

# Dangers of Breathing Silica Dust

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## Potential Hazard

Silica is the basic component of sand and rock. The best known and most abundant type of crystalline silica is quartz. Materials that commonly contain silica include:

- concrete, concrete block, cement and mortar
- masonry, tiles, brick and refractory brick
- granite, sand, fill dirt and top soil
- asphalt-containing rock or stone
- abrasive used for blasting.

Silica is so common that any workplace activity that creates dust can expose workers to airborne silica.

## Exposure to Silica Dust

If you do any of the following activities, you are at risk of breathing silica dust:

- chipping, sawing, grinding, hammering or drilling of rock, concrete or masonry structures
- crushing, loading, hauling or dumping of rock
- many building demolition processes
- power cutting or dressing stone
- façade renovation, including tuck-point work
- abrasive or hydro blasting of concrete
- clean-up activities, e.g., dry sweeping or pressurized air blowing of concrete or sand dust
- tunneling, excavation or earth moving of soils with high silica content.



## What is Silicosis?

Silicosis is a disease caused by the prolonged breathing of crystalline silica dust. Fine particles deposited in the lungs cause thickening and scarring of lung tissue. Crystalline silica exposure can also cause lung cancer.

## Symptoms

Initially, workers with silicosis may have no symptoms. However, as the disease progresses, a worker may experience shortness of breath, severe cough and weakness. These symptoms can worsen over time and lead to death.

## How to Control the Hazard

To protect workers, employers should:

- change the material – substitute crushed glass, olivine or other material for silica sand in abrasive blasting
- change the process – design buildings with pre-built recesses for plumbing, gas and electrical wiring to reduce the need to cut or drill masonry and concrete

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### SAFE Work Manitoba contact information:

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- provide engineering controls – use local exhaust ventilation or water spray systems to reduce dust levels; use barriers to restrict access by unprotected workers
- provide personal protective equipment (PPE), such as respirators and protective clothing
- train workers on silica exposure dangers and on using dust control measures and PPE
- develop and implement an exposure control plan; an effective plan must include purpose and responsibilities, risk assessment, controls, education, training, written safe work procedures, washing or decontamination facilities, health surveillance and documentation (see [Fibrogenic Dust Exposure – Worker’s Medical Screening Guideline, 2018](#)).

Workers who are exposed to silica dust should take the following measures:

- Learn about control measures that can protect them.
- Ask their supervisors how they will be protected when performing dusty work.
- Follow safe work procedures and use respiratory protection.
- Talk to their family doctor, who may recommend health surveillance.

### Exposure Limits in Manitoba

In Manitoba, the occupational exposure limit is 0.025 milligrams per cubic metre (mg/m<sup>3</sup>), which is the maximum amount of airborne concentration of crystalline silica to which workers may be exposed during an eight-hour work shift and 40-hour work week, over the course of the worker’s lifetime. Since crystalline silica is also classified as a human carcinogen, as far as reasonably practicable, exposures must be kept as close as possible to zero.

An effective plan to mitigate worker exposure to silica could include an assessment of risk (in some instances, air monitoring activities to ascertain airborne concentrations and allow for the selection of adequate and appropriate control measures), health hazard identification provided to workers, implementation of engineering controls and personal protective equipment, development of safe work procedures, worker training, health surveillance and record-keeping.

Employers can use the sample exposure control plans (see link below) as templates to develop their own plans, and add specific details regarding safe work practices for their operations. It is important to follow all the points outlined in the sample plans or use equally effective measures.

### More Information

- [SAFE Work Manitoba – Occupational Disease and Illness Prevention Strategy](#)
- [WorkSafeBC – Developing a Silica Exposure Control Plan](#)
- [CCOHS – Chemical Profile - Silica](#)
- [CAREX – Canada Lung Carcinogen Package](#)

### References to legal requirements under workplace safety and health legislation:

- Chemical and Biological Substances: Manitoba Regulation 217/2016 - Part 36
- Personal Protective Equipment: Manitoba Regulation 217/2006 - Part 6

Additional workplace safety and health information available at [safemanitoba.com](http://safemanitoba.com)

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