



# Crystalline Silica

## Burden of Occupational Cancer Fact Sheet



### WHAT IS SILICA?

Silica is a **naturally occurring mineral found in soil, sand, and rocks**. Work processes such as breaking, grinding, 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.

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

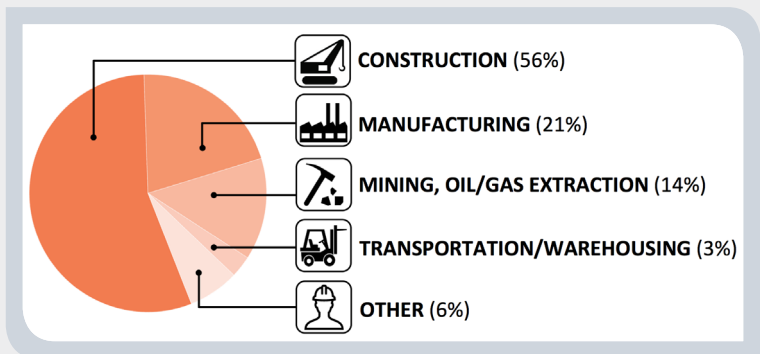
The term 'burden' refers to the human impact (deaths, illness, years of life lost) and the economic costs (health care, productivity) associated with a cause or group of causes of disease.

**570**  
Lung cancers caused by workplace silica exposure

Preliminary results show that approximately **570 lung cancers** are attributed to occupational exposure to crystalline silica each year in Canada, based on 2011 cancer statistics. This amounts to **2.4% of lung cancer cases** diagnosed annually.

### WHAT WORKERS ARE MOST AFFECTED?

Most occupational lung cancers associated with crystalline silica occur among workers in the **construction sector** (see pie chart on right). These cancers also occur among workers in the manufacturing, mining and oil and gas extraction, and transportation and warehousing sectors. Some of the other sectors affected include wholesale trade, public administration, and utilities.



## CAREX CANADA ASSESSMENT OF OCCUPATIONAL EXPOSURE TO SILICA

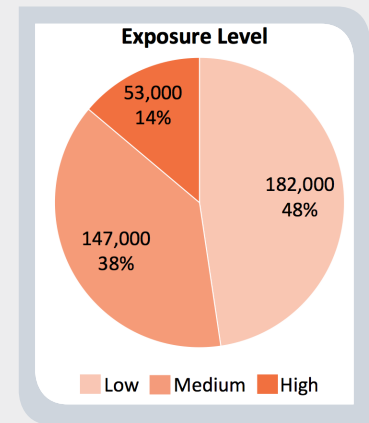
Inhalation is the most important route of occupational exposure to silica. Approximately 380,000 Canadians are exposed to silica at work.

Industries with the largest number of exposed workers in Canada include:

- **Specialty trade contractors** (141,000 people exposed)
- **Building construction** (65,000 exposed)
- **Heavy and civil engineering construction** (31,000 exposed)

Occupations with the largest number of exposed workers include:

- **Construction trades helpers and labourers** (105,000 exposed)
- **Heavy equipment operators** (41,000 exposed)
- **Plasterers and drywallers** (34,000 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 above). 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.

## 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](http://www.occupationalcancer.ca) or CAREX Canada at [www.carexcanada.ca](http://www.carexcanada.ca).

This fact sheet was produced by OCRC and CAREX Canada. The Burden of Occupational Cancer Study is led by the 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: Chris RubberDragon, Wyliepoon.

