



# Respirable crystalline silica

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# Today's agenda

- Health effects
- History & key dates
- Scope, application, & definitions
- Exposure assessment options
- Table 1 – exposure control methods
- Methods of compliance & controls
- Written exposure control plan
- Housekeeping
- Respiratory protection
- Medical surveillance
- Hazard communication & training
- Recordkeeping
- Additional time for questions

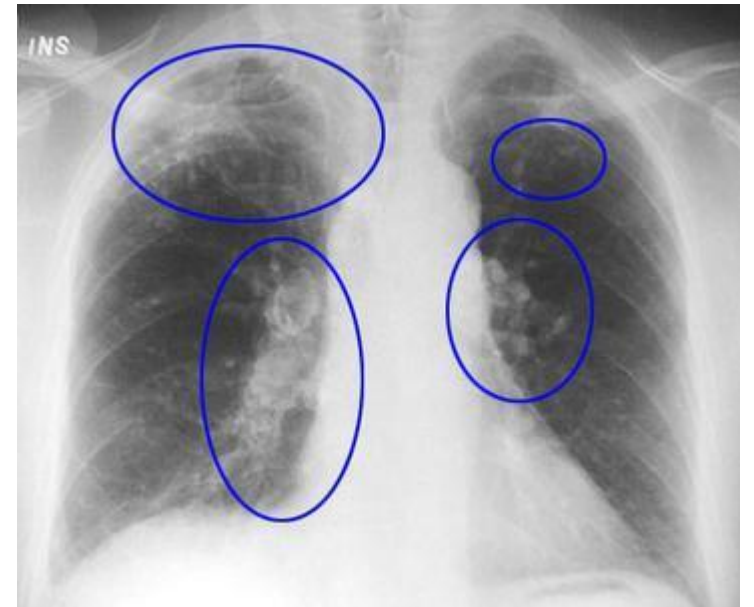
# Why are we still talking about silica?

- About 2.3 million people in the U.S. are exposed to silica at work
- Commonly found in the construction industry due to processes and activities
- Also found in foundry operations and other general industry settings
- “Respirable” crystalline silica are very small particulates created when cutting, sawing, grinding, drilling, and crusting stone, concrete, brick, block, and mortar
  - At least 100 times smaller than ordinary sand particles
  - Can travel deep into workers’ lungs

Source: <https://www.osha.gov/silica-crystalline>

# Health effects

- Workers who inhale respirable crystalline silica are at increased risk of:
  - Silicosis, an incurable disease that can lead to disability and death
  - Lung cancer
  - Chronic obstructive pulmonary disease (COPD)
  - Kidney disease



Source: <https://www.usgs.gov/media/images/a-picture-silicosis-lung>

# Silicosis – there is no cure

- When silica enters the lung, it causes the formation of scar tissue
- Scar tissue makes it more difficult for the lungs to take in oxygen
- Typically occurs after 15-20 years of occupational exposure
- Symptoms may not be apparent at first, but chest x-rays can be performed
- Symptoms: shortness of breath that progresses, fatigue, chest pain, and eventually respiratory failure
- Workers that smoke are at higher risk of serious health issues

Source: <https://www.osha.gov/silica-crystalline/health-effects>

# Silicosis x-ray images



***Formation of Scar Tissue***



***Healthy Lungs***

Source: <https://www.osha.gov/sites/default/files/2021-05/Silica%20Student%20Workbook.pdf>

# History & Key Dates

- To protect workers, OSHA has published two standards:
  - General industry & Maritime – 29 CFR 1910.1053
  - Construction – 29 CFR 1926.1153
- Federal OSHA adopted the final rule on March 25, 2016
- Minnesota OSHA adopted the final rule on September 26, 2016
- General industry & Maritime employers needed to comply by June 23, 2018\*
- Construction employers needed to comply by September 23, 2017<sup>†</sup>



# Today we will focus on 29 CFR 1926.1153



Source: <https://www.cdc.gov/niosh/silica/about/>



Source: <https://www.osha.gov/silica-crystalline/construction>



# Probable Use of Silica

**Probable Use of Silica**



If you can answer YES to any of these, then it is likely that Silica is used at your work and that it is airborne.



<b>Industry</b> Do you work in any of these?	<b>Occupations</b> Are you one of these?	<b>Materials</b> Are any of these involved?
<ul style="list-style-type: none"> <li>•Abrasive blasting</li> <li>•Asphalt pavement manufacturing</li> <li>•Blast furnaces</li> <li>•Cement manufacturing</li> <li>•Ceramics, clay, and pottery</li> <li>•Concrete mixing</li> <li>•Concrete tunneling</li> <li>•Construction (mainly cement, concrete work)</li> <li>•Demolition</li> <li>•Electronics industry</li> <li>•Foundry industry:</li> </ul>	<ul style="list-style-type: none"> <li>•<u>Brickmason/stonemason</u></li> <li>•Construction laborer</li> <li>•Crane and tower operator</li> <li>•Crushing and grinding machine operator</li> <li>•Furnace, kiln, non-food oven operator</li> <li>•Grinding, abrading, buffing, and polishing machine operator</li> <li>•Hand molder/shaper (not jeweler)</li> <li>•Heavy-equipment mechanic</li> </ul>	<ul style="list-style-type: none"> <li>•Abrasives</li> <li>•Coal Dust</li> <li>•Concrete</li> <li>•Dirt</li> <li>•Filter Aids</li> <li>•Graphite, natural</li> <li>•Mica</li> <li>•Mineral Products</li> <li>•Paints</li> <li>•Pavement</li> <li>•Perlite</li> <li>•Plant Materials</li> <li>•Plastic Fillers</li> <li>•Polishing Compounds</li> <li>•Portland Cement</li> </ul>

