The New Silica Standard for General & Construction Industry

CIHC 2016 San Diego

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Contact Information

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Occupational Safety and Health Standards Board (OSHSB)

Dave Thomas
Chairman (Labor)
Appointed 7/2/2010-6/1/2018

VACANT Management Representative	Laura Stock Occupational Safety Representative 6/11/2012-6/1/2019	VACANT Occupational Health Representative
Dave Harrison Labor Representative 6/11/2012 - 6/1/2019	Patty Quinlan Public Representative 6/16/2016 - 6/1/2020	Barbara Smisko Management Representative 6/11/2012 - 6/1/2019

OSHSB Staff

Executive Officer
(Appointed by the Board)

Engineering Staff (as of 9/22/16) 1 Principal Safety Engineer 5 Senior Safety Engineers	Legal Counsel
3 Analysts	Support Staff

Mission

- The mission of the Occupational Safety and Health Standards Board is to promote, adopt, and maintain reasonable and enforceable standards that will ensure a safe and healthful workplace for California workers.
- The Board does not engage in enforcement activities, such as interpreting standards, investigating incidents or complaints, training, levying fines, or issuing elevator permits. Those are the duties of the Division of Occupational Safety and Health (Division).

- The Standards Board is the only agency in the state authorized to adopt, amend or repeal occupational safety and health standards or orders.
- In addition, the Standards Board maintains standards for certain areas not covered by federal standards or enforcement. These latter standards apply to elevators, aerial passenger tramways, amusement rides, pressure vessels, and mine safety training.

Regulation Sources

- Federal Changes
- Petition Decisions
- Appeals Board Decisions
- Variance Decisions
- DOSH Requests
- Standards Board members or staff
- Administrative direction

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How you can participate in the rulemaking process?

- Subscribe to the Public Hearing Notices
- Attend Board meetings
- Submit comments regarding rulemaking proposals
- Submit petitions
- Join advisory committees
- Reach out to Board staff as needed to learn about RM project status
- Monitor OSHSB website: www.dir.ca.gov/oshsb

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Thanks

- OSHA Silica Regulatory Update (Webinar #0107, April 18, 2016)
- Federal Register Silica Final Rule: https://www.gpo.gov/fdsys/pkg/FR-2016-03-25/pdf/2016-04800.pdf

  (16 Mb, 600+ pages)
- Silicosis Mortality Trends and New Exposures to Respirable Crystalline Silica – United States, 2001-2010, Morbity and Mortality Weekly Report (MMWR), February 13, 2015 / 64(05);117-120.

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Final Rule Published on March 25, 2016

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Reasons for the Rule

- Current permissible exposure limits (PELs) are formulas that many find hard to understand
- Construction/shipyard PELs are obsolete particle count limits
- General industry formula PEL is about equal to 100 µg/m^3; construction/shipyard formulas are about 250 µg/m^3

Old PELs

$$\frac{250}{\%\ SiO_2 + 5} \qquad \frac{10\ mg/m^3}{\%\ SiO_2 + 2}$$

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Most Important Reason for the Rule

- Current PELs do not adequately protect workers
- Extensive epidemiologic evidence that lung cancer and silicosis occur at exposure levels below 100 µg/m^3

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Exposure and Health Risks

Exposure to respirable crystalline silica has been linked to:

- Silicosis;
- Lung cancer;
- Chronic obstructive pulmonary disease; and
- Kidney disease

Healthy Lung

Silicotic Lung

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Health Benefits

OSHA estimates that once the effects of the rule are fully realized, it will prevent:

- More than 600 deaths per year
  - Lung cancer: 124
  - Silicosis and other non-cancer lung diseases: 325
  - End-stage kidney disease: 193
- More than 900 new silicosis cases per year

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Silicosis Deaths (2001-2010)

Age Group (yrs)				
	15-44	≥45	Overall	Rate
Male	23	1,347	1,370	1.39
Female	5	62	67	0.05
Race				
White	22	1,214	1,236	0.59
Black	5	181	186	0.87
Other	1	14	15	0.16

Estimated under-reporting by a factor of 2.5 to 5.

