

CONTROL OF SILICA DUST IN CONSTRUCTION

Heavy Equipment and Utility Vehicles Used During Demolition Activities

Using heavy equipment and utility vehicles for tasks such as demolishing, abrading, or fracturing silica-containing materials such as brick, block, and concrete can generate *respirable crystalline silica* dust. When inhaled, the small particles of silica can irreversibly damage the lungs. This fact sheet describes dust controls that can be used to minimize the amount of airborne dust when using heavy equipment or utility vehicles during demolition activities as listed in Table 1 of the Respirable Crystalline Silica Standard for Construction, [29 CFR 1926.1153](#). A separate fact sheet addresses heavy equipment use for earthmoving tasks such as grading and excavating activities.

Engineering Control Methods: Enclosed cab **AND** water sprays and/or dust suppressants if other workers are present

The use of an enclosed cab when operating heavy equipment and utility vehicles during demolition activities, or when fracturing and abrading silica-containing materials, can reduce operator exposures to silica dust. If other workers are present in the area, water and/or dust suppressants must be applied as necessary to minimize visible dust.



Excavator equipped with an enclosed cab and hoe-ram demolishing a concrete wall.

Photo courtesy of CPWR

Operator Isolation

Operators using heavy equipment and utility vehicles must stay inside an enclosed cab with the doors and windows closed while work is in progress. The cab must:

- Be well-sealed and well-ventilated, using positive pressure.
- Have door jambs, window grooves, power line entries and other joints that work properly and are tightly sealed.
- Have heating and air conditioning so that operators can keep windows and doors closed.
- Use an intake air filter with a minimum MERV-16 rating (at least 95 percent efficient in the 0.3–10.0 μm range).
- Be kept free from settled dust by regular cleaning and maintenance to prevent dust from becoming airborne inside the enclosure.

Modern heavy equipment typically comes equipped with enclosed, filtered cabs that meet the requirements of the silica standard in Table 1. Retrofit equipment is available for older equipment.

Wet Methods

Wet methods for heavy equipment and utility vehicle operators include the use of any method of wet application that will suppress silica dust emissions and be compatible to the task. These include using:

- Tank trucks equipped with hoses and nozzles that spray water or other dust suppressants over large areas to wet the materials disturbed during tasks, including haul roads and job sites in general.
- A worker who assists the operator by applying water or other types of dust suppressants to materials being demolished, abraded, or fractured.
- Large atomized misting devices.
- Spray equipment attached directly to the vehicle.
- Timing the application of the water or other dust suppressants to ensure that the materials are still damp when they are disturbed.

Water must be applied at flow rates sufficient to minimize the release of visible dust. Too much water can create mud slurry that can cause hazards. Too little water will not effectively control dust emissions.



Atomized misting canons, like the DustBoss unit pictured, are an effective way to suppress silica dust.

Respiratory Protection

When properly used, an enclosed cab and wet methods can effectively reduce exposure to silica dust. Therefore, the silica standard for construction does not require use of respiratory protection when employers comply fully with Table 1 of the standard.

Additional Information

For more information, visit www.osha.gov/silica and see the OSHA Fact Sheet on the [Crystalline Silica Rule for Construction](#), and the [Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for Construction](#).

OSHA can provide compliance assistance through a variety of programs, including technical assistance about effective safety and health programs, workplace consultations, and training and education. OSHA's On-Site Consultation Program offers free, confidential occupational safety and health services to small and medium-sized businesses in all states and several territories across the country, with priority given to high-hazard worksites. On-Site consultation services are separate from enforcement and do not result in penalties or citations. To locate the OSHA On-Site Consultation Program nearest you, visit www.osha.gov/consultation.

How to Contact OSHA

Under the Occupational Safety and Health Act of 1970, employers are responsible for providing safe and healthful workplaces for their employees. OSHA's role is to ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education and assistance. For more information, visit www.osha.gov or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.



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