<ul style="list-style-type: none"> <li>grinding, molding, shakeout, core room (High Risk)</li> <li>•Hand molding, casting, and forming</li> <li>•Jackhammer operations</li> <li>•Manufacturing abrasives, paints, soaps, and glass</li> <li>•Mining</li> <li>•Repair or replacement of linings of rotary kilns and cupola furnaces</li> <li>•Rolling and finishing mills</li> <li>•Sandblasting (High Risk)</li> <li>•Setting, laying, and repairing railroad track</li> <li>•Steelwork</li> <li>•Stone, brick, and concrete block cutting, blasting, chipping, grinding, and sawing</li> <li>•Tunneling operations</li> </ul>	<ul style="list-style-type: none"> <li>•Janitor or cleaner</li> <li>•Machinist</li> <li>•Metals/plastics machine operator</li> <li>•Molding and casting machine operator</li> <li>•Mining machine operator</li> <li>•Miscellaneous material moving equipment operator</li> <li>•Millwright</li> <li>•Operating engineer</li> <li>•Painter who sandblasts (High Risk)</li> <li>•Production supervisor</li> <li>•Rockdriller (High Risk)</li> <li>•Roof bolter (High Risk)</li> <li>•Sandblaster (High Risk)</li> <li>•Steelworker</li> <li>•Welder/cutter</li> </ul> <p><i>See how the chance of death is increased according to occupation</i></p>	<ul style="list-style-type: none"> <li>•Sands</li> <li>•Silicates</li> <li>•Slag</li> <li>•Soapstone</li> <li>•Soil</li> </ul>
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# 29 CFR 1926.1153(a) Scope and application

- “This section applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposure will remain below 25 micrograms per cubic meter of air (25  $\mu\text{g}/\text{m}^3$ ) as an 8-hour time-weighted average (TWA) *under any foreseeable conditions.*”
- NOTE: The exception applies only where exposures below 25  $\mu\text{g}/\text{m}^3$  as an 8-hour TWA are expected or achieved without using engineering or other controls. The exception is intended to ensure that the standard does not apply to employees whose work results in only minimal silica exposures. OSHA considers the failure of most controls, such as engineering controls, to be a foreseeable condition.

Source: <https://www.osha.gov/silica-crystalline/construction-info>

# 29 CFR 1926.1153(a) Scope and application

- OSHA identified specific tasks likely outside the scope of the standard:
  - Mixing small amounts of mortar and concrete
  - Mixing bagged, silica-free drywall compound
  - Mixing bagged exterior insulation finishing system (EIFS) base/finish coat
  - Usual manual (i.e., non-powered) chisels, shears, and utility knives
  - Working with silica-containing products that are, and are intended to be, handled while wet (e.g., pour wet concrete, grouting floor/tiles, hand wiping block walls to remove excess wet mortar)

Source: <https://www.osha.gov/silica-crystalline/construction-info>

# OSHA "FAQs" page for the Construction Industry

- OSHA has an FAQ page to provide guidance to employers and employees, including scope of the standard:  
<https://www.osha.gov/silica-crystalline/construction-info>

**Frequently Asked Questions ("FAQs") for the Construction Industry**

[PDF version](#)

On March 25, 2016, the Occupational Safety and Health Administration (OSHA) published a final rule regulating occupational exposure to respirable crystalline silica (silica) in the construction industry (the standard). 81 Fed. Reg. 16286. OSHA developed these Frequently Asked Questions (FAQs) about the standard in consultation with industry and union stakeholders.

These FAQs provide guidance to employers and employees regarding the standard's requirements. This document is organized by topic. A short introductory paragraph is included for each group of questions and answers to provide background information about the underlying regulatory requirements.

The following acronyms are used throughout this document:

- AL - action level (25 µg/m<sup>3</sup> as an 8-hour time-weighted average)
- HEPA filter - high-efficiency particulate air filter
- PEL - permissible exposure limit (50 µg/m<sup>3</sup> as an 8-hour time-weighted average)
- PLHCP - physician or other licensed health care professional
- TWA - time-weighted average

**Scope (29 C.F.R. § 1926.1153(a))**

OSHA's silica standard for construction applies to all occupational exposures to respirable crystalline silica in construction work, except where employee exposures will remain below the AL of 25 µg/m<sup>3</sup>, calculated as an 8-hour TWA, under any foreseeable conditions. 29 C.F.R. § 1926.1153(a). The exception applies only where exposures below 25 µg/m<sup>3</sup> as an 8-hour TWA are expected or achieved without using engineering or other controls. The exception is intended to ensure that the standard does not apply to employees whose work results in only minimal silica exposures. See 81 Fed. Reg. at 16706.

**1. Has OSHA identified specific tasks that are likely to be outside the scope of the standard because they typically generate exposures below the AL of 25 µg/m<sup>3</sup> as an 8-hour TWA under all foreseeable conditions?**

**2. Does the standard cover employees who perform silica-generating tasks for only 15 minutes or less a day?**

# OSHA Standard Interpretations

- OSHA interpretation letters further explain requirements and how they apply to particular circumstances: <https://www.osha.gov/laws-regs/standardinterpretations/standardnumber/1926/1926.1153%20-%20Index/result>

## Standard Interpretations

Subscribe to our [RSS Standard Interpretations](#) feed.