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Scope of Coverage

- Three forms of silica: quartz, cristobalite and tridymite
- Exposures from chipping, cutting, sawing, drilling, grinding, sanding, and crushing of concrete, brick, block, rock, and stone products (such as in construction operations)
- Exposures from using sand products (such as glass manufacturing, foundries, and sand blasting)

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Industries and Operations with Exposures

- Construction
- Glass manufacturing
- Pottery products
- Structural clay products
- Concrete products
- Foundries
- Dental laboratories
- Paintings and coatings
- Jewelry production
- Refractory products
- Asphalt products
- Landscaping
- Ready-mix concrete
- Cut stone and stone products
- Abrasive blasting in:
  - Maritime work
  - Construction
  - General industry
- Refractory furnace installation and repair
- Railroads
- Hydraulic fracturing for gas and oil

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Workers and Industries Affected

- 2.3 million workers:
  - Construction: 2 million
  - GI/Maritime: 300,000
- 676,000 establishments
  - Construction: 600,000
  - GI/Maritime: 76,000

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Respirable Crystalline Silica Rule

- Two standards:
  - One for general industry and maritime
  - One for construction
- Similar to other OSHA health standards and ASTM consensus standards

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General Industry/Maritime Standard

(a) Scope
(b) Definitions
(c) Permissible exposure limit (PEL)
(d) Exposure assessment
(e) Regulated areas
(f) Methods of compliance
  (1) Engineering and work practice controls
  (2) Written exposure control plan
(g) Respiratory protection
(h) Housekeeping
(i) Medical surveillance
(j) Communication of silica hazards
(k) Recordkeeping
(l) Dates

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Construction

(a) Scope
(b) Definitions
(c) Specified exposure control methods
OR
(d) Alternative exposure control methods
  - PEL
  - Exposure Assessment
  - Methods of Compliance
(e) Respiratory protection
(f) Housekeeping
(g) Written exposure control plan
(h) Medical surveillance
(i) Communication of silica hazards
(j) Recordkeeping
(k) Dates

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Construction - Scope

- All occupational exposures to respirable crystalline silica are covered, unless employee exposure will remain below 25 µg/m^3 as an 8-hr TWA under any foreseeable conditions.

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Construction - Specified Exposure Control Methods

- Table 1 in the construction standard matches 18 tasks with effective dust control methods and, in some cases, respirator requirements.
- Employers that fully and properly implement controls on Table 1 do not have to:
  - Comply with the PEL
  - Conduct exposure assessments for employees engaged in those tasks

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Example of Table 1 Entry

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum APF	
		≤ 4 hr/shift	> 4 hr/shift
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 manufacturers' instruction to minimize dust - When used outdoors - When used indoors or in an enclosed area	 None APF 10	 APF 10 APF 10

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Example of Table 1 Entry

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum APF	
		≤ 4 hr/shift	> 4 hr/shift
Stationary masonry saws	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.	None	None

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Example of Table 1 Entry

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum APF	
		≤ 4 hr/shift	> 4 hr/shift
Vehicle-mounted drilling rigs for rock and concrete	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector. OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None None	None None

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List of Table 1 Entries

- Stationary masonry saws
- Handheld power saws
- Handheld power saws for fiber cement board
- Walk-behind saws
- Drivable saws
- Rig-mounted core saws or drills
- Handheld and stand-mounted drills
- Dowel drilling rigs for concrete
- Vehicle-mounted drilling rigs for rock and concrete
- Jackhammers and handheld powered chipping tools
- Handheld grinders for mortar removal (tuckpointing)
- Handheld grinders for other than mortar removal
- Walk-behind milling machines and floor grinders
- Small drivable milling machines
- Large drivable milling machines
- Crushing machines
- Heavy equipment and utility vehicles to abrade or fracture silica materials
- Heavy equipment and utility vehicles for grading and excavating

