



Crystalline Silica

Burden of Occupational Cancer Fact Sheet for Construction



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

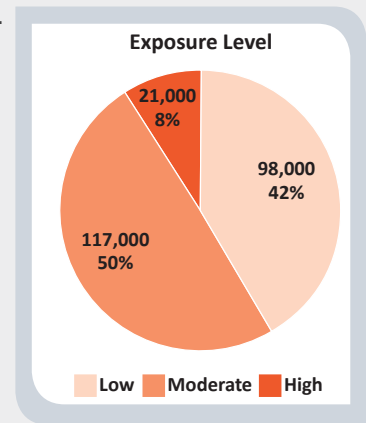
CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SILICA

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](#).

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.

