



Guide to
**Silica
Dust
Control**

General
EQUIPMENT COMPANY

Guide to Silica Dust Control



Silica - Where does it come from?

Silica dust has been around since the beginning of time and as long as humans have been on planet Earth. The mineral silica is the second most common element found next to oxygen.

Silica can be found in common rocks such as granite, sandstone, slate among others as well as a common component of everyday sand and soil. As wind, water and sun break the larger rocks down over time, the silica can become a very fine crystalline dust.

This same dust can also be created, in heavier concentrations, by man-made, occupational processes such as grinding, drilling and crushing of rock or ore materials, road construction, mining, quarrying, concrete sawing and even pottery making to name a few. The dust created from the process can become airborne and inhaled by people.

Silicosis - What is it?

Silicosis is a permanent lung disease with no cure. It is caused by the inhalation of crystalline silica dust. The dust particles become trapped in the lung causing damage to the lung lining. Depending on the amount of dust inhaled, it can take a number of weeks to years after initial exposure before any symptoms of the disease actually appear.

Symptoms of the disease such as shortness of breath, fatigue, coughing, infections and weight loss can be treated to some extent. Over time, lung capacity decreases affecting overall health, placing a person at higher risk for other diseases such as lung cancer, kidney disease and can lead to death.

What do I need to do about it?

Just remember, you don't need to be a rocket scientist. Help is available. Technology to prevent airborne silica dust exposure, such as certified

vacuum systems, facemasks and air filtration systems, have been available in the marketplace for some time.

The Occupational Safety & Health Administration (OSHA) has revised silica dust standard 29 CFR 1910.1153 to reduce crystalline silica dust exposure to workers.

- The occupational permissible exposure limit (PEL) to silica dust has been reduced from 250 micrograms per cubic meter of air (250 $\mu\text{g}/\text{m}^3$) over an 8 hour work day (time weighted average or TWA to 50 $\mu\text{g}/\text{m}^3$ over an 8 hour day TWA. If the exposure remains under 25 $\mu\text{g}/\text{m}^3$ over an 8 hour day TWA, for the foreseeable future, the standard does not apply.
- Employers in construction related and other industries will have one year (starting September 23, 2017) to comply with most of the new requirements.
- As part of the silica standard revisions, a flexible set of options have been developed for you to choose from to help you and your business comply with the changes.
- Based on your business and the type work being performed, you may need to upgrade equipment and/or revise work practices to meet the revised silica standard.



Step 1 - Does it Apply or Not?

Take the time to first assess your company for type work being performed or processes being used that may produce silica dust. For a list of industries affected by the revised standard visit www.osha.gov/publications/osh3683.pdf.

Step 2 - Choose an Option

Review and choose the option from the revised silica dust standard that best fits your business for the type work being performed and the ability to implement and comply to the standard. Employers may choose to use more than one option.

Option 1: Table 1

The table covers job-specific requirements based on time spent operating in different environments, plus predefined tasks and equipment control methods currently available and determined by OSHA to reduce exposure. Refer to Table 1 excerpts on page 4 and 5.

! IMPORTANT:

As a non-certified product, a standard style Shop-Vac readily available at many retail outlets cannot meet the more stringent silica dust control requirements.

✓ TIPS:

- Option 2 & 3 are not required if equipment operated is listed in Table 1 and a control plan for the specific task is implemented.
- If water is used as one of the dust control methods, the slurry created can be addressed by use of readily available EPA compliant treatments that reduce slurry water content and solidify remaining materials for easy disposal into a trash can.

Option 2: Performance/Objective Data

Employers can use objective data to show control method(s) used reduce exposure limits below 50 µg/m³ over an 8 hour work period TWA. Data can come from employer air monitoring programs or third parties such as education entities, trade associations or manufacturers. Data must accurately reflect exposure limits and conditions similar or worse than current worksite.

Option 3: Air Monitoring

Employers can generate their own exposure data. For this, employers must implement an air monitoring program for workers exposed over the limit of 25 µg/m³ over an 8 hour work period and implement control methods.

Step 3 - Assess Equipment & Processes

Assess the type company equipment used in work being performed and/or processes used and determine if they meet the revised silica dust standards. This may include items such as personal protection equipment (PPE's - masks, coveralls, etc.), grinding, cutting, polishing, vacuuming and air filtration equipment.

✓ TIP:

- It may be as simple as looking at product labels, operator manuals, manufacturer websites or calling the manufacturer to obtain performance/compliance information.

