

# OSHA's New Silica Rule Everything You Need to Know

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## Defined

- Respirable Crystalline Silica Dust
  - Common naturally occurring mineral
  - Used for many applications
    - Sand, concrete, brick, block, stone, mortar
    - Does not include amorphous silica
  - Respirable silica formed by high energy operations
    - Sanding, cutting, sawing, grinding, crushing



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## Objectives

- Understand the general provisions of the new rule
- Identify specific activities that will be affected by this rule
- Completing and implementing an exposure control plan
- Understand when employee monitoring and medical evaluations will be applicable



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## Background

- Priority for Rulemaking since mid 90's
  - 1996 Special Emphasis Program
    - WHO – IARC classifies as carcinogen
  - 1999-200 Stakeholders' Meetings
  - 2003 Draft Standard
  - 2011 Draft Submitted to OMB
  - 2013 Pressured to Release Proposed Rule
  - 2015 Submission of Final Rule
  - 2016 Final Rule Adopted



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## Background

- New Standard Reduces Exposure Limits
  - 8-hour TWA of 50  $\mu\text{g}/\text{m}^3$  PEL
  - 25  $\mu\text{g}/\text{m}^3$  Action Level
- Exposure Assessments
- Exposure Control Methods
- Respiratory Protection
- Medical Surveillance
- Hazard Communication
- Rules for Related Records



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## Regulatory Application

- Construction
  - September 2017
- General Industry/Maritime
  - June 2018



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# Exposure Assessments

- Table 1 – Construction
- Performance Option
  - Air monitoring data
  - Objective data
- Scheduled Monitoring Option
  - Initial monitoring
    - Discontinue if below AL
  - 6 months if < PEL
  - 3 months if > PEL



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## Table 1

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Stationary Masonry Saws</li><li>• Handheld power saws</li><li>• Handheld power saws for cutting fiber cement boards</li><li>• Walk-behind saws</li><li>• Drivable saws</li><li>• Rig-mounted core saws or drills</li></ul> | <ul style="list-style-type: none"><li>• Handheld &amp; stand-mounted drills (including impact and rotary hammer drills)</li><li>• Dowel drilling rig for concrete</li><li>• Vehicle-mounted drilling rigs for rock/concrete</li><li>• Jackhammers and handheld powered chipping tools</li></ul> |
|--|---|



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## Table 1

- Handheld grinders (mortar removal)
- Handheld grinders (other uses)
- Walk-behind milling machines and floor grinders
- Small drivable milling machines (<half-lane)
- Large drivable milling machines (≥half-lane)
- Crushing machines
- Heavy equipment and utility vehicles used to abrade, fracture or demolish silica-containing materials
- Heavy equipment and utility vehicles used for grading and excavating.



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## Using Table 1

- Determine applicability of the standard
  - What materials are used?
  - What tasks are completed?
    - On Table 1?
    - Comply with Table 1?
    - Modify task/equipment to comply with Table 1
    - If unable to modify must use performance or monitoring option



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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/shift	> 4 hours/shift
(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
(ii) Handheld power saws (any blade diameter)	<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> <ul style="list-style-type: none"> <li>• When used outdoors.</li> <li>• When used indoors or in an enclosed area.</li> </ul>	None APF 10	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/shift	> 4 hours/shift
(xi) Handheld grinders for mortar removal (i.e., tuckpointing)	<p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (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.</p>	APF 10	APF 25



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## Visible Dust

- For enclosed work, exhaust system minimizes accumulation
- Wet methods must apply flow rates to minimize
- Enclosed cabs
  - Free from settled dust
  - Doors which seal
  - Positive pressure
  - Filtered air intake at 95%
  - Heating and cooling systems



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## Hazard Determination

- Identify any tasks performed that are NOT Construction or on Table 1
  - Determine exposure levels
    - Use existing representative objective data or combine with air monitoring data
    - Initial Monitoring
    - Perform representative air monitoring (following scheduled monitoring approach)