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Fully and Properly Implementing Controls Specified on Table 1

- Presence of controls is not sufficient.
- Employers are required to ensure that:
  - Controls are present and maintained
  - Employees understand the proper use of those controls and use them accordingly

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Employees Engaged in Table 1 Tasks

- Employees <u>are</u> "engaged in the task" when operating the listed equipment, assisting with the task, or have some responsibility for the completion of the task
- Employees <u>are not</u> "engaged in the task" if they are only in the vicinity of a task

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Respiratory Protection Requirements on Table 1

- Respirators required where exposures above the PEL are likely to persist despite full and proper implementation of the specified engineering and work practice controls
- Where respirators required, must be used by all employees engaged in the task for entire duration of the task
- Provisions specify how to determine when respirators are required for an employee engaged in more than one task

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Alternative Exposure Control Methods

- Tasks not listed in Table 1
- Where Table 1 requirements not properly implemented

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Permissible Exposure Limit (PEL)

- PEL = 50 µg/m^3 as an 8-Hour TWA
- Action Level = 25 µg/m^3 as an 8-Hour TWA

Current PELS until 6/23/2017	
Quartz, tripoli, fused silica	100 µg/m^3
Tridymite	50 µg/m^3
Cristobalite	50 µg/m^3

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Exposure Assessment

- Required if exposures are or may reasonably be expected to be at or above action level of 25 µg/m^3
- Exposures assessments can be done following:
  - The performance option
  - The scheduled monitoring option

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Performance Option

- Exposures assessed using any combination of air monitoring data or objective data sufficient to accurately characterize employee exposure to respirable crystalline silica

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Objective Data

- Includes air monitoring data from industry-wide surveys or calculations based on the composition of a substance;
- Demonstrates employee exposure associated with a particular product or material or a specific process, task, or activity;
- Must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

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Scheduled Monitoring Option

- Prescribes a schedule for performing initial and periodic personal monitoring
- If monitoring indicates:
  - Initial below the AL: no additional monitoring
  - Most recent at or above the AL: repeat within 6 months
  - Most recent above the PEL: repeat within 3 months
  - When two consecutive non-initial results, taken 7 or more days apart, are below the AL, monitoring can be discontinued
  - Reassess if circumstances change

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Appendix A – Methods of Sample Analysis

- Employers must ensure that samples are analyzed by a laboratory that follows the procedures in Appendix A
- Appendix A specifies methods of sample analysis
  - Allows for use of OSHA, NIOSH, or MSHA methods
  - Analysis must be conducted by accredited laboratories that follow specified quality control procedures

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Methods of Compliance – Hierarchy of Controls

- Employers can use any engineering or work practice controls to limit exposures to the PEL
- Respirators permitted where PEL cannot be achieved with engineering and work practice controls

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Construction – Written Exposure Control Plan

The plan must describe:

- Tasks involving exposure to respirable crystalline silica
- Engineering controls, work practices, and respiratory protection for each task
- Housekeeping measures used to limit exposure
- Procedures used to restrict access, when necessary to limit exposures

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Construction – Competent Person

- Construction employers must designate a competent person to implement the written exposure control plan
- *Competent person* is an individual capable of identifying existing and foreseeable respirable crystalline silica hazards, who has authorization to take prompt corrective measures
- Makes frequent and regular inspection of job sites, materials, and equipment

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Respiratory Protection

- Must comply with Title 8 §5144
- Respirators required for exposures above the PEL:
  - While installing or implementing controls or work practices
  - For tasks where controls or work practices are not feasible
  - When feasible controls cannot reduce exposures to the PEL

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Housekeeping

- When it can contribute to exposure, employers must not allow:
  - Dry sweeping or brushing
  - Use of compressed air for cleaning surfaces or clothing, unless it is used with ventilation to capture the dust
- Those methods can be used if no other methods like HEPA vacuums, wet sweeping, or use of ventilation with compressed air are feasible

