

Protection from Silica

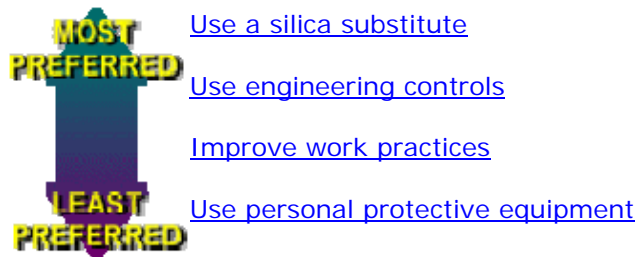


Taking Action to Protect Against Silica

Now that I know there is a hazard of silica at my work, what do I do?

You must implement the best possible permanent solution to reducing or eliminating the hazard. If such a solution cannot be enacted immediately, then you are required to implement a temporary control to protect your workers until the permanent solution is put in place.

The following solutions are listed in order of preference. (Depending on the work site a higher choice may actually be less effective.):



Note that all of these options may serve as a permanent solution if necessary. Yet the ones toward the bottom serve well as temporary controls and the ones toward the top serve best as permanent controls.

OSHA's [FREE Consultation Services](#) can provide a more thorough evaluation of your situation and help you decide which measures are best.

Remember: All workers breathing crystalline silica dust should have a medical examination that includes:

- Chest X-ray (classified according to the 1980 International Labour Office).
- Classification of Radiographs of Pneumoconioses.
- Pulmonary function test.
- Annual evaluation for TB (tuberculosis).

NIOSH provides a list of [doctors certified in interpreting X-rays](#) and silicosis diagnosis.

Silica Substitutes

The most sure way to eliminate the silica hazard is to eliminate the silica!

This is especially important for sandblasters, where the abrasive blasting is often done outside and in different locations, making it impossible to install an engineering control. The most severe silica exposures occur in abrasive blasting. See the article [Stop Silicosis in Sandblasters](#).

Eliminating the silica means using a different, safer material in place of the silica-containing substance. It is true that in some cases it is not possible to use a substitute in place of silica, but for many operations, such as abrasive blasting, there are many possible substitutes, including those below.

Alumaglass™	Garnet	Starblast XL™
Aluminum Oxide	Glass Beads	Steel Grit
Aluminum Shot	Melamine Plastic	Steel Shot
Ambient Polycarbonate	Novaculite	Urea Plastic
Armex™	PC+™	Visigrit™
Apricot Pits	Polycarbonate	Walnut Shells
Corn Cobs	Silicon Carbide	Wheat Grain
Cryogenic Polycarbonate	Stainless Cast Shot	White Aluminum Oxide
Emery	Stainless Cut Wire	Zircon

Advantages

Complete elimination of any health hazard related to silica
 Eliminates the need to implement or maintain engineering controls
 These substances are not as dense as silica products which makes them easier to transport
 They can be moved from job site to job site

Disadvantages

May be slightly more expensive than silica products*
 These substances are generally not as hard as silica products which may mean more is needed to do the job

*Using a substitute can still be cheaper in the long run when you add the cost of engineering controls or protective equipment needed to combat the silica hazard. Check out the [cost-comparison example](#) and the [NIOSH study](#).

Engineering Controls

Keep silica out of the air

If silica products must be used, OSHA requires engineering controls to be used wherever possible. This type of control involves a mechanical process to eliminate exposure to silica dust. Some of these controls may be very simple, as can be seen in the examples below:

Install a water hose to wet down the dust at the point of generation
 Install local exhaust ventilation
 During rock drilling, flow water

Install dust collection systems onto machines or equipment that generates dust
 Use concrete/masonry saws that provide water to the blade

through the drill stem

Advantages

If working properly will eliminate the potential hazard
Must be installed only once
Requires little training of workers
Places no physical burden on workers

Disadvantages

Can be expensive to implement
Requires routine maintenance

There are specific controls recommended for certain types of operations, such as [abrasive blasting](#) and [foundry work](#).

Once installed, engineering controls must be [properly operated and maintained](#).

Work Practices

What employees can do to reduce silica intake

If workers know about silica and understand the severity of its health hazard, they will be more likely to do the following:

Know which work operations can lead to silica exposure
Participate in any air monitoring or training programs offered by the employer
If possible, change into disposable or washable work clothes at the worksite; shower (where available) and change into clean clothing before leaving the worksite.
Do not eat, drink, use tobacco, products, or apply cosmetics in areas where there is dust containing crystalline silica.

Wash your hands and face before eating, drinking, smoking, or applying cosmetics outside of the exposure area.
If using respirators, do not alter the respirator in any way.
Use type CE positive pressure abrasive blasting respirators for sandblasting
For other operations where respirators may be required, use a respirator approved for protection against crystalline silica-containing dust.
If using tight-fitting respirators do not grow beards or mustaches

Advantages

They can reduce the chance for exposure.
They may be cheaper in the short run.

Disadvantages

They require training of all new employees.
They require employees to use the practices appropriately.
They require monitoring of employees at workers.

Personal Protective Equipment

A good option as a temporary control. The last choice as a permanent control.

Personal protective equipment against silica includes respirators and masks. Respirators should be used only when the dust controls cannot keep dust levels below the NIOSH Recommended Exposure Level.

There are many types of respirators, from air-purifying to air-supplying and from a nose and mouth covering to a full body respirator. You can receive guidance on selecting a respirator from:

[OSHA's Respiratory Protection Safety & Health Topics page](#)

The OSHA ventilation standard ([1910.94](#)) contains specific respiratory protection requirements for abrasive blasting operations.

Advantages

- They can reduce the chance for exposure.
- They may be cheaper in the short run.
- Useful as a temporary control while the long term solution is being implemented.

Disadvantages

- They require training of all new employees.
- They require employees to use the equipment appropriately.
- They require setting up a formal PPE program to validate their proper use.
- They require monitoring of all the PPE to insure proper maintenance.
- They can be a health hazard by themselves.