



Asbestos

Burden of Occupational Cancer Fact Sheet for Construction



Asbestos testing

WHAT IS ASBESTOS?

Asbestos is **a group of naturally occurring, fibrous silicate minerals**. It has historically been useful for many construction applications because of its heat resistance, tensile strength, and insulating characteristics. It is found primarily in roofing, thermal and electrical insulation, cement pipe and sheets, flooring, gaskets, coatings, and other products.

The Government of Canada banned most uses of asbestos and asbestos-containing products in 2018. However, the vast majority of exposures that occur today are due to contact with older asbestos-containing products. Asbestos may be encountered during the maintenance, renovation, and modification of existing public, residential, and commercial buildings.

The International Agency for Research on Cancer classifies asbestos as a **known carcinogen** (IARC 1).

WHAT ARE ITS HEALTH EFFECTS?

- Mesothelioma (a cancer of the protective lining of many internal organs)
- Lung, laryngeal, and ovarian cancer
- Asbestosis (scar tissue in the lungs)

THE BURDEN OF CANCER FROM WORKPLACE EXPOSURE TO ASBESTOS IN CANADA

The term 'burden' refers to the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) associated with a cause or group of causes of disease.

470
Lung cancers due to workplace asbestos exposure in construction

Approximately 1,900 lung cancers and 430 mesotheliomas are attributed to occupational exposure to asbestos each year in Canada, based on past exposure (1961-2001). Of these, approximately **470 lung cancers** and **100 mesotheliomas** are estimated to occur among workers in the construction industry.

WHAT IS THE ECONOMIC IMPACT?

Work-related asbestos exposure in the construction industry resulted in approximately **\$572 million in costs for newly diagnosed lung cancer and mesothelioma cases** in 2011.

This includes approximately:

- 65% in health-related quality of life losses
- 8% in direct costs including health care, out of pocket expenses, family care giving, and workers' compensation administration
- 27% in indirect costs including output and productivity losses

\$572 million
Estimated yearly cost of lung cancer and mesothelioma due to workplace asbestos exposure in construction

CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO ASBESTOS*

Inhalation is the most common route of occupational exposure to asbestos. Approximately 134,000 Canadians are exposed to asbestos in construction.

Occupations with the largest number of exposed workers in construction include:

- **Carpenters and cabinetmakers** (34,000 people exposed)
- **Construction trades helpers and labourers** (28,000 exposed)
- **Electricians** (17,000 exposed)

**Note: CAREX Canada estimates of exposure were not used to develop the burden of occupational cancer estimates for asbestos.*

HOW CAN EXPOSURE BE REDUCED?

The Canadian government banned most uses of asbestos in 2018. However, asbestos still exists in many public buildings, workplaces, and homes. Exposure can be reduced or eliminated by safely removing all existing asbestos-containing materials from buildings and workplaces before it deteriorates. A public registry of all public buildings and workplaces that contain asbestos can inform the public and workers about where there may be risk of exposure. For more details, visit the [OCRC exposure controls webpage](#).

CONSTRUCTION INDUSTRY IN CANADA

In 2016, the construction sector employed 1.4 million workers. The sector is comprised of establishments that construct, repair, and renovate buildings and engineering works, and subdivide and develop land.

ABOUT THE BURDEN OF OCCUPATIONAL CANCER STUDY

The Burden of Occupational Cancer Study quantified the number of cancers that are caused by exposure to carcinogens in the workplace in order to identify priority areas for prevention. It was a collaboration between researchers at OCRC, CAREX Canada, the Institute for Work & Health (who led the economic analyses), University of British Columbia, Université de Montréal, Institut de recherche Robert-Sauvé en santé et en sécurité du travail, and Imperial College London.



For more information, please visit OCRC at www.occupationalcancer.ca or CAREX Canada at www.carexcanada.ca.

This fact sheet was produced by CAREX Canada in partnership with OCRC. The Burden of Occupational Cancer Study was led by OCRC and is supported by the Canadian Cancer Society. CAREX Canada is hosted at Simon Fraser University and supported by the Canadian Partnership Against Cancer. Acknowledgments for header photos: KOMUnews, Chris RubberDragon, Asbestos Testing, Jimmy Johnson (NAVFAC).



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Crystalline Silica

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WHAT IS SILICA?

Crystalline silica is a **naturally occurring mineral found in soil, sand, and rocks**. Work processes such as breaking, grinding, cutting, drilling or sawing these materials releases crystalline silica dust into the air. Workplace exposure to crystalline silica is common in several trades due to its presence in many handled materials such as concrete, mortar, and brick, and its use in processes such as sandblasting.

The International Agency for Research on Cancer classifies crystalline silica as a **known carcinogen (IARC 1)**.

WHAT ARE ITS HEALTH EFFECTS?

- Lung cancer
- Silicosis (thickening and scarring of the lungs)
- Chronic obstructive pulmonary disease (COPD)
- Rheumatoid arthritis
- Tuberculosis

THE BURDEN OF LUNG CANCER FROM WORKPLACE EXPOSURE TO SILICA IN CANADA

The term ‘burden’ refers to the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) associated with a cause or group of causes of disease.

320
Lung cancers due to workplace silica exposure in construction

Approximately 570 lung cancers are due to occupational exposure to crystalline silica each year in Canada, based on past exposures (1961-2001). Of these, approximately **320 lung cancers** are estimated to occur among workers in the construction industry.

