

Five Steps to Safer Mining

Silica dust can harm health

Silica is the most common mineral in the earth. When miners drill, process or crush rock that contains crystalline silica, small dust particles become airborne. When inhaled, these particles can travel deep into the lungs and increase the risk of developing serious diseases including:

- Silicosis (an incurable and sometimes deadly lung disease)
- Tuberculosis (TB)
- Silicotuberculosis — a combination of silicosis and TB
- Lung cancer
- Chronic obstructive pulmonary disease (COPD) and other potentially debilitating respiratory diseases
- Kidney disease

Workers exposed to silica dust have about twice the risk of coming down with TB and individuals with silicosis have approximately four times greater risk for active TB disease.

In most cases, these diseases occur after years of exposure to silica dust. More miners suffer and die from silica dust-related diseases than from accidents

How are you exposed to silica dust?

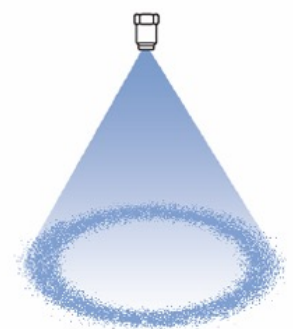
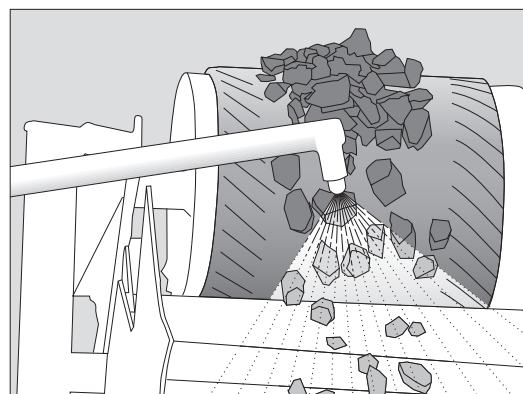
Disturbing rock or soil will release silica dust particles. Exposure to silica dust is unavoidable in mining when using drills, jackhammers, crushers, grinders and even when using handheld manual tools to break rock. Very high dust exposures also come from dry milling and crushing machines used to process ore.

Simple steps to reduce silica dust exposure

1. Reduce dust exposures with the use of wet methods.

Wet rock surfaces while drilling or breaking rock. Water spray systems that generate a fine mist can be used to trap dust particles that impact with small water droplets. Wet milling creates much less dust than dry milling.

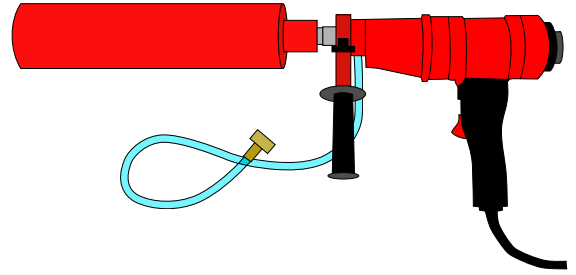
Reductions in respirable dust from stone crushing and grinding mills can be accomplished through enclosures or containment (to confine the dust) combined with water spray systems. Water spray systems are generally less expensive than dust collection systems and do not require electricity.



When blasting rock, wet down the entire area before initiating the blast!

2. Use electric drills instead of pneumatic drills.

Using electric drills with similar size drill bits greatly reduces respirable silica dust, noise, and vibration. Both types of drills offer very similar productivity. It is also preferable to use a wet core drill that injects water along with air and the water brings the pulverized material out of the cut.



3. Keep drill bits very sharp.

Dull drill bits are associated with higher levels of respirable silica dust and noise.

4. Increase distance from the source of dust and increase waiting periods after blasting rock to allow the dust to settle.

If electricity is available, ventilation can be used to move dust away from workers with the exhaust air going outside the work area

5. Wear a respirator, change clothing before going home, and wash frequently!

- Use a half-face or full-face rubber mask with a P3 or NIOSH N/R/, or P-100 HEPA particulate filter to provide effective protection.
- Ensure that respirators are properly fitted, appropriately maintained, equipped with replacement filters (when necessary), and approved for use (with U.S. NIOSH or European CE mark). In addition, to ensure a tight facial seal, you cannot have a beard or mustache. Workers should have a physical exam and pulmonary function test to ensure that they can safely work while wearing a respirator.
- Change into clean clothes before leaving your worksite.
- Wash hands and face before eating and before going home.



Note: These silica dust control measures will also reduce exposures to lead, cadmium, cobalt, arsenic and other harmful metals contained in ore.

Mercury Hazards

If you are using mercury for gold ore processing, NEVER store or heat mercury in your home or in your kitchen. Mercury-free methods for gold ore processing can often extract more gold!



Learn more about safer mining at Occupational Knowledge International
okinternational.org/mining