OSHA requirements are set by statute, standards, and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. Each letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information.

Publication Date Standard #

[Standard Number](#) > [1926](#) > **1926.1153**

- [1926.1153 - Handling and disposal of respirable silica dust, contaminated equipment, and filters from vacuums and PPE](#) - 02/14/2022
- [1926.1153 - Medical surveillance requirements in OSHA's respirable crystalline silica standard for construction](#) - 02/02/2018
- [1926.1153 - Respirable Crystalline Silica Focused Inspection Initiative in the Engineered Stone Fabrication and Installation Industries](#) - 09/22/2023
- [1926.1153 - Retention of Spirometry Records](#) - 09/18/2019
- [1926.1153 - Types of construction work excluded from the Silica standard](#) - 07/25/2019
- [1926.1153\(a\) - Types of construction work excluded from the Silica standard](#) - 07/25/2019
- [1926.1153\(c\)\(1\) - Handling and disposal of respirable silica dust, contaminated equipment, and filters from vacuums and PPE](#) - 02/14/2022
- [1926.1153\(c\)\(1\) - Silica in Construction, Integrated Water Delivery System, Exposure Assessment, Medical Surveillance, Respiratory Protection](#) - 03/04/2019
- [1926.1153\(c\)\(1\) - Types of construction work excluded from the Silica standard](#) - 07/25/2019
- [1926.1153\(d\) - Types of construction work excluded from the Silica standard](#) - 07/25/2019
- [1926.1153\(d\)\(2\) - Handling and disposal of respirable silica dust, contaminated equipment, and filters from vacuums and PPE](#) - 02/14/2022
- [1926.1153\(d\)\(2\)\(vi\) - Silica in Construction, Integrated Water Delivery System, Exposure Assessment, Medical Surveillance, Respiratory Protection](#) - 03/04/2019
- [1926.1153\(e\) - Types of construction work excluded from the Silica standard](#) - 07/25/2019
- [1926.1153\(e\)\(1\) - Medical surveillance requirements in OSHA's respirable crystalline silica standard for construction](#) - 02/02/2018



# 29 CFR 1926.1153(b) Definitions

- *Respirable crystalline silica:*

“means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality—Particle Size Fraction Definitions for Health-Related Sampling.”

# Permissible Exposure Limits

- Action level (AL) of  $25 \mu\text{g}/\text{m}^3$  calculated as an 8-hour time-weighted average (TWA)
- Permissible exposure limit (PEL) of  $50 \mu\text{g}/\text{m}^3$  calculated as an 8-hour TWA





# 29 CFR 1926.1153(d) Exposure Assessment

- For tasks not listed in Table 1 of 29 CFR 1926.1153(c) or where the employer does not fully and properly implement the controls, practices, and respiratory protection in Table 1
  - Employer shall assess exposure of each employee who is or may be expected to be exposed at or above the AL via the:
    - Performance option per (d)(2)(ii)
- OR
- Scheduled monitoring option per (d)(2)(iii)



# 29 CFR 1926.1153(d)(2)(ii) Performance option

- Performance (d)(2)(ii)
  - “The employer shall assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.”
    - Air monitoring data are any results of air monitoring that the employer has done to meet the requirements of the standard
    - Objective data is information that demonstrates employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity.
      - Data from industry wide surveys
      - Calculations based on composition of a substance
      - Area sampling results and exposure mapping profile approaches
      - Historical data collected by the employer



Source: <https://www.osha.gov/sites/default/files/2021-05/Silica%20Student%20Workbook.pdf>

# 29 CFR 1926.1153(d)(2)(iii) Scheduled monitoring option

- Scheduled monitoring (d)(2)(iii)
  - Initial monitoring to assess 8-hr TWA; reflect the exposures of employees on each shift, for each job classification, in each work area
  - If monitoring shows exposures  $<AL$ , employer may discontinue monitoring
  - If  $>AL$ , but  $<PEL$ , employer shall repeat monitoring within six months
  - If  $>PEL$ , employer shall repeat monitoring within 3 months
  - If eventually  $<AL$  (non-initial), employer shall repeat within six months until two consecutive measurements<sup>†</sup> are  $<AL$



- *Reassessment of exposures*
  - “The employer shall reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.”

# 29 CFR 1926.1153(c) Specified exposure control methods

- More commonly know as “Table 1”
- The employer shall fully and properly implement:
  - The engineering controls
  - Work practices
  - Respiratory protection
- Specified for the task on Table 1, unless the employer complies with paragraph (d) as previously discussed
- <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1153>

# Table 1 – Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours per day	>4 hours per day
(i) Stationary masonry saws	<p>Use saw equipped 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>	None	None

Fact Sheets for Table 1 Tasks: <https://www.osha.gov/silica-crystalline/construction>

