

## Complying with OSHA's Respirable Crystalline Silica Standards

*Adapted from Information by the  
Occupational Safety and Health Administration*

According to the Occupational Safety and Health Administration (OSHA), crystalline silica is a common mineral found in the earth's crust. Sand, stone, concrete, and mortar all contain crystalline silica. When workers drill into materials containing crystalline silica, or use industrial sand, they can be exposed to very small silica dust particles, known as respirable crystalline silica dust.

These particles can travel deep into workers' lungs and cause silicosis, an incurable and sometimes deadly lung disease. Respirable crystalline silica also causes lung cancer, other respiratory diseases such as chronic obstructive pulmonary disease (commonly known as COPD), and kidney disease.

Some rigs are equipped with dust-collecting equipment which includes a movable duct attached to a capture hood or shroud around the drill bit. A flexible rubber skirt encloses the drill hole opening and captures cuttings coming through the hole. Dust pulled from inside the shroud is fed through a flexible duct to primary and secondary filters. The primary filter, or dust separator, typically has a self-cleaning back pulse feature to dump the collected particles to the ground. Secondary releases into the air can be minimized with a low-flow water spray at the discharge point.

An alternative to using a dust-collection system is operator isolation in an enclosed cab or booth, along with applying water to the drill bit during cutting to reduce dust.

Drill operators using vehicle-mounted rigs with enclosed cabs can reduce their silica exposure by staying inside the cab during drilling. The cab must:

- Be well sealed and well-ventilated using positive pressure.
- Have door jambs, window grooves, power line entries, and other joints which work properly and are tightly sealed.
- Have heating and air conditioning so operators can keep windows and doors closed.
- Use an intake air filter with a minimum MERV-16 rating (at least 95% in the 0.3-10.0µm, or micrometer, range).
- Be kept free from settled dust by regular cleaning and maintenance to prevent dust from becoming airborne inside the enclosure.

When properly used, dust collection systems and operator isolation can effectively control exposure to silica dust.



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*Epiroc's SB series hydraulic breaker attachments come standard with an internal water port for dust suppression, a feature that can assist in compliance with OSHA final silica rule dust regulations.*

*Photo courtesy of Epiroc USA.*

OSHA's Respirable Crystalline Silica standard requires employers to limit worker exposures to respirable crystalline silica. Among other things, the standard requires employers to:

- Assess employee exposure to silica to see if it is at, or above an action level of 25 µg/m<sup>3</sup> (micrograms of silica per cubic meter of air), averaged over an 8-hour day;
- Protect workers from exposures above the permissible exposure limit (PEL) of 50 µg/m<sup>3</sup>, averaged over an 8-hour day;
- Limit access to areas where workers could be exposed above the PEL;
- Use dust controls to protect workers from exposures above the PEL;
- Provide respirators when dust controls cannot limit exposure;
- Use housekeeping methods which do not create airborne dust, if feasible;
- Establish and implement a written exposure control plan identifying tasks involving exposure and methods used to protect workers;
- Offer medical exams - including chest X-rays

and lung function tests - every three years for workers exposed at, or above the action level for 30 or more days per year;

- Train workers on work operations resulting in silica exposure and ways to limit exposure;

- Keep records of exposure measurements, objective data, and medical exams.

**General industry employers must comply with the standard's requirements by June 23, 2018**, except for hydraulic fracturing operations, which has until June 23, 2021, to comply with all of the standards. Between June 23, 2018, to June 23, 2021, hydraulic fracturing employers can continue to have employees use respirators when exposures exceed the PEL.

For more information on OSHA's Respirable Crystalline Silica standard visit:

[www.osha.gov/dsg/topics/silicacrystalline/index.html](http://www.osha.gov/dsg/topics/silicacrystalline/index.html)

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