

Silica

Hazard Alert



One of the most dangerous kinds of dust you can breathe is crystalline silica. Silica is in sand, rock, masonry, concrete, and some paints. (Quartz is silica.) You can be exposed to silica when you work with these materials in abrasive blasting, cutting/sawing, jackhammering, grinding, drilling, crushing, or dry sweeping – or during demolition of concrete or masonry structures.

The Hazards

In the lungs, silica can cause **silicosis**, which scars air sacs and keeps oxygen from getting in the blood. Silicosis can cause shortness of breath. Sometimes it can kill you. And it increases your chance of getting tuberculosis (TB) and lung cancer. Many industrial countries have restricted the use of silica sand for sandblasting.

Silicosis usually takes about 20 years to develop, but you can get it after 5 to 10 years; it depends on how much silica you are exposed to and if you are protected. Or you can get silicosis after a few weeks if you work in thick clouds of crystalline silica and you are not protected. (This happened to tunnel workers who cut through hard rock and were not protected.) You can be in danger even if you do not *see* dust. Silicosis can get worse years after you are away from the dust.

What You Can Do

- **Wet down dry materials and surfaces before you work with them** or before you sweep them. Use equipment with water sprays. Or use a HEPA vacuum. This will cut down on the dust.
- **Use local exhaust ventilation** to reduce airborne dust where it originates.
- **For abrasive blasting, replace silica sand with safer materials or use safer methods.** The U.S. government's National Institute for Occupational Safety and Health (NIOSH) says do not use sand or any abrasive with more than 1% crystalline silica in it. Specular hematite (iron oxide) may be a safer substitute. (A study by NIOSH found hematite was less toxic than some other substitutes.) But if you use some slags or steel grit, you may be exposed to some toxic metals. Because there is silica in concrete and some paints, even if you don't use sand for abrasive blasting on them, you can be exposed to silica. Wet blasting methods can reduce exposures to silica.
- **When doing abrasive blasting, you need to use a type CE abrasive blasting respirator** (positive pressure/pressure demand, with an APF of 1,000 or 2,000). This respirator provides air from outside the blasting area. **Respirators must not be the main way you reduce exposures.** Effective engineering controls and air sampling must be done during the work to ensure the controls are working. Use only a **NIOSH-approved respirator** (If a respirator is NIOSH-approved, chemical cartridges, particulate filters, and the box it comes in will say "NIOSH." Self-contained breathing apparatus will have a NIOSH label on the backpack.)

(Please turn the page.)

- **When drilling in rock that *may* contain silica, you may need a respirator.** The type of respirator you need will depend on the silica concentration levels. Wet methods will help reduce exposures.

- **If you need a respirator, OSHA says you must have a full respiratory protection program.** This means correct selection and fitting of respirators, medical clearance of workers for fitness to wear a respirator, and worker training to use the respirators. Correct storage and cleaning of respirators and an evaluation of the program are also needed. Your employer must have a written safety-and-health program too.

- **Do not eat, drink, or smoke near silica.** Wash your hands before you eat, drink, or smoke.

- **Change out of your work clothes before you go home.** This limits the dust you and your family are exposed to.

OSHA has rules about levels of silica (and other dusts). For more information, call your local union, the National Institute for Occupational Safety and Health (1-800-35-NIOSH or www.cdc.gov/niosh), OSHA (1-800-321-OSHA or www.osha.gov), or the Center to Protect Workers' Rights (CPWR) (301-578-8500 or www.cpwr.com). (CPWR has free hazard alerts on *Safe Work with Power Saws* and *Air-Purifying Respirators* – in English or Spanish.) Or go to www.elcosh.org.

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