What You Need to Know About OSHA's New Silica Rule

On March 25, 2016, OSHA published a final rule which requires employers to limit worker exposure to respirable crystalline silica and to take other steps to protect workers. The new permissible exposure limit (PEL) of 50 µg/m3 (micrograms of respirable crystalline silica per cubic meter of air) as an 8-hour time-weighted average in all industries covered by the rule.

What is crystalline silica and why should I be concerned?

Crystalline silica is a natural component of the earth's crust and is a basic component of sand, quartz, and granite rock. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.

Occupational exposure to respirable crystalline silica occurs when cutting, sawing, drilling, and crushing of concrete, brick, ceramic tiles, rock, and stone products. Occupational exposure also occurs in operations that process or use large quantities of sand, such as foundries and the glass, pottery and concrete products industries.

Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs' ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.

What are the symptoms of silicosis?

Silicosis is classified into three types: chronic/classic, accelerated, and acute.

- **Chronic/classic silicosis**, the most common, occurs after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.
- **Accelerated silicosis** can occur after 5–10 years of high exposures to respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.
- **Acute silicosis** occurs after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

Silicosis is not curable, but it is preventable.

Workplace Safety

ACS
ACS-SAFETY.COM

What are the new OSHA requirements?

OSHA issued two separate standards, one for Construction and the other for General Industry (and Maritime), in order to allow employers to tailor solutions to the specific conditions in their workplaces.

General Industry

The standard requires General Industry employers to:

- **Measure** the amount of silica that workers are exposed to if it may be at or above **an action level of 25 µg/m^3**, averaged over an 8-hour day.
- Protect workers from respirable crystalline silica exposures above the **PEL of 50 µg/m^3**, averaged over an 8-hour day.
- **Limit workers' access** to areas where they could be exposed above the PEL.
- Use **dust controls** to protect workers from silica exposures above the PEL.
- Provide **respirators** to workers when dust controls cannot limit exposures to the PEL.
- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available.
- Establish and implement a **written exposure control plan** that identifies tasks that involve 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 that result in silica exposure and ways to limit exposure.
- **Keep records** of workers' silica exposure and medical exams.

Construction Industry

The construction standard does not apply where exposures will remain low under any foreseeable conditions; for example, when only performing tasks such as mixing mortar; pouring concrete footers, slab foundation and foundation walls; and removing concrete formwork.

The standard provides flexible alternatives, especially useful for small employers. Construction employers can either use a control method, or they can measure workers' exposure to silica and independently decide which dust controls work best to limit exposures to the PEL. Regardless of which exposure control method is used, all construction employers covered by the standard are required to:

- Establish and implement a **written exposure control plan** that identifies tasks that involve exposure and methods used to protect workers, including procedures to restrict access to work areas where high exposures may occur.
- **Designate a competent person** to implement the written exposure control plan.
- Restrict **housekeeping** practices that expose workers to silica where feasible alternatives are available.

- Offer **medical exams** (including chest X-rays and lung function tests) every three years for workers who are required by the standard to wear a respirator for 30 or more days per year.
- **Train workers** on work operations that result in silica exposure and ways to limit exposure.
- **Keep records** of workers' silica exposure and medical exams.

What can employers/employees do to protect against exposures to crystalline silica?

- Replace crystalline silica materials with safer substitutes, whenever possible.
- Provide engineering or administrative controls, where feasible, such as local exhaust ventilation, and blasting cabinets. Where necessary to reduce exposures below the PEL, use protective equipment or other protective measures.
- Use all available work practices to control dust exposures, such as water sprays.
- Wear only a N95 NIOSH certified respirator, if respirator protection is required. Do not alter the respirator. Do not wear a tight-fitting respirator with a beard or mustache that prevents a good seal between the respirator and the face.
- Wear only a Type CE abrasive-blast supplied-air respirator for abrasive blasting.
- Wear disposable or washable work clothes and shower if facilities are available. Vacuum the dust from your clothes or change into clean clothing before leaving the work site.
- Participate in training, exposure monitoring, and health screening and surveillance programs to monitor any adverse health effects caused by crystalline silica exposures.
- Be aware of the operations and job tasks creating crystalline silica exposures in your workplace environment and know how to protect yourself.
- Be aware of the health hazards related to exposures to crystalline silica. Smoking adds to the lung damage caused by silica exposures.
- Do not eat, drink, smoke, or apply cosmetics in areas where crystalline silica dust is present. Wash your hands and face outside of dusty areas before performing any of these activities.

Timetable for Compliance

Employers must comply with most of the requirements within five years of the final rule's effective date of June 23, 2016. The schedule for compliance is:

- Construction – Employers must comply with all requirements by June 23, 2017 with the exception of methods of sample analysis (final compliance date June 23, 2018).
- General Industry and Maritime – Employers must comply with all requirements by June 23, 2018 with the exception of medical surveillance for employees exposed at or above the action level for 30 or more days a year (final compliance - June 23, 2020).
- Hydraulic Fracturing – Employers must comply with all requirements of the standard by June 23, 2018. However, employers have an additional three years (June 23, 2012) to meet the engineering control requirements.

Remember: If it's silica, it's not just dust.