Step 4 - Write A Plan

Regardless of the above option chosen in Step 2, all employers covered by the standard must have a written plan(s) identifying:

- a) Silica generating tasks, engineering controls and work practices used for each task.
- b) Respiratory protection (for exposure above the PEL). Respirators are required when:

- ❖ Workers install or implement silica controls or work practices.
- ❖ Tasks for silica controls or work practices are not feasible.
- ❖ Feasible controls cannot reduce exposures to meet the PEL.

Visit www.osha.gov/SLTC/respiratoryprotection/standards.html for more information on Respiratory Protection Standard 29 CFR 1910.134.

- c) Housekeeping practices to limit exposures.
 - ❖ The standard restricts use of methods contributing to silica dust exposure including dry sweeping/brushing plus compressed air to clean surfaces or clothing unless air is used with ventilation to capture dust.
- d) Procedures to restrict access to silica producing tasks/areas.
 - ❖ Restriction access is intended to eliminate exposure of unprotected bystanders.
- e) Medical surveillance plan for workers required to wear a respirator for 30 or more days per year.
 - ❖ Contractors using air monitoring data and/or require a medical surveillance program must maintain records in accordance to Recording-keeping Standard 29 CFR 1910.1020.
 - ❖ In general, this would not apply to the operation of General Equipment surface preparation products, unless required by the nature and length of specific job applications.
- f) Training that informs workers about the health effects of crystalline silica dust and following identified work practices.

Visit www.osha.gov/dsg/hazcom/index.html and www.osha.gov/publications/OSHA3696.pdf for more information on Hazard Communication Standard 29 CFR 1910.1200.

! IMPORTANT:

The employer of record has final responsibility for compliance to the silica dust standard. Failure to do so can result in substantial fines and penalties to a rental customer and/or contractor.

✓ TIPS:

- Maintain dust control equipment in good working order. Keep dust ports, hose and filters clean and free of obstructions.
- Wear disposable/washable protective clothing on the jobsite. Shower (if possible) and change into clean clothing before leaving jobsite to prevent vehicle, home and other work area contamination with silica dust or other contaminants such as lead.
- Do not use silica sand or other substances containing more than 1 percent crystalline silica for abrasive blasting applications. Use less hazardous materials.
- For companies renting equipment to contractors, as a convenience, offer a written control plan template and properly maintained equipment that meets the standard.



Step 5 - Implement & Monitor

Implement your plans and monitor the results. The written plan must be implemented by a competent person. The competent person must:

- Be capable to identify existing and foreseeable respirable crystalline silica hazards.
- Have authority to take prompt, corrective action measures to eliminate or minimize silica hazards.
- Have knowledge and ability to implement exposure control plans.

Each plan may need to be different depending on the company, equipment and type work being performed. Consult the OSHA website www.osha.gov/silica and/or OSHA consulting services www.osha.gov/dcsp/smallbusiness or call 1-800-321-OSHA (6742) for better understanding of silica regulations or assistance in developing and implementing your plans.

TABLE 1, Section (iv) FOR WALK-BEHIND SAWS

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours per Shift	≥ 4 Hours per Shift
Walk-behind saws	<p>Use saw with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:</p> <ul style="list-style-type: none"> ● When used outdoors ● When used indoors or in an enclosed area. 	None APF10	None APF10

TABLE 1, Section (x) FOR JACKHAMMERS AND OTHER, HANDHELD-POWERED CHIPPING TOOLS

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours per Shift	≥ 4 Hours per Shift
Jackhammers and handheld-powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. <ul style="list-style-type: none"> • Used outdoors • Used indoors or in an enclosed area. 	None APF10	APF10 APF10
	OR		
	Use machine equipped with a commercially available shroud and dust collection system. Operate and maintain the machine in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the machine manufacturer, or greater and be equipped with filtration with 99% or greater efficiency and a filter cleaning system. <ul style="list-style-type: none"> • When used outdoors • When used indoors or in an enclosed work area 	None APF10	APF10 APF10

TABLE 1, Section (xiii) FOR WALK-BEHIND MILLING MACHINES AND FLOOR GRINDERS

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 Hours Per Shift	≥ 4 Hours Per Shift
Walk behind milling machines and floor grinders	Use machine equipped an integrated water delivery system that continuously feeds water to the cutting surface.	None	None
	Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.		
	OR		
	Use machine equipped with a dust collection system recommended by the manufacturer.	None	None
	Operate and maintain machine and dust collection system in accordance with manufacturer's instructions to minimize dust emissions. Dust collection system must provide the air flow recommended by the machine manufacturer, or greater and be equipped with filtration with 99% or greater efficiency and a filter cleaning system. When used indoors or in an enclosed work area, use a HEPA-filtered system to remove loose dust between passes.		



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