

Regulatory Compliance

Crystalline Silica Q&A: What Is It and How Will It Affect You?

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Background and Health Impacts

Q: What is crystalline silica?

Crystalline silica is a common mineral found in many naturally occurring materials and used in many industrial products and at construction sites. Materials like sand, concrete, stone and mortar contain crystalline silica. Crystalline silica is also used to make products such as glass, pottery, ceramics, bricks, concrete and artificial stone. Industrial sand used in certain operations, such as foundry work and hydraulic fracturing (fracking), is also a source of crystalline silica exposure. Amorphous silica, such as silica gel, is not crystalline silica.

Q: How can exposure to crystalline silica affect workers' health?

Inhaling very small ("respirable") crystalline silica particles causes multiple diseases, including silicosis, an incurable lung disease that can lead to disability and death. Respirable crystalline silica also causes lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease.

Q: Who is at risk from exposure to crystalline silica?

Around 2.3 million workers are exposed to crystalline silica on the job. Simply being near sand or other silica-containing materials is not hazardous. The hazard exists when specific activities create respirable dust that is released into the air.

Respirable crystalline silica — very small particles typically at least 100 times smaller than ordinary sand found on beaches or playgrounds — is generated by high-energy operations like cutting, sawing, grinding, drilling and crushing stone, rock, concrete, brick, block and mortar; or when using industrial sand. Activities such as abrasive blasting with sand; sawing brick or concrete; sanding or drilling into concrete walls; grinding mortar; manufacturing brick, concrete blocks, or ceramic products; and cutting or crushing stone generates respirable dust.

Q: What is the relationship between silica exposure and lung cancer?

There is strong scientific evidence showing that exposure to respirable crystalline silica can increase a person's risk of developing lung cancer. The World Health Organization's International Agency for Research on Cancer — the leading international voice on cancer causation — and the National Institutes of Health's National Toxicology Program have conducted extensive reviews of the scientific literature and have designated crystalline silica as a known human carcinogen. The American Cancer Society has adopted the WHO and NIH's determinations.

More than 50 peer-reviewed epidemiological studies that OSHA evaluated for this rulemaking have examined the link between silica exposure and lung cancer in at least 10 industries. In particular, several studies of workers in specific industrial sectors support the link between exposure to respirable crystalline silica and lung cancer among workers.

Q: How does the crystalline silica rule protect workers' health?

The new rule requires that employers use engineering controls — such as ventilation and wet methods for cutting and sawing crystalline silica-containing materials — to reduce workers' exposure to silica dust. Once the full effects of the rule are realized, OSHA expects it to prevent 600 deaths a year from silica-related diseases — such as silicosis, lung cancer, other respiratory diseases and kidney disease — and to prevent more than 900 new cases of silicosis each year.

Source: https://www.osha.gov/dsg/topics/silicacrystalline/additional_info_silica.html

Read more about the change in the OSHA Silica Standard here:

[OSHA's Silica Standards: Don't Let Enforcement Delay Slow Your Prep](#)

Rule Requirements

Q: How can silica exposures be controlled to keep exposure at or below the PEL?

- Employers must use engineering controls and work practices as the primary way to keep exposures at or below the PEL.
- Engineering controls include wetting down work operations or using local exhaust ventilation (such as vacuums) to keep silica-containing dust out of the air and out of workers' lungs. Another control method that may work well is enclosing an operation ("process isolation").
- Examples of work practices to control silica exposures include wetting down dust before sweeping it up or using the water flow rate recommended by the manufacturer for a tool with water controls.
- Respirators are only allowed when engineering and work practice controls cannot maintain exposures at or below the PEL.

For construction, the standard includes Table 1, a list of common construction tasks along with exposure control methods and work practices that work well for those tasks and can be used to comply with the requirements of the standard.

Q: Why can't silica-exposed workers just wear respirators all the time?

Respirators are not as protective as engineering controls, and they aren't always as practical either. Unless respirators are selected for each worker, individually fitted and periodically refitted, and regularly maintained, and unless filters and other parts are replaced as necessary, workers will continue to be exposed to silica. In many cases, workers using only respirators would also have to wear more extensive and expensive protection. Even when respirators are selected, fitted, and maintained correctly, they must be worn consistently and correctly by workers to be effective. Respirators can also be uncomfortable, especially in hot weather, and cannot be used by some workers.

Q: What is Table 1: "Specified Exposure Control Methods When Working with Materials Containing Crystalline Silica"?

Table 1 is a flexible compliance option that effectively protects workers from silica exposures. It identifies 18 common construction tasks that generate high exposures to respirable crystalline silica and for each task, specifies engineering controls, work practices, and respiratory protection that effectively protect workers. Employers who fully and properly implement the engineering controls, work practices, and respiratory protection specified for a task on Table 1 are not required to measure respirable crystalline silica exposures to verify that levels are at or below the PEL for workers engaged in the Table 1 task.

OSHA developed Table 1 in response to stakeholders in the construction industry, who indicated the need for guidance and a standard that is different than a standard for general industry. Among the concerns of construction industry stakeholders were the impracticality of exposure monitoring based on short duration of task and constantly changing conditions, such as weather, job sites and materials.

Q: Are the air sampling methods used to detect and measure silica reliable?

Yes, worker exposures to silica at the new PEL and action level can be reliably measured using existing sampling and analytical methods. Moreover, to improve reliability of silica measurements, employers must ensure that their silica samples are analyzed by laboratories that meet the qualifications and use methods specified in Appendix A of the standard.