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## Hazard Determination

- Performance Option
  - Air monitoring data
  - Objective data
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## Performance Option

- Can use a range to characterize exposure
- Requirements
  - Prior to work beginning
  - Reassess upon changes
  - Demonstrate exposures are accurately characterized
  - Reflects each shift, job classification, and work area



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## Objective Data

- Air monitoring from industry-wide surveys
- Calculations based on composition
- Area sampling results and mapping profiles
- Historic air monitoring data



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## Scheduled Monitoring

- TWA exposure over 8 hours
- Collected from breathing zone
- Outside of respirators
- Minimum
  - One full shift
  - Each job function
  - Each job classification
- May be representative
  - Must sample highest exposure risk



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## General Employer Obligations

- Provide respiratory protection when required
- Restrict housekeeping to feasible alternative which do not generate dust
- Establish and implement an Exposure Control Plan
  - Designate competent person
- Medical Exams
- Train employees
- Recordkeeping



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## Exemptions

- Reasonably expected to stay below action level
  - When performed in isolation from other tasks (not limited to)
    - Mixing concrete for post holes
    - Pouring concrete footers, slabs, foundation walls
    - Removing formwork
  - Very short term exposures (not limited to)
    - Hand-held drills < 15 minutes



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## Exposure Determinations

- Employees engaged in tasks
  - Not just users of equipment, but others directly involved in the work
  - Limiting access to indirect workers to prevent exposure
- Controls fully implemented
  - Water flow rate
  - Air flow rate
  - Blade speed
  - Equipment maintenance
  - Water change-out schedule



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## Reassessing Exposures

- Changes if expecting different results based on
  - Production
  - Process
  - Control equipment
  - Personnel
  - Work practices
- Not required if changes would result in lower exposures



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## Notifying Employees

- Notify of results of exposure monitoring within 15 working days
  - All affected, even if by representative sample
  - Objective data
- Notify in writing or post in common area
- If above PEL, employer to describe controls to be used
- Permit observation by employees or reps



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## Regulated Areas

- Areas expected above the PEL
  - GI must establish, demarcate, and limit access
  - Construction must restrict access to reduce exposures
    - Scheduling when fewer employees are around
    - Verbal communication
    - Moving employees to different areas
    - Posted warning signs
    - Consider tasks performed by other contractors



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## Respiratory Protection

- Comply with 1910.134
- Provide respiratory protection where Table 1 requires
- Made by employer determination of exposure
  - Assigned protection factors



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## Exposure Control Plans

- Develop Written Exposure Control Plan
  - Describes Tasks
  - Describes Exposures
  - Describes Controls
    - Engineering
    - Work Practice
    - Housekeeping
    - Table 1
    - Area Restriction



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## Exposure Control Plans

- Description of Tasks
  - List all tasks where exposure may occur
  - Equipment used
  - Factors that affect exposure
    - Materials
    - Ventilation / Weather
    - Indoor / Outdoor



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## Exposure Control Plans

- Describe Exposures
  - Using exposure determinations
  - Table 1
    - Anticipated timing
      - > or < 4 hours
      - Combined times of exposure for multiple task
  - Exempted tasks are no longer exempt if combined with other tasks



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## Exposure Control Plans

- Describe Controls
  - Critical if using Table 1
  - Dust collection systems
  - Water delivery
  - Respiratory protection
  - Manufacturer restrictions
  - Housekeeping
  - Area Restrictions
  - Work Practice Controls



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## Exposure Control Plans

- Annual Review of Exposure Control Plans
  - Review and evaluate effectiveness
  - All information is up-to-date
  - New equipment additions
  - New monitoring or objective data



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## Competent Person

- Regular and frequent inspections of job site, materials, and equipment
  - Verify ECP is followed
  - Must have training specific to project expectations



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## Vacuum Systems

- HEPA rated
- Filter cleaning mechanism
  - To prevent exposure to dirty filter
- Volume requirements for handheld tool blade diameter size
  - 25 CFM per inch of diameter



