to wear and use respiratory equipment, except during emergency or other special circumstances. Where this is necessary the employer must provide the worker with training on the care and use of the equipment.

Regulation 278/05 is applicable to construction projects along with existing buildings and structures. It does not address allowable exposure limits. Instead, it deals with asbestos detection, work procedures, control measures and protective equipment required for work involving potential exposure to ACM in buildings and construction projects. The regulation requires the classification of work involving ACM (or suspected ACM) according to risk of exposure for workers and others nearby. Each classification triggers specific obligations for owners/occupants/constructors/employers. These classifications include:

- Type 1 represents low risk in terms of scale and potential airborne fibres.
- Type 2 represents medium risk which may exceed allowable exposure levels.
- Type 3 represents larger scale operations and significant risk for airborne fibres beyond allowable exposure levels.

These obligations can include documenting and reporting (to the Ministry of Labour) those workers involved in this work (Type 2 and 3) along with instruction and training for workers carrying out asbestos operations. This training must be delivered by a "competent person" as defined by *the Act*. There are additional training requirements for workers and supervisors working in a Type 3 operation.

Building owners have additional duties including preparing and maintaining an "ongoing asbestos management plan" (O. Regulation 278/05). Examples of actions required in this plan include:

- preparing a record clearly outlining the location of all friable and non-friable ACMs,
- updating this record at least once in every 12-month period or when new information becomes available, and
- sharing these records with building occupants, employees and those performing work onsite.

What else can be done?

Saskatchewan is the only province with a public asbestos registry. Reporting is mandatory for buildings owned by the provincial government, health regions, crown corporations and facilities used as public schools.

In 2016, the federal government published an inventory of buildings owned or leased by Public Services and Procurement Canada and the [Government of Canada](#) which indicates whether or not they contain asbestos. Buildings containing asbestos are required to have an asbestos management plan.

To address a host of asbestos legacy issues many are calling for a national asbestos strategy with strong enforcement measures and coordination among all levels of government. Such a strategy could inform exposure prevention measures and would include: creation of registries for exposed workers and buildings containing asbestos; establishment of an expert review panel to examine issues related to legacy asbestos; new mechanisms to effectively regulate safe disposal; and support for the just transition to safe alternatives for asbestos.

NOTE: To help workplace parties better understand this deadly workplace hazard, related health and safety laws, necessary controls and additional exposure oversight tools, the WHSC offers an Asbestos hazard awareness program. For more details call 1-888-869-7950 and ask to speak to a training services representative.



Published by the
Workers Health & Safety Centre
675 Cochrane Drive
Suite 710, East Tower
Markham, Ontario L3R 0B8
Tel: 416-441-1939
Fax: 416-441-1043
Toll free: **1-888-869-7950**
Web site: www.whsc.on.ca

Executive Director:
Dave Killham

Director, Information Services:
Loretta Michaud

Editor:
Ellen Simmons

Submissions are encouraged.
Reproduction is permitted, provided the source is acknowledged and a copy sent to the Director, Information Services.

 facebook.com/WHSCtraining

 twitter.com/WHSCtraining

 linkedin.com/company/WHSCtraining

 youtube.com/WHSCtraining