# OSHA Website – Fact Sheets and Videos for Table 1

## Controlling Silica Dust in Construction Fact Sheets for Table 1 Tasks

- [Handheld Power Saws Fact Sheet \(Español\)](#)
- [Handheld Grinders for Tasks Other Than Mortar Removal Fact Sheet \(Español\)](#)
- [Handheld Power Saws Used to Cut Fiber-Cement Board \(Español\)](#)
- [Jackhammers or Handheld Powered Chipping Tools Fact Sheet \(Español\)](#)
- [Handheld and Stand-Mounted Drills Fact Sheet \(Español\)](#)
- [Stationary Masonry Saws Fact Sheet \(Español\)](#)
- [Handheld Grinders for Mortar Removal \(Tuckpointing\) Fact Sheet \(Español\)](#)
- [Walk-Behind Saws Fact Sheet \(Español\)](#)
- [Drivable Saws Fact Sheet \(Español\)](#)
- [Rig-Mounted Core Saws or Drills Fact Sheet \(Español\)](#)
- [Dowel Drilling Rigs for Concrete Fact Sheet \(Español\)](#)
- [Vehicle-Mounted Drilling Rigs for Rock and Concrete Fact Sheet \(Español\)](#)
- [Walk-Behind Milling Machines and Floor Grinders Fact Sheet \(Español\)](#)
- [Small Drivable Milling Machines \(Less than Half Lane\) Fact Sheet \(Español\)](#)
- [Large Drivable Milling Machines \(Half Lane and Larger\) Fact Sheet \(Español\)](#)
- [Crushing Machines Fact Sheet \(Español\)](#)
- [Heavy Equipment and Utility Vehicles Used During Demolition Activities Fact Sheet \(Español\)](#)
- [Heavy Equipment and Utility Vehicles Used for Grading and Excavating Tasks Fact Sheet \(Español\)](#)



Applying water to a saw blade when cutting materials that contain crystalline silica — such as stone, rock, concrete, brick, and block — substantially reduces the amount of dust created during these operations.

## Controlling Silica Dust in Construction Videos for Table 1 Tasks

- [Stationary Masonry Saws](#)
- [Handheld Power Saws](#)
- [Handheld and Stand-Mounted Drills](#)
- [Jackhammers or Handheld Powered Chipping Tools](#)
- [Handheld Grinders for Mortar Removal \(Tuckpointing\)](#)
- [Handheld Grinders for Uses Other than Mortar Removal](#)



## OSHA<sup>®</sup> FactSheet

### CONTROL OF SILICA DUST IN CONSTRUCTION **Stationary Masonry Saws**

Using a stationary masonry saw to cut bricks, concrete blocks, pavers, and other silica-containing materials can generate *respirable crystalline silica*. When inhaled over time, 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 stationary masonry saws as listed in the Respirable Crystalline Silica Standard for Construction, **29 CFR 1926.56**.

**Engineering Control Method:** Water applied continuously to the saw blade



#### Wet Cutting

When using a stationary masonry saw, wet cutting with an integrated water delivery system that continuously feeds water to the blade is an effective way to reduce exposure to silica dust. Many stationary masonry saws come equipped with a water basin that holds several gallons of water. A pump recirculates the water through a nozzle that directs a continuous stream onto the blade where it wets the material being cut and reduces the amount of dust generated.



A worker cutting masonry block on a stationary masonry saw that continuously feeds water to the blade.

Photo courtesy of OSHA

- **Check** that hoses are securely connected and are not cracked or broken.
- **Ensuring** that water flows at the rates recommended by the manufacturer. Water flow rates must be sufficient to minimize the release of visible dust.
- **Adjust** nozzles so that water goes to the blade and wets the cutting area.
- **Rinsing or replacing** water filters at recommended intervals.
- **Replace** basin water when it gets gritty or begins to silt up with dust.
- **Inspect** the saw blade before use to be sure it is in good condition and does not show excessive wear.

#### Indoors or in Enclosed Areas

Wet cutting indoors or in enclosed areas may not reliably keep silica exposures low, so extra ventilation or a means of exhaust may be needed to reduce visible airborne dust. Extra ventilation can be supplied by using:

- Exhaust trunks
- Portable exhaust fans
- Air ducts
- Other means of mechanical ventilation

# Table 1 – Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours per day	>4 hours per day
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions:		
	-When used outdoors	None	APF 10
	-When used indoors or in an enclosed area	APF 10	APF 10

# Table 1 – Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica

Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hours per day	>4 hours per day
(xi) Handheld grinders for mortar removal (i.e., tuckpointing)	Use grinder equipped with commercially available shroud and dust collection system	APF 10	APF 25
	Operate and maintain tool in accordance with manufacturer’s instructions to minimize dust emissions		
	Dust collector must provide 25 cfm or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism		

When implementing the control measures specified in Table 1, each employer shall:

(i) for tasks performed indoors or in enclosed area, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust.

(ii) For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust.

## 29 CFR 1926.1153(c)(2) continued...

- (iii) For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
  - (A) is maintained as free as practicable from settled dust.
  - (B) Has door seals and closing mechanisms that work properly.
  - (C) Has gaskets and seals that are in good condition and working properly.
  - (D) Is under positive pressure maintained through a continuous delivery of fresh air.
  - (E) Has intake air that is filtered through a filter that is 95% efficient in the 0.3 – 10.0 um range (e.g. MERV-16 or better); and
  - (F) Has heating and cooling capabilities

- “Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.”



Source: <https://www.osha.gov/respiratory-protection>



# 29 CFR 1926(d) reminder!!

- *Alternative exposure control methods. For tasks not listed in Table 1, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1...*
- Table 1 repeatedly mentions “operate and maintain tool in accordance with manufacturer’s instruction to minimize dust emissions”. Thus, it is important to be familiar with the tools used onsite. They might have additional practices that are not mentioned in Table 1, such as a manufacturer requiring the use of a respirator when using their product.
- Not following the manufacturer’s instructions may require you to follow the exposure assessment requirements of paragraph (d)



