

MNOSHA Construction Seminar

Respirable Crystalline Silica

29 CFR 1926.1153



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MINNESOTA DEPARTMENT OF
LABOR & INDUSTRY



History

- Sept. 12, 2013: Published the proposed rule and request for comments
- Federal OSHA adopted the final rule March 25, 2016
- Minnesota OSHA adopted the final rule Sept. 26, 2016

General industry effective dates

- All obligations of this section June 23, 2018
 - except medical surveillance (i)(1)(i)
 - June 23, 2018, for those exceeding the PEL for 30 or more days a year
 - June 23, 2020, for those exceeding the action level 30 or more days a year
- Hydraulic fracturing operations in gas and oil industry – June 23, 2018
 - except medical surveillance (i)(1)(i) and engineering controls (f)(1) (June 23, 2021)

Construction effective dates



- All obligations commence Sept. 23, 2017
- Requirements for sample analysis (d)(2)(v) commence June 23, 2018

Permissible exposure limits (PELs)

- Action level of $25 \mu\text{g}/\text{m}^3$ as an eight-hour TWA
- Permissible exposure limit of $50 \mu\text{g}/\text{m}^3$ as an eight-hour TWA



New definition

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

Exposure assessment

- Initial exposure assessment
- Periodic exposure assessments
 - fixed schedule option
 - performance option
- Additional exposure assessments
 - changes in operation
- Or, in construction, comply with Table 1



Construction – Table 1

- Specified exposure control methods
- 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)

Sample from Table 1

Table 1. Exposure control methods for selected construction operations			
Equipment/task	Engineering and work practice control methods	Required respiratory protection and minimum assigned protection factor (APF)	
		≤4 hr/day	>4 hr/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

Sample from Table 1

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 hr/day	>4 hr/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 <ul style="list-style-type: none"> – when used outdoors – when used indoors or in an enclosed area 	None APF 10	APF 10 APF 10

When implementing 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

(iii) for measures implemented that include an enclosed cab or booth, ensure 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 work 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 percent efficient in the 0.3 to 10.0 um range (for example MERV-16 or better)
- F. has heating and cooling capabilities

Employee notification of assessment results

- Within five days (construction) or 15 days (general industry) of conducting an assessment the employer shall notify in writing each affected employee
- Whenever an exposure assessment indicates 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



Engineering controls

- Wet methods
- Ventilation
- Enclosures



- Elimination
- Substitution

Regulated areas



- **General industry:** establish a regulated area to limit access to areas that exceed the PEL
- **Construction, general industry:** develop a written exposure control plan

Written exposure control plan

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.



Industry Do you work in any of these?	Occupations Are you one of these?	Materials Are any of these involved?
<ul style="list-style-type: none"> • Abrasive blasting • Asphalt pavement manufacturing • Blast furnaces • Cement manufacturing • Ceramics, clay, and pottery • Concrete mixing • Concrete tunneling • Construction (mainly cement concrete work) • Demolition • Electronics industry • Foundry industry: grinding, molding, shakeout, core room (High Risk) • Hand molding, casting, and forming • Jackhammer operations • Manufacturing abrasives, paints, soaps, and glass • Mining • Repair or replacement of linings of rotary kilns and cupola furnaces • Rolling and finishing mills • Sandblasting (High Risk) • Setting, laying, and repairing railroad track • Steelwork • Stone, brick, and concrete block cutting, blasting, chipping, grinding, and sawing • Tunneling operations 	<ul style="list-style-type: none"> • Brickmason/stonemason • Construction laborer • Crane and tower operator • Crushing and grinding machine operator • Furnace, kiln, non-food oven operator • Grinding, abrading, buffing, and polishing machine operator • Hand molder/shaper (not jeweler) • Heavy-equipment mechanic • Janitor or cleaner • Machinist • Metals/plastics machine operator • Molding and casting machine operator • Mining machine operator • Miscellaneous material moving equipment operator • Millwright • Operating engineer • Painter who sandblasts (High Risk) • Production supervisor • Rock driller (High Risk) • Roof bolter (High Risk) • Sandblaster (High Risk) • Steelworker • Welder/cutter <p style="color: #008080; font-size: small;">See how the chance of death is increased according to occupation</p>	<ul style="list-style-type: none"> • Abrasives • Coal Dust • Concrete • Dirt • Filter Aids • Graphite, natural • Mica • Mineral Products • Paints • Pavement • Perlite • Plant Materials • Plastic Fillers • Polishing Compounds • Portland Cement • Sands • Silicates • Slag • Soapstone • Soil

