



# Crystalline Silica

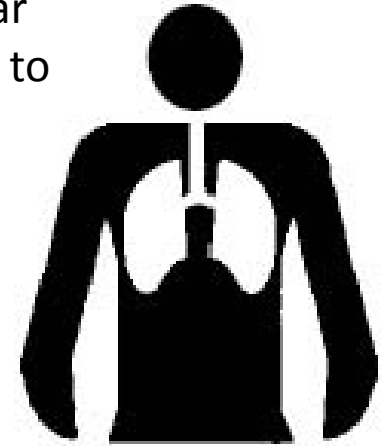
Compliance Update 2017

# Crystalline Silica

- Basic component of soil, sand, granite, and many other minerals.
- Quartz is the most common form of crystalline silica.
- Other common forms include cristobalite and tridymite.
- All three forms may become respirable when disturbed.

## ➤ Silicosis

- A disease of the lungs due to the breathing of dust containing crystalline silica particles. This dust can cause fibrosis or scar tissue formations in the lungs that reduce the lung's ability to work to extract oxygen from the air.
- There is no cure for this disease.



## ➤ Symptoms of silicosis

### Stages:

- Continued exposure may result in the exposed person noticing a shortness of breath upon exercising, possible fever and occasionally bluish skin at the ear lobes or lips.
- Progression of the disease leads to fatigue, extreme shortness of breath, loss of appetite, pain in the chest, and respiratory failure, which all may lead eventually to death.
- Acute silicosis may develop after short periods of exposure. Chronic silicosis usually occurs after 10 or more years of exposure to lower levels of quartz.

# Potential Silica Exposures

- Sawing brick or concrete
- Sanding/drilling into concrete walls
- Grinding/mixing mortar
- Sanding/drilling sheetrock
- Cutting or crushing stone
- Abrasive blasting with sand
- Manufacturing brick, concrete blocks, stone countertops, or ceramic products

# Regulatory Changes

29 CFR 1926.1153	
Old Standard	New Standard
<b><u>Permissible Exposure Limit</u></b>  Formula and calculation based on specific type of silica (Table Z-2)	<b><u>Permissible Exposure Limit</u></b>  50 $\mu\text{g}/\text{m}^3$
	<b><u>Action Level</u></b>  25 $\mu\text{g}/\text{m}^3$

- Under the new standard, the PEL will not be based on a formula but a specific value.
- Limits based on an 8 hour work period

# Alternatives for Construction

- The standard provides flexible alternatives for small employers.
    1. Employers can measure their workers' exposure to silica and decide which dust controls work best
- OR**
2. Employers can simply use a control method provided in Table 1

# Control Methods

Site testing, work duration, and Safety Data Sheets determine the level of protection necessary.

## Order of Priority

### **Engineering Controls**

Eliminate exposure through equipment or process



### **Administrative Controls**

Control exposure through reduced work time



### **Personal Protective Equipment**

Last option, employee wears safety equipment

# Control Methods

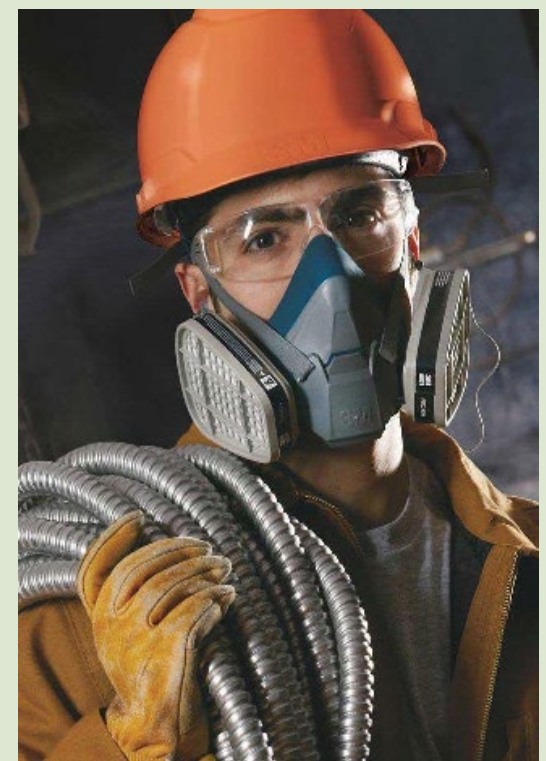
Wet Saw



Vacuum Attachment



Respiratory Protection





# Control Methods – Table 1

Ex: Protecting Against Dust from Stationary Masonry Saws

Table 1. Exposure Control Methods for Selected Construction Operations			
Operation	Engineering and Work Practice Control Methods	Required Air-Purifying Respirator (Minimum Assigned Protection Factor)	
		≤4 hr/day	>4 hr/day
Using Stationary Masonry Saws	Use saw equipped with integrated water delivery system. (Plus additional specifications)	None	Half-Mask (10)

Web link to OSHA site for complete Table 1:

[https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=1270](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=1270)

# Requirements

- Business must have a written policy addressing operations that generate silica dust
- Employees must be educated on use of tools and systems that eliminate and/or reduce dust
- If respiratory protection is necessary business must comply with all provisions of 1910.134 Industry or 1926.103 Construction

# Requirements

- Plan must account for site housekeeping and the trades that may be affected by the operation
- Medical surveillance must be performed
- Hazard communication regarding silica must be provided
- All records pertaining to education and monitoring must be maintained