



Crystalline Silica

Burden of Occupational Cancer Fact Sheet for Mining



WHAT IS SILICA?

Silica is a **naturally occurring mineral found in soil, sand, and rocks**. Mining processes such as drilling, crushing, or blasting these materials releases crystalline silica dust into the air. Silica has long been recognized as a hazard in the mining industry.

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.

80
Lung cancers caused by silica exposure in mining

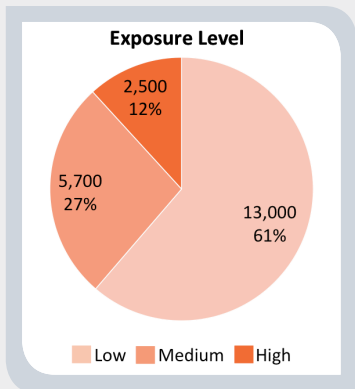
Results show that approximately 570 lung cancers are attributed to occupational exposure to crystalline silica each year in Canada, based on 2011 cancer statistics. Of these, approximately **80 lung cancers** are estimated to occur among workers in the mining industry.

CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SILICA

Inhalation is the most important route of occupational exposure to silica. Approximately 21,000 Canadians are exposed to silica in mining. Occupations with the largest number of exposed workers in mining include:

- **Heavy equipment operators** (6,500 exposed)
- **Underground production and development miners** (5,100 exposed)
- **Supervisors, mining and quarrying** (2,400 exposed)

Results show the majority of workers exposed to crystalline silica are in the low exposure level category, with a significant number at risk for moderate to high 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?

Silica-related cancers can be prevented by reducing the number of workers exposed and ensuring that the levels of exposures are as low as reasonably achievable (ALARA). Organizations should evaluate the risk of exposure in the workplace and implement the hierarchy of controls to address the safety needs of workers.

MINING INDUSTRY IN CANADA

In 2006, the mining and oil and gas extraction industry employed approximately 240,000 workers. For the purpose of this fact sheet, the mining industry is defined broadly to include all of underground and surface mining, quarrying, oil and gas extraction, as well as support workers for these activities.

ABOUT THE BURDEN OF OCCUPATIONAL CANCER STUDY

The Burden of Occupational Cancer Study aims to quantify the number of cancers that are caused by exposure to carcinogens in the workplace in order to identify priority areas for prevention. It is a collaboration between researchers at OCRC, CAREX Canada, the Institute for Work & Health, 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.

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