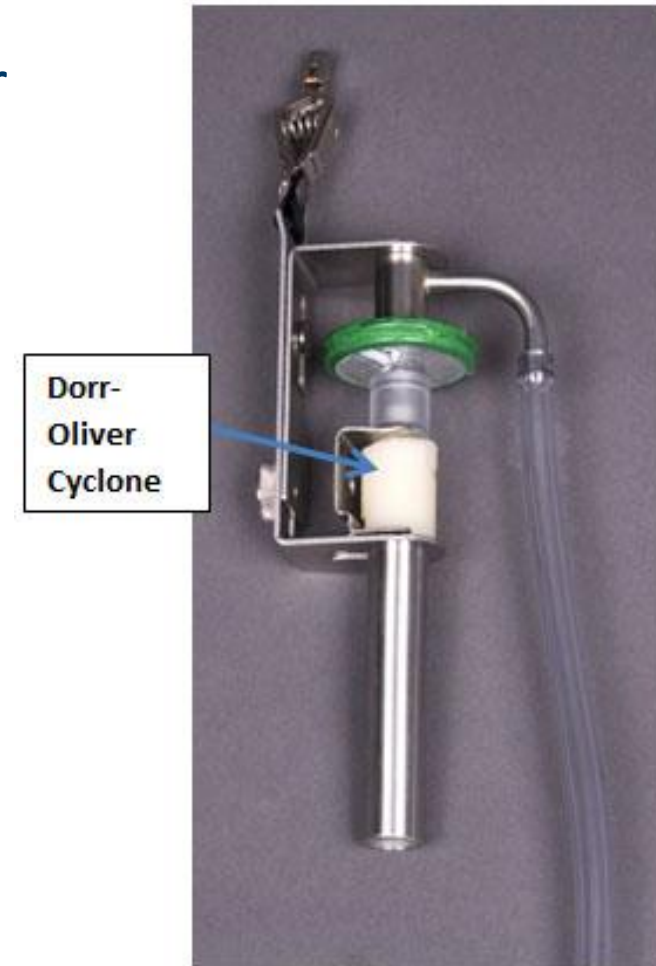
# 1926.1153(d)(2)(vi) Employee Notification of Assessment Results

- Within 5 days of conducting an assessment the employer shall individually notify each affected employee in writing or post results.
- Whenever an employee exposure is above the PEL, *the employer shall describe in the written notification the corrective action being taken to reduce employee exposures to or below the PEL.*



# 1926.1153(d)(2)(vii) Observation of monitoring

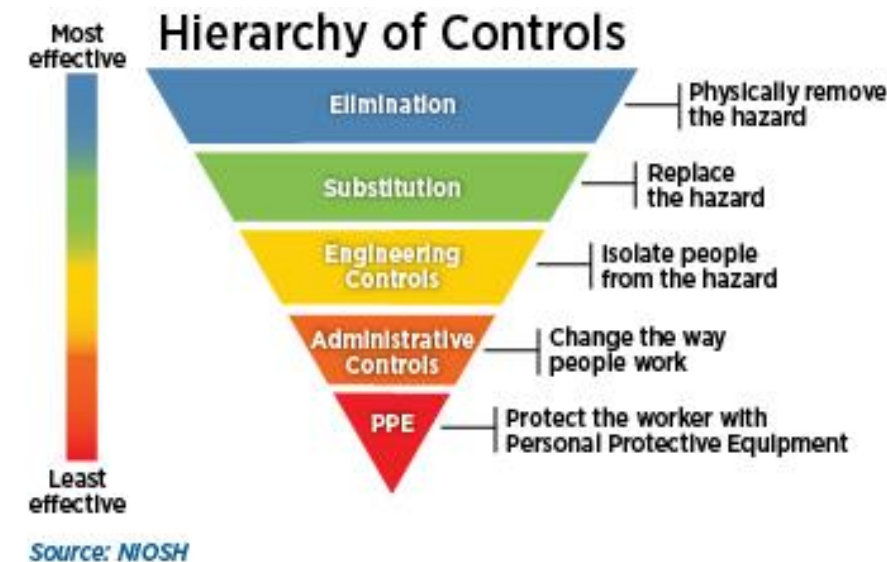
- When air monitoring is performed, the employer shall provide affected employees or their representatives opportunity to observe any monitoring of employee exposure
- The employer shall provide (at no cost) and require the use of PPE for the observe if entry into an area requires it.



Source: <https://www.osha.gov/otm/section-2-health-hazards/chapter-1>

# 29 CFR 1926.1153(d)(3) Methods of compliance

- Engineering and work practice controls
  - Shall be used to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible.
  - When controls are not sufficient to reduce exposures, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection and comply with paragraph (e), and in extension, 29 CFR 1910.134



# Engineering controls

- Wet methods
- Ventilation (e.g., LEV)
- Enclosures/isolation





# Engineering controls examples



**✘ No Engineering Controls**



**✔ Yes Engineering Controls**



**✘ No Engineering Controls**



**✔ Yes Engineering Controls**

Source: <https://www.osha.gov/sites/default/files/2021-05/Silica%20Student%20Workbook.pdf>

# Work practice controls

- Inspecting and maintaining controls to prevent malfunctions
- Ensuring nozzles spray water at point of dust generation
- Ensuring hoses are not kinked
- Wetting dust before cleaning
- Training

***Good work practice controls. Wetting down silica dust before sweeping limits exposure.***



***Poor work practice controls. No dry sweeping allowed.***



Source: <https://www.osha.gov/sites/default/files/2021-05/Silica%20Student%20Workbook.pdf>

# Regulated Area – 1910.1053 vs. 1926.1153



- **General Industry:** An area, demarcated by the employer, where an employee's exposure to airborne concentrations exceeds, or can reasonably be expected to exceed, the PEL; per 1910.1053(e), it must be demarcated and shall limit access
- **Construction:** No specific to paragraph regarding regulated areas, but written exposure control plan under 1926.1153(g) covers this



# 29 CFR 1926.1153(g) Written Exposure Control Plan

- Shall establish and implement a written control plan that contains at least:
  - A description of the tasks in the workplace that involve exposure to respirable crystalline silica
  - A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each tasks
  - A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and
  - **A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors.**

# 29 CFR 1926.1153(g) Written Exposure Control Plan

- The employer shall review and evaluate the effectiveness of the plan at least annually and update it as necessary
- The employer shall make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director [e.g. MNOSHA]
- The employer shall designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.

