

## Exposure to Silica Dust

### What is Silica?

Silica is a common mineral found in soil, sand, and rock. Construction work sites use a variety of industrial processes that subject workers to dust that contains fine silica particles. Materials that commonly contain silica include:

- concrete, cement, and mortar;
- masonry, tiles, and brick;
- granite, sand, and top soil;
- asphalt that contains rock or stone; and
- abrasives used for blasting.



*Figure 1—Silica dust resulting from cutting concrete blocks*

### What is Silicosis?

Silicosis is a disease caused by the prolonged breathing of silica dust. Fine dust particles, deposited in the lungs, act as tiny blades causing thickening and scarring of lung tissue. Initially, workers with silicosis may have no symptoms, however, as the disease progresses a worker may experience shortness of breath, severe cough and/or body weakness. Evidence suggests that overexposure to silica dust can also result in lung cancer.

### Are You Exposed to Silica Dust?

The American Conference of Governmental Industrial Hygienists (ACGIH) is a private, scientific association that publishes guidelines for Threshold Limit Values (TLVs), which are the safe levels of exposure to chemical and physical substances found in workplaces.

The maximum exposure limit, as prescribed by the ACGIH, to which workers may be exposed during an eight-hour work shift, is 0.025 mg/m<sup>3</sup>.

Performing any of the following activities increases the risk of silica dust exposure:

- chipping, sawing, grinding, hammering or drilling of rock, concrete or masonry structures;
- excavation, crushing, loading, hauling or dumping of soil or rock;
- building demolition processes;
- cutting asphalt that contains rock or stone;
- power cutting or dressing stone;
- abrasive use or hydroblasting of concrete; and/or
- clean up activities, e.g., dry sweeping or pressurized air blowing of concrete or sand dust.

## Reduce the Risk

The key to preventing silica related illness is to eliminate the dust from getting into the workplace air. If elimination is not possible, an effective plan to reduce worker exposure to silica should include an assessment of risk, awareness training provided to workers, worker health surveillance, and record keeping. To further protect workers the following controls should be considered:

- Develop and follow safe work procedures.
- Use a less hazardous material – replace silica sand in abrasive blasting with crushed glass, garnet, olivine, or other material.
- 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.
- Use exhaust ventilation or water spray systems to reduce dust levels.
- Enclose work areas and restrict access by unprotected workers.
- Reduce the need for grinding rough concrete by creating a smoother surface while pouring.
- Use hand tools equipped with dust control solutions.
- Provide personal protective equipment (PPE), such as respirators, eye wear, and protective clothing.



*Figure 2—Silica dust exposure after 3 minutes of drilling.*



*Figure 3 – Using hand tools equipped with dust control solutions*

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*If you have questions on this or any workplace safety topic, contact WCB Occupational Health & Safety at 902-368-5680 or toll free 1-800-237-5049, or visit our website at [wcb.pe.ca](http://wcb.pe.ca).*