Cal-OSHA’s Rule on Occupational Exposure to Respirable Crystalline Silica

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Cal OSHA Update
November 4, 2016
Status of Final Rule

• Horcher rulemaking procedure
• Adopted by California Occupational Safety and Health Board – September 2016
• Approved by Office of Administrative Law October 17, 2016
• Effective Date October 17, 2016
• Models Federal OSHA’s Silica Standard

http://www.dir.ca.gov/OSHSB/Respirable-Crystalline-Silica-HORCHER.html
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)
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
California’s Respirable Crystalline Silica Rule

- Two standards:
  - One for General Industry
  - One for Construction
General Industry - 5204

(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
General Industry
Scope – 5204(a)

• All occupational exposures to respirable crystalline silica are covered, **except:**

• Agricultural operations covered by Section 3436
• Construction Operations covered by Section 1532.3
• Exposures resulting from processing of sorptive clays.
• If employer has objective data that exposures will be below 25 micrograms per cubic meter. (Action Level)
• If employer complies with 1532.3 and
  – Task indistinguishable from construction task in Table 1 of 1532.3
  – Task not performed regularly in same environment and conditions
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
### 5155-Airborne Contaminants

**Table AC-1 - PELs**

- **Silica, crystalline, respirable dust**\(^{(n)}\)
- 14464461 Cristobalite, respirable dust – **0.05** *(see also Sections 1532.3 & 5204)*
- 14808607 Quartz, respirable dust – **0.1 0.05** *(see also Sections 1532.3 & 5204)*
- 14808607 Quartz, total dust – **0.3**
- 60676860 Silica, fused, respirable dust – **0.1**
- 15468323 Tridymite, respirable dust – **0.05** *(see also Sections 1532.3 & 5204)*
- 1317959 Tripoli, *(as quartz)* respirable dust – **0.1 0.05** *(see also Sections 1532.3 & 5204)*
Exposure Assessment-5204(d)

• Required if exposures are or may reasonably be expected to be at or above action level of 25 µg/m³

• Exposures assessments can be done following:
  • The performance option
  • The scheduled monitoring option
Performance Option-5204(d)

• Exposures assessed using any combination of air monitoring data or objective data sufficient to accurately characterize employee exposure to respirable crystalline silica
Objective Data-5204(b)

- 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
Scheduled Monitoring Option-5204(d)

- 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
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
General Industry – Regulated Areas-5204(e)

• Required where exposures can reasonably be expected to exceed the PEL
• Must be demarcated in any manner that limits workers in the area
• Post warning signs at entrances per 5204(j)(2)
• Respirator use required for employees and employee’s designated representatives
Methods of Compliance – Hierarchy of Controls-5204(f)

• 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
Engineering Controls

Grinding stone without engineering controls

Polishing stone using water to control the dust
Engineering Controls (cont.)

Grinding without engineering controls

Grinding using a vacuum dust collector
Engineering Controls (cont.)

Jackhammer use without engineering controls

Jackhammer use with water spray to control dust
General Industry – Written Exposure Control Plan-5204(f)

• The plan must describe:
  • Tasks involving exposure to respirable crystalline silica
  • Engineering controls, work practices, and respiratory protection used to limit exposure for each task
  • Housekeeping measures used to limit exposure
Respiratory Protection-5204(g)

- Must comply with Title 8, CCR, Section 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
  - While in a regulated area (General Industry)
Housekeeping-5204(h)

• 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
General Industry–Medical Surveillance-5204(i)

- Employers must offer medical examinations to workers who will be exposed above the action level 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)
Medical Opinion

• Worker receives *report* with detailed medical findings, any work restrictions, and recommendations concerning any further evaluation or treatment

• 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
Communication of Hazards-5204(j)

- Employers required to comply with hazard communication standard (HCS) (T8,CCR,Sec. 5194)
- Address: Cancer, lung effects, immune system effects, and kidney effects as part of HCS
- Train workers on health hazards, tasks resulting in exposure, workplace protections, and medical surveillance.
Recordkeeping-5204(k)

- Must maintain records for:
  - Air monitoring data
  - Objective data
  - Medical records maintained and made available per Section 3204
General Industry – Compliance Dates-5204(l)