WHAT IS THE ECONOMIC IMPACT?

Work-related silica exposure in the construction industry resulted in approximately **\$314 million in costs for newly diagnosed lung cancer cases** in 2011.

- This includes approximately:
- 66% in health-related quality of life losses
 - 7% in direct costs including health care, out of pocket expenses, family caregiving, and workers’ compensation administration
 - 27% in indirect costs including output and productivity losses

\$314 million
Estimated yearly cost of lung cancer due to workplace silica exposure in construction

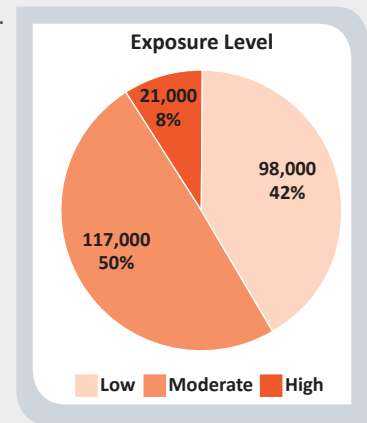
CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SILICA

Inhalation is the most common route of occupational exposure to crystalline silica. Approximately 236,000 Canadians are exposed to silica in construction.

Occupations with the largest number of exposed workers in construction include:

- **Construction trades helpers and labourers** (89,000 people exposed)
- **Masonry and plastering trades** (66,000 exposed)
- **Heavy equipment operators** (23,000 exposed)

Results show the majority of workers exposed to crystalline silica in construction are in the moderate exposure level category (see pie chart on right). To learn more about how these exposure levels are defined, visit the [CAREX Canada website](#).



HOW CAN EXPOSURE BE REDUCED?

For some applications, silica can be replaced with safer materials. For example, garnet or high-pressure water can be used instead of sandblasting with silica. Other control strategies include eliminating processes that generate silica, implementing local exhaust ventilation, and using wet sweeping, cutting, and drilling methods. For more details, visit the [OCRC exposure controls webpage](#).

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Solar Radiation

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WHAT IS SOLAR RADIATION?

Solar radiation is the **main natural source of exposure to ultraviolet radiation**. Levels of exposure vary depending on geography, seasonality, time of day and meteorology, as well as time spent out of doors and the amount of skin exposed. Any construction work that takes place outdoors can result in exposure to solar radiation.

The International Agency for Research on Cancer classifies solar radiation as a **known carcinogen (IARC 1)**.

WHAT ARE ITS HEALTH EFFECTS?

- Skin cancer
- Sunburns
- Heat stress/stroke
- Thick, scaly skin patches
- Cataracts
- Eye lesions and cancer

THE BURDEN OF CANCER FROM WORKPLACE EXPOSURE TO SOLAR RADIATION IN CANADA

The term 'burden' refers to the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) associated with a cause or group of causes of disease.

1,100
Skin cancers due to workplace sun exposure in construction

Approximately 4,600 non-melanoma skin cancers are due to occupational solar radiation each year, based on past exposures (1961-2001). Of these, approximately **1,100 non-melanoma skin cancers** are estimated to occur among workers in the construction industry.

WHAT IS THE ECONOMIC IMPACT?

Work-related exposure to solar radiation in the construction industry resulted in approximately **\$7.89 million in costs for newly diagnosed non-melanoma skin cancer cases** in 2011.

- This includes approximately:
- 17% in health-related quality of life losses
 - 58% in direct costs including health care, out of pocket expenses, family caregiving, and workers' compensation administration
 - 25% in indirect costs including output and productivity losses

\$7.89 million
Estimated yearly cost of skin cancer due to workplace sun exposure in construction

CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SOLAR RADIATION

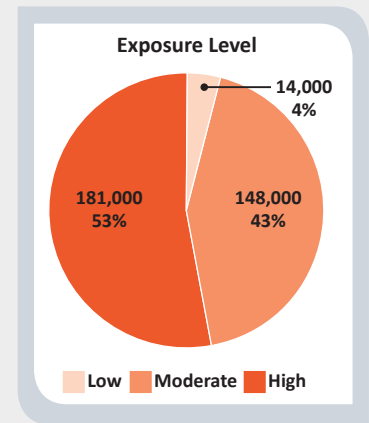
Exposure to solar radiation can occur via skin or eyes.

Approximately 343,000 Canadians are exposed to solar radiation in construction.

Occupations with the largest number of exposed workers in construction include:

- **Construction trades helpers and labourers** (100,000 people exposed)
- **Carpenters and cabinetmakers** (53,000 exposed)
- **Heavy equipment operators** (46,000 exposed)

Results show the majority of workers exposed to solar radiation in construction are in the high exposure level category, with a significant number at risk for moderate exposure (see pie chart on right). To learn more about how these exposure levels are defined, visit the [CAREX Canada website](#).



HOW CAN EXPOSURE BE REDUCED?

Providing shade is the best way to protect workers from solar UV radiation. Other controls include modifying reflective surfaces, tinting windows on vehicles, and minimizing time spent in the sun during peak UV hours (11am – 3pm). Sun Safety at Work Canada provides resources on how workplaces can develop and implement sun safety programs. For more details, visit the [OCRC exposure controls webpage](#).

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