# 29 CFR 1926.1153(f) Housekeeping

- The employer shall not allow dry sweeping or dry brushing where such activity could contribute to employee exposure unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.
- Compressed air shall not be used to clean clothing or surfaces unless used in conjunction with a ventilation system to capture the dust cloud, or no alternative method is feasible.

# 29 CFR 1926.1153(e) Respiratory protection

- Where respiratory protection is required, the employer must provide each employee an appropriate respirator that complies with paragraph (e) and 29 CFR 1910.134
  - Where specified by Table 1 of paragraph (c)
  - Where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in Table 1
  - Where exposures exceed the PEL during tasks where engineering controls and work practice are not feasible
  - Where the employer has implemented all feasible controls, and such controls are still not sufficient to reduce exposures below the PEL

# 29 CFR 1910.134 Overview

- Establish and implement a written program with worksite-specific procedures
- Procedures for selecting respirators in the workplace
- Medical evaluations of required users\*
- Fit testing for tight-fitting respirators; initial and annual
- Procedures for proper use of respirators
- Schedules for cleaning, disinfecting, storing, inspection, maintaining, etc.
- Training of employees in proper use, limitations, maintenance, and hazards
- Procedures for regularly evaluating effectiveness of program



# 29 CFR 1926.1153(h) Medical Surveillance

- **Construction:** The employer shall make medical surveillance available at no cost to the employee for each employee who will be required to use a respirator for 30 or more days per year.
- Medical surveillance is not the same as medical evaluation for 1910.134
- **General Industry:** For workers exposed above the action level for 30 or more days per year.



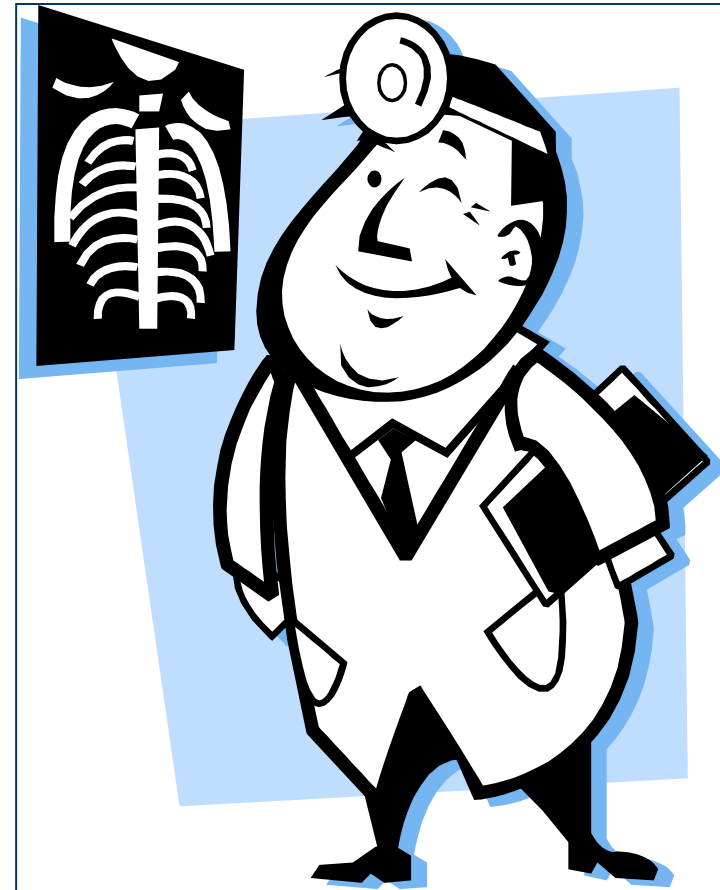
# 29 CFR 1926.1153(h) Medical Surveillance cont...

- The employer shall ensure that all medical examinations and procedures are performed by a *physician or other licensed health care professional (PLHCP)*
- Initial (baseline) medical examination within 30 days after initial assignment
- What if the employee refuses?
  - Letter of interp: <https://www.osha.gov/laws-regs/standardinterpretations/2018-02-02>
  - To promote acceptance, the standard requires training on health hazards (i)(2)(i)(A)
  - The standard also requires training on purpose of medical surveillance
  - Employer could consider having employee sign a statement that they refused the offered medical examination/tests