Effective date to be established by OAL pending approval

Employers must comply with all requirements of the standard by June 23, 2018, except:

- Medical surveillance for those employees exposed above PEL 30 or more days/year – June 23, 2018
- Medical surveillance for those employees exposed above Action Level 30 or more days/year – June 23, 2020
- Hydraulic fracturing operations in the oil and gas industry
  - must implement engineering controls to limit exposures to new PEL by June 23, 2021.
  - Implement medical surveillance per above dates
Construction Standard-1532.3

(a) Scope
(b) Definitions
(c) Specified exposure control methods
   OR
(d) Alternative exposure control methods
   (1) PEL
   (2) Exposure Assessment
   (3) 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
Construction – Scope
1532.3(a)

• All occupational exposures to respirable crystalline silica are covered, unless employee exposure will remain below 25 μg/m³ as an 8-hr TWA under any foreseeable conditions.
Construction – Definitions – 1532.3(b)

- Action Level
- Competent Person
- HEPA Filter
- Objective Data
- PLHCP
- Respirable Crystalline Silica
Construction –
Specified Exposure Control Methods
1532.3(c)

- 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
<table>
<thead>
<tr>
<th>Equipment / Task</th>
<th>Engineering and Work Practice Control Methods</th>
<th>Required Respiratory Protection and Minimum APF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary masonry saws</td>
<td>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.</td>
<td>None</td>
</tr>
</tbody>
</table>
Example of a Table 1 Entry

<table>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>≤ 4 hr/shift</td>
</tr>
<tr>
<td>Handheld power saws (any blade diameter)</td>
<td>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</td>
<td>None APF 10</td>
</tr>
</tbody>
</table>
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
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
  • Provide means of exhaust for tasks in indoor or enclosed areas
  • For wet methods, apply sufficient water flow to minimize dust
  • Specific measures for tasks performed in enclosed cabs or booths
Employees Engaged in Table 1 Tasks

• Employees are “engaged in the task” when operating the listed equipment, assisting with the task, or have some responsibility for the completion of the task

• Employees are not “engaged in the task” if they are only in the vicinity of a task
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.
Alternative Exposure Control Methods-1532.3(d)

- For Tasks not listed in Table 1 or where employer does not implement engineering controls, work practices and respiratory protection specified in Table 1
- Employer shall assess employee when reasonably expected be exposed at or above Action Level – 25 micrograms per cubic meter.
- Performance option – air monitoring and objective data
- Scheduled monitoring option
Must comply with Title 8, CCR, Section 5144

Respirators required
- Per Table 1
- When task not listed in Table 1
- Where PEL is exceeded 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
• 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
Construction – Written Exposure Control Plan-1532.3(g)

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

Must evaluate effectiveness annually
Construction – Competent Person-1532.3(g)(4)

• 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
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).
Communication of Hazards-1532.3(i)

• Employers required to comply with hazard communication standard (HCS) (T8,CCR,Sec. 5194)
• Address: Cancer, lung effects, immune system effects, and kidney effects as part of HCS
• Train workers on health hazards, tasks resulting in exposure, workplace protections, and medical surveillance.
Recordkeeping-1532.3(j)

- Must maintain records for:
  - Air monitoring data
  - Objective data
  - Medical records maintained and made available per Section 3204
Construction – Compliance Dates-1532.3(k)

• Effective date established upon approval of OAL
• 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
Current Applicable Standard – Dust-Generating Operations-1530.1

- Use of powered tools & equipment
- Cutting, grinding, drilling, coring concrete or masonry materials
- Specific requirements for dust reduction systems
Exception to Dust-Generating Operations-1530.1

- Stucco, plastering material or similar products
- Wall cladding, siding or similar products
- Downward drilling
- Incidental jack-hammering or drilling
- Using powder-actuated tools
- Incidental work such as drilling holes for plumbing fixtures
- Tile backer boards cut with powered shears or dust reduction blade with dust containment device
Guidance and Outreach

- Hazards of Silica

Construction etool:
http://www.dir.ca.gov/dosh/etools/08-019/index.htm