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## Wet Methods

- Integrated systems
  - Built into tool system
  - Continuous feed to surface or blade
  - Flow rates provided by manufacturer
- Water delivery system
  - Continuous stream/spray
- Supplemental sprays combined with surfactant
- Must eliminate visible dust



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## Housekeeping

- No dry sweeping where exposure may occur
  - HEPA filter vacuum
  - Wet Methods
  - No Compressed air
    - Unless systems captures dust
    - No alternative is feasible



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# Abrasive Blasting

- Compliance
  - New Silica Dust
  - Ventilation
  - Respiratory Protection



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# Medical Surveillance

- Intentions
  - Identify silica-related diseases
  - Identify adverse health conditions
  - Fitness to use respirators
- Employers cover all associated costs
- 30 day rule
  - Respirator use (construction)
  - Exposure above Action Level (GI)
    - Above PEL until June 2020



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## Medical Surveillance

- Frequency
  - Offer within 30 days of assignment
    - Unless previous exam
  - Every three years
    - Or sooner if recommended by PLHCP
- May be combined with evaluation for respirator use / fit test
  - Or RPP evaluation may occur prior to 30 day limit



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## Medical Exam

- Medical and work history
  - Focus on past, present, future exposures
- Physical respiratory exam
- Chest X-ray
- Lung function (spirometry)
- Latent tuberculosis (initial only)
- Any of test deemed appropriate by PLHCP



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## Medical Exam

- Employer to provide
  - Description of past, present, future work
  - Knowledge of exposure levels
  - Description of PPE used
  - Information from previous medical exams
- Only required to provide information under control of the employer



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## Medical Written Report

- For Employee
  - PLHCP to explain and provide written report within 30 days
    - Description of results
    - Medical conditions which increase risks or require further treatment / exams
    - Limitations on PPE
    - Limitations on silica exposure
    - Need to be examined by specialist



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## Medical Written Report

- Employer must get within 30 days written opinion
  - Date of exam
  - Statement of compliance with standard
  - Respirator limitations
- Employees must authorize release
  - Limitations on exposure to silica
  - Specialist recommendations



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## Specialist Exams

- Within 30 days of written opinion
- American Board Certified Specialist
  - Pulmonary Disease, or
  - Occupational Medicine
- Employer must provide same info
- Specialist explains results and written report to employee within 30 days
  - Provides employer an opinion within 30 days



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## Specialist Exams

- Employee Reports
  - Description of exam and conditions concerning silica exposure
  - Recommended respirator limitations
  - Exposure Limitations
- Employer Reports
  - Date of exam
  - Recommended respirator limitations
  - Further information by authorization of employee



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## Communication of Hazards

- Training
  - Silica Health Hazards
  - Tasks which expose employees
  - Methods of exposure control
    - Proper use of controls for specific tools
    - Signs controls may be inadequate
  - Contents of the standard
  - Identity of the Competent Person for the shift
  - Description of Medical Surveillance program



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## Training Frequency

- Upon assignment of exposure tasks
- New tasks
- New controls
- Demonstrate lack of knowledge
  
- Copy of the standard must be available



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## Recordkeeping

- Air Monitoring Data
  - Date sample taken
  - Task monitored
  - Sampling and Analytical methods
  - Number, duration, and results
  - Lab identity
  - Types of PPE
  - Name, SSN, and job classification



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## Recordkeeping

- Objective Data
  - Specific crystalline silica-containing material
  - Testing protocol and results
  - Process description
  - Any other relevant data



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## Recordkeeping

- Medical Surveillance
  - Name and SSN
  - Copy of PLHCP and specialist written opinions
  - Copy of all information required to be provided to the PLHCP and specialists
- Maintained for length of employment + 30 years
  - If less than 1 year, records are not required if given to employee



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## Conclusion

- Biggest change in construction industry in recent times
- Compliance will be challenging
  - Exposure determinations
  - Adequate equipment
  - Medical evaluations
  - Recordkeeping
  - Exposure Control Plans
  - Employee training



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