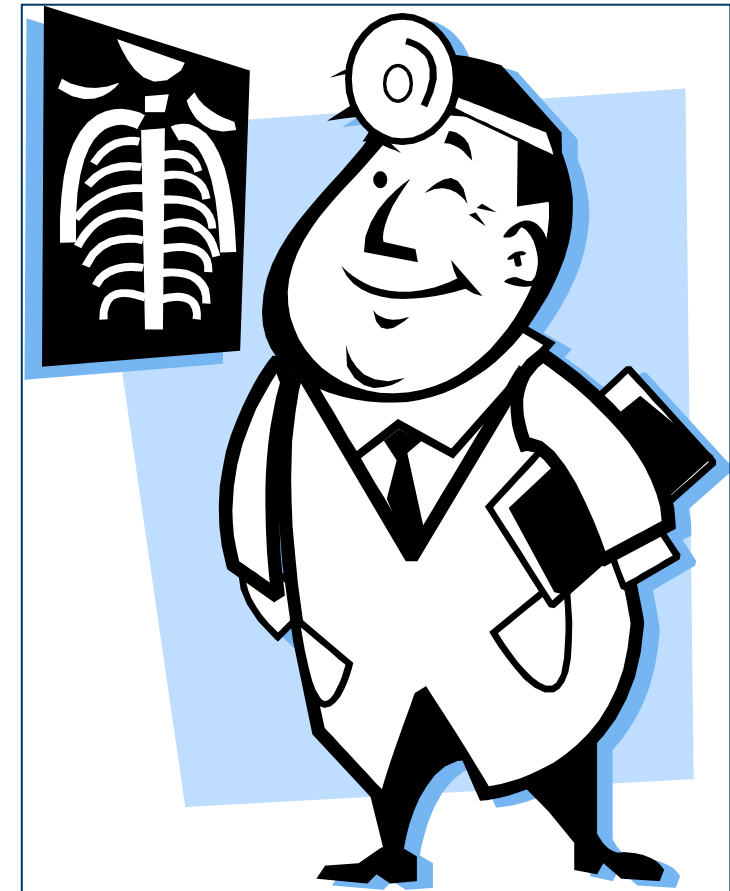
# Medical Surveillance components

- Medical and work history
- Physical exam with special emphasis on respiratory system
- A chest x-ray properly interpreted
- A pulmonary function test (PFT)
- Testing for latent Tuberculosis
- Any other tests deemed appropriate by the PLHCP
- At least every 3 years



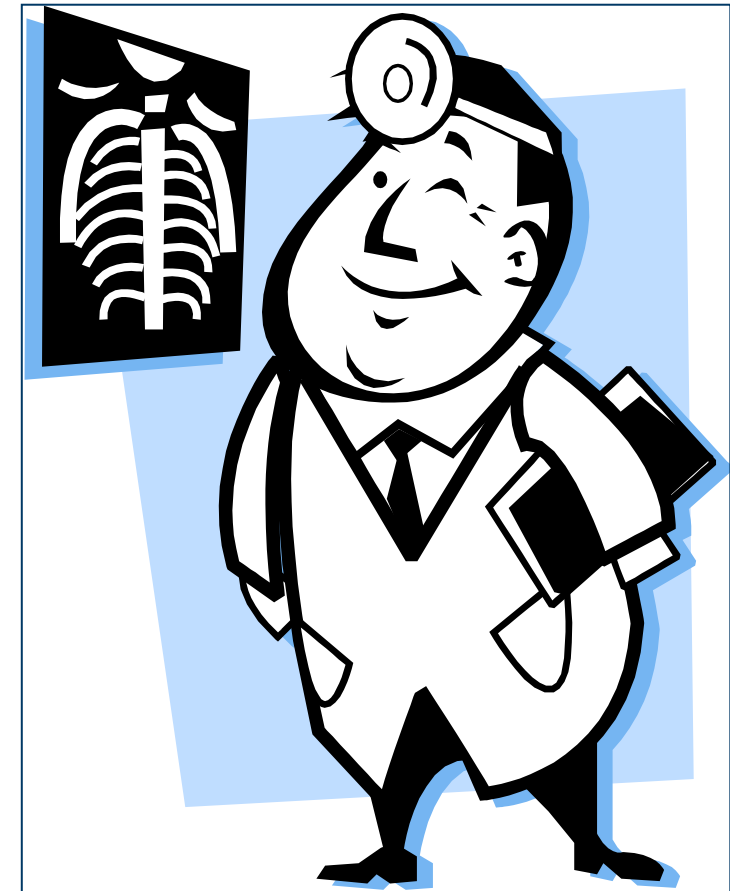
# Information provided to the PLHCP

- Description of employee's duties
- Employee's anticipated levels of exposure
- Description of PPE used by employee
- Information from records of employment-related medical exam previously provided to the employee



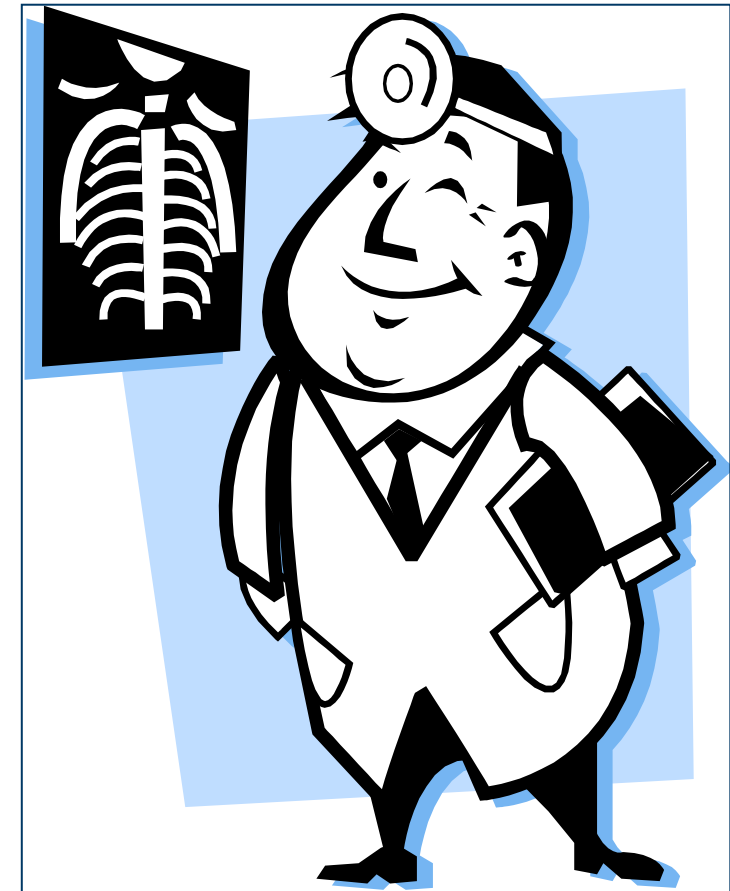
# Written medical report for the employee