- OSHA has carefully reviewed the available science and expert testimony contained in the rulemaking record on the ability of modern sampling and analytical methods to reliably measure respirable crystalline silica at the new PEL and action level.
- Published OSHA, NIOSH, and MSHA methods for analyzing respirable crystalline silica are able to measure concentrations at the new PEL and action level with acceptable precision, based on analyses of quality control samples and on studies conducted when those methods were developed in the 1970s.
- There are high-flow dust samplers now available that can collect more airborne dust, and more silica, than other samplers commonly used. Collecting more dust means that laboratories can measure the amount of silica in the dust with greater precision.

Q: What is the purpose of medical surveillance?

The purpose of medical surveillance is, when reasonably possible, to:

- Identify adverse health effects associated with respirable crystalline silica exposure so that appropriate actions can be taken.
- Determine if an employee has any condition, such as a lung disease, that might make him or her more sensitive to respirable crystalline silica exposure.
- Determine the employee's fitness to use respirators.

In response to the information gained through medical surveillance, employees can take actions to improve their health, such as making job choices to reduce exposures, wearing a respirator for extra protection, or making personal lifestyle or health decisions, such as quitting smoking or getting flu shots.

Q: Why are the results of medical surveillance only given to the worker and not the employer?

The employer receives the physician or other licensed health care professional's recommended limitations on respirator use, which is vitally important information that the employer needs to protect the worker because those who are not fit to wear a respirator but wear one can be at risk of sudden incapacitation or death.

Other findings of the medical examination are only given to the employee because many employees and physicians testified that if employers received the results of the examination, many employees would not participate in medical surveillance because they feared discrimination or retaliation.

Employers do not need medical findings because they should base employee protections on exposure levels and how well controls are working. On the other hand, employees need the results of medical examinations to manage their health.

Source: https://www.osha.gov/dsg/topics/silicacrystalline/additional_info_silica.html

Compliance Dates

Q: When must employers comply with the standard for general/industry and maritime?

For all operations in general industry and maritime, other than hydraulic fracturing operations in the oil and gas industry:

- Employers are required to comply with all obligations of the standard, with the exception of the action level trigger for medical surveillance, by **June 23, 2018**.
- Employers are required to offer medical examinations to employees exposed above the PEL for 30 or more days a year beginning on **June 23, 2018**.
- Employers are required to offer medical examinations to employees exposed at or above the action level for 30 or more days a year beginning on **June 23, 2020**.

For hydraulic fracturing operations in the oil and gas industry:

- Employers are required to comply with all obligations of the standard, except for engineering controls and the action level trigger for medical surveillance, by **June 23, 2018**.
- Employers are required to comply with requirements for engineering controls to limit exposures to the new PEL by **June 23, 2021**. From **June 23, 2018**, through **June 23, 2021**, employers can continue to have employees wear respirators if their exposures exceed the PEL.
- Employers are required to offer medical examinations to employees exposed above the PEL for 30 or more days beginning on **June 23, 2018**.
- Employers are required to offer medical examinations to employees exposed at or above the action level for 30 or more days a year beginning on **June 23, 2020**.

Q: Why is there a different compliance date for the hydraulic fracturing industry?

Because controls for respirable crystalline silica in hydraulic fracturing are still in development, the rule allows hydraulic fracturing employers additional time to implement engineering controls to take advantage of emerging technologies. Those employers do not have to implement engineering controls to limit exposures to the new PEL until **June 23, 2021**, three years later than other general industry and maritime employers. From **June 23, 2018**, to **June 23, 2021**, hydraulic fracturing employers can continue to have employees use respirators when exposures exceed the PEL.

Q: When must employers comply with the standard for construction?

Employers are required to comply with all obligations of the standard (except methods of sample analysis) by **September 23, 2017**. Employers are required to comply with methods of sample analysis by **June 23, 2018**.

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State Plans and Compliance Assistance

Q: Will states with OSHA-approved programs adopt the standards?

Yes. States with OSHA-approved state plans have six months to adopt standards that are at least as effective as Federal OSHA standards. Many state plans adopt standards identical to OSHA, but some state plans may have different or more stringent requirements.

Q: What resources are available to help small businesses and other employers comply with the standards?

OSHA recognizes that most employers want to keep their employees safe and protect them from

workplace hazards. We therefore provide extensive compliance assistance through our ***Compliance Assistance Specialists***, website, ***publications***, webinars, and ***training programs***, many of which are geared toward small and mid-sized employers. For silica, OSHA will develop a Small Entity Compliance Guide, fact sheets and other compliance assistance resources. For more information, see the ***Crystalline Silica Rulemaking*** page.

OSHA's ***On-Site Consultation Program*** provides professional, high-quality, individualized assistance to small businesses at no cost. This service, which is provided by consultants from state agencies or universities, is separate and independent from enforcement programs in federal or state OSHA's programs, and provides free and confidential workplace safety and health evaluations and advice to small and medium-sized businesses. In FY 2015, the On-Site Consultation Program conducted more than 27,800 free visits to small and medium-sized business worksites, helping to remove more than 3.5 million workers from hazards nationwide.

Click here for OSHA's Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime.

Source: https://www.osha.gov/dsg/topics/silicacrystalline/additional_info_silica.html

Information compiled from previously featured content on OSHA's website.

www.mscdirect.com/betterMRO

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