Respirable Crystalline Silica in Construction

Protect construction workers from the hazards of silica exposure.

Approximately two million construction workers are exposed to respirable crystalline silica in over 600,000 U.S. workplaces. Crystalline silica is a mineral found in many construction materials such as sand, stone, concrete, brick, and mortar. When these materials are cut, ground, drilled or crushed, they generate very small airborne dust particles that can enter workers’ lungs. Workers exposed to this dust are at an increased risk of developing silica-related illnesses that may be incurable or fatal, such as silicosis, lung cancer, respiratory diseases or kidney diseases.

Tools used in construction that can generate respirable crystalline silica include:

- Stationary masonry saws
- Handheld power saws
- Grinders
- Drills
- Jackhammers and handheld powered chipping tools
- Milling machinery
- Heavy equipment used in demolition
- Crushing machinery
- Vehicle-mounted drilling rigs
- Abrasive blasting equipment
OSHA's silica standard (29 CFR 1926.1153) establishes methods for identifying and limiting worker exposures below the permissible exposure limit (PEL) for respirable silica. Employers have two options for controlling silica exposures. They can follow Table 1 control methods laid out in OSHA's standard (29 CFR 1926.1153(c)(1)), or measure workers' exposure to silica independently and decide which controls best limit exposures below the PEL.

Table 1 matches 18 common construction tasks with effective dust control methods. These controls include using water to prevent particles from becoming airborne, using vacuum systems with filters designed to capture respirable dust, or using respirators. By following Table 1 correctly, employers are not required to measure workers' exposure to the silica PEL for those 18 tasks.

If employers do not fully implement Table 1 control methods or when the task with potential silica exposure is not included in Table 1, the employer must:

- Determine the amount of silica workers are exposed to or may reasonably be exposed to, averaged over an 8-hour day with the action level being at or above 25 micrograms of silica per cubic meter.
- Provide protection for workers with an exposure above the PEL of 50 micrograms per cubic meter.
- For exposures exceeding the PEL, provide dust controls and safe work methods to provide protection.
- Implement a respiratory protection program that provides the proper respirators, medical evaluations, fit testing and training when dust controls and safe work methods cannot limit exposures below the PEL.
Regardless of whether Table 1 controls or alternative exposure controls are used, all construction employers are required to:

- Establish and implement a written exposure control plan that identifies tasks that involve exposure and methods needed to protect workers.
- Have a competent person designated to implement the written control plan.
- Restrict housekeeping practices that would expose workers to silica, such as using compressed air or dry sweeping, when effective safer alternatives are available.
- Offer medical exams that include chest X-rays and function lung tests every three years for workers who are required by the standard to wear a respirator for 30 or more days during the year.
- Train workers on the health effects of silica exposure, workplace tasks that can expose them to silica, and ways to limit exposure.
- Maintain records of workers' silica exposure and medical exams.

**Resources:**

- [https://www.osha.gov/dsg/topics/silicacrystalline/](https://www.osha.gov/dsg/topics/silicacrystalline/)
- [https://www.osha.gov/Publications/OSHA3902.pdf](https://www.osha.gov/Publications/OSHA3902.pdf)
- [https://www.osha.gov/Publications/OSHA3911.pdf](https://www.osha.gov/Publications/OSHA3911.pdf)