- A description of the tasks that have exposure
- A description of the engineering controls, work practices and respiratory protection used
- A description of the housekeeping measures to be used
- A description of procedures to restrict access and minimize the number of employees exposed
- Shall be reviewed annually

Housekeeping

- The employer shall not allow dry sweeping or dry brushing where such activity could contribute to employee exposure unless wet sweeping, HEPA vacuuming or other methods 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 available

Respirators

- Used when engineering controls are not sufficient to reduce exposures below the PELs
- Requires
 - a written respiratory protection program
 - medical evaluation
 - employee Training
 - fit testing



Medical surveillance

- **Construction:** for workers who wear a respirator 30 or more days a year
- **General industry:** for workers who are exposed above the action level for 30 or more days a year



Medical surveillance

- Medical and work history
- Physical exam with emphasis on respiratory
- A chest X-ray
- A pulmonary function test
- Testing for latent tuberculosis
- Any other tests deemed appropriate by the PLHCP
- At least every three years



Hazard communication

- Must be included in hazard communication training
- Must address cancer, lung effects, immune system effects and kidney effects



Employee information and training

- Health hazards associated with silica
- Specific tasks that could expose employees to silica
- Specific measures the employer has implemented to reduce exposures to silica, including engineering controls and work practices
- Contents of the standard
- Purpose and description of the medical surveillance program
- Construction: identity of the competent person

Recordkeeping

- Exposure assessment records
- Medical surveillance records
- Respirator medical evaluation and fit testing
- Training records
- Injury and illness records



MNOSHA's newsletter *Safety Lines*

- *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 to receive email notification about the publication of new editions at www.dli.mn.gov/OSHA/SafetyLines.asp


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Safety Lines

2008: Minnesota OSHA's year in review

Compiled by Shelly Techor, MNOSHA Management Analyst, and Kelly Taylor, MNOSHA Program Analyst

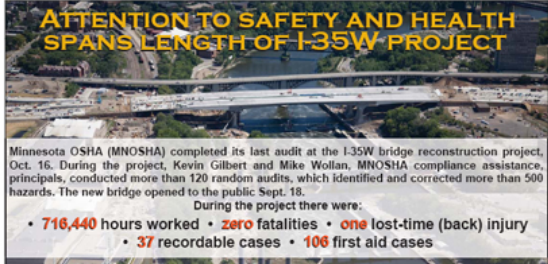
Performance review highlights
Each year, Minnesota OSHA (MNOSHA) conducts a review of its projected performance as defined in its performance plan, which is generated prior to the start of the federal fiscal-year (FFY), Oct. 1.



In FFY 2008, Minnesota OSHA:

- visited 2,591 establishments and identified 4,884 hazards;
- generated safety inspection results within 19 days on average, while the national average is 46 days;
- generated health inspection results within 33 days on average, while the national average is 59 days;
- resolved contested cases within 148 days on average, while the national average is 258 days;
- conducted 81 outreach presentations with an average participation level of 53 people; and
- signed a new partnership with the Minnesota Department of Transportation and Flatiron-Manson Joint Venture. (See *Safety Lines*, January 2008, *I-35W bridge rebuild partnership*).

For more information about MNOSHA's performance, the MNOSHA annual report is posted online during the first quarter of each calendar year at www.dli.state.mn.us/mnosha.html.



ATTENTION TO SAFETY AND HEALTH SPANS LENGTH OF I-35W PROJECT

Minnesota OSHA (MNOSHA) completed its last audit at the I-35W bridge reconstruction project, Oct. 16. During the project, Kevin Gilbert and Mike Wollan, MNOSHA compliance assistance principals, conducted more than 120 random audits, which identified and corrected more than 500 hazards. The new bridge opened to the public Sept. 18.

During the project there were:

- **716,440** hours worked • **zero** fatalities • **one** lost-time (back) injury
- **37** recordable cases • **106** first aid cases

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