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Construction – Medical Surveillance

- Employers must offer medical examinations to workers:
  - Who will be required to wear a respirator under the standard for 30 or more days a year.
- Employers must offer examinations every three years to workers who continue to be exposed above the trigger
- Exam includes medical and work history, physical exam, chest X-ray, and pulmonary function test (TB test on initial exam only)

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Medical Opinion

- Worker receives report with detailed medical findings
- Employer receives an opinion that only describes limitations on respirator use, and if the worker gives written consent, recommendations on:
  - Limitations on exposure to respirable crystalline silica, and/or
  - Examination by a specialist

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Communication of Hazards

- Employers required to comply with hazard communication standard (§5194)
- Address: Cancer, lung effects, immune system effects, and kidney effects as part of HCS
- Train workers on health hazards, tasks resulting in exposure, this section, workplace protections, and medical surveillance

"Employees must demonstrate knowledge and understanding"

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Recordkeeping

- Must maintain records per §3204 for:
  - Air monitoring data
  - Objective data
  - Medical records

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Construction – Compliance Dates

- Employers must comply with all requirements (except methods of sample analysis) by June 23, 2017
- Compliance with methods of sample analysis required by June 23, 2018

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Crystalline Silica in Construction Advisory Committee

- Wednesday, December 14, 2016 in Sacramento
- Address concerns raised by construction employers during adoption of federal final rule:
  - Existing exceptions in §1530.1 "Concrete and Masonry Materials"
  - Addition of vacuum controls to parts of Table 1
  - Exception for rooftop work (similar to §1530.1)

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Proposed Exceptions to Table 1

- (1) Stucco, plastering material, or similar products.
- (2) Wall cladding, siding, or similar products.
- (3) Downward drilling.
- (4) Jack-hammering or chipping when that work is incidental to the scope of work or planned operations of a plumbing or landscaping activity.
- (5) Work with powder-actuated tools.
- (6) Work incidental to the installation of concrete and masonry materials such as the drilling of holes for plumbing fixtures.

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Proposed Exceptions to Table 1

- (7) Tile backer board when cut with powered shears or a dust reduction blade having a dust containment device.
- (8) Drywall or wallboard materials.
- (9) Mixing of mortar, concrete, or similar products.
- (10) Emergency operations. During the first 24 hours of an operation undertaken in response to an emergency, a dust reduction system is not required where it can reasonably be demonstrated or foreseen that use of a dust reduction system will materially impair the timely progress of the operation. For the purposes of this exception, "emergency" means an unexpected occurrence requiring immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. "Emergency" includes, but is not limited to, a fire, flood, earthquake or other soil or geologic movement, structural collapse, damage to a subsurface installation, terrorist act, or sabotage.

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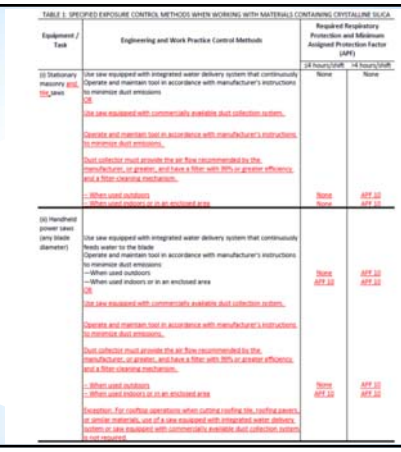
Proposed Modifications to Table 1



Proposed Exception for Rooftop Cutting of Roofing Tiles

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Guidance and Outreach

- Silica Rulemaking Webpage: www.osha.gov/silica
  - Fact sheets
  - FAQs
  - Video
- Appendix B – Medical Surveillance Guidelines
- Small Entity Compliance Guide: https://www.osha.gov/Publications/OSHA3902.pdf

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Questions?

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