- Provided to the employee within 30 days of each medical examination performed
- Statement indicating results of the exam and medical conditions that would place employee at increased risk
- Recommended limitation of the employee's use of respirators
- Recommended limitations on employee's exposure to silica



# Written medical opinion for the employer

- Provided to employer within 30 days of the medical examination
- Date of exam
- Statement that the exam met the requirements of the standard
- Recommended limits on use of respirator or employee's exposure to silica
- Employer shall ensure that the employee receives a copy of the written medical opinion within 30 days



# 29 CFR 1926.1153(i)(1) Hazard Communication

- Must be included in and comply with the requirements of the hazard communication standard (HCS) under 29 CFR 1910.1200.
- Access to labels on containers and safety data sheets (SDSs) and training in accordance with (i)(2)
- Must address cancer, lung effects, immune system effects, and kidney effects.



# 1926.1153(i)(2) Employee Information and Training

- The health hazards associated with silica
- Specific tasks that could expose employees to silica
- Specific measures the employer has implemented to protect employees from exposure to silica, including engineering controls, work practices, and respirators to be used
- The contents of the standard
- The identity of the competent person designated by the employer per (g)(4)
- The purpose and description of the medical surveillance program

# 29 CFR 1926.1153(j) Recordkeeping

- Exposure assessment records – air monitoring data (date, task, method, results, lab, PPE, employee, etc.)
- Objective data regarding materials containing silica
- Medical surveillance records
- Respirator medical evaluation and fit testing
- Training records (e.g., HazCom/RTK)
- Injury and illness records (e.g. OSHA 300s)





# MNOSHA's Newsletter

- *Safety Lines* is an online, quarterly publication of the Minnesota Department of Labor and Industry.
- Its purpose is to promote occupational safety and health and to inform readers of the purpose, plans and progress of Minnesota OSHA.
- Sign up via e-mail to receive notification online at <https://www.dli.mn.gov/business/workplace-safety-and-health/mnosha-compliance-safety-lines-newsletter>

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## Safety Lines

### Working in summer sun: Steps, tools to prevent heat illness

Millions of U.S. employees are exposed to heat in their workplaces. Although heat-related illness is preventable, thousands of workers become ill each year while working in hot or humid conditions and some cases are fatal. Nearly three out of four fatalities from heat illness happen during the first week of work because new and returning employees have not built a tolerance to the heat gradually, known as "acclimatization."


#### Signs and symptoms – take action

A range of heat illnesses can affect anyone, regardless of age or physical condition. Furthermore, exposure to heat can occur in a variety of outdoor and indoor environments, such as: construction; agriculture; bakeries and kitchens with heat-generating appliances; foundries; and warehouses. Below are a few common types of heat illnesses and their signs and symptoms.

- **Heat stroke:** confusion, slurred speech, unconsciousness, seizures, heavy sweating or hot and dry skin, very high body temperature and rapid heart rate
- **Heat exhaustion:** fatigue, irritability, thirst, nausea or vomiting, dizziness or lightheadedness, heavy sweating, elevated body temperature or fast heart rate
- **Heat cramps:** less serious than heat exhaustion or stroke and marked by muscle spasms or pain (usually in legs, arms or trunk)

If heat stroke is suspected based on symptoms, call 911 right away – this is a medical emergency.

For any case of heat illness, cool the employee off by following first-aid recommendations provided on federal OSHA's "Heat-related illnesses and first aid" webpage (see [osha.gov/heat-exposure/illness-first-aid](https://www.osha.gov/heat-exposure/illness-first-aid)). **Never leave a worker with heat illness alone** and, when in doubt, call 911.



To help the affected worker:

- take them to a cooler area, such as in the shade or in air conditioning;
- immerse them in cold water or an ice bath – the best method to cool the body rapidly;
- remove their outer layers of clothing, especially heavy gear; and
- place ice or cold wet towels on their head, neck, trunk, armpits and groin.

#### Employer's responsibility to protect workers

Under the federal Occupational Safety and Health Act, employers are responsible for providing workplaces free of known safety hazards. This includes protecting workers from heat-related hazards. It is the employer's responsibility to:

- provide workers with water, rest and shade;
- allow new or returning workers to gradually increase workloads and take more frequent breaks during the first week of work (acclimatizing);
- plan for emergencies and train workers about prevention; and
- monitor workers for signs of illness.

For indoor workplaces in Minnesota, employers must also adhere to Minnesota Rules 5205.0110, subpart 2, Indoor ventilation and temperature in places of employment (see <https://www.revisor.mn.gov/rules/5205.0110/#rule.5205.0110.2>).

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# Thank You!

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