Finding the Needle in the Haystack - OSHA and the Silica Rule

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The current permissible exposure limit ("PEL") for construction is based on the number of dust particles, rather than the mass of respirable dust, per unit of volume of air. The construction PEL formula is considered obsolete by OSHA and NOISH.

The current PEL, calculated as an 8-hour time-weighted average, is approximately 250 micrograms of respirable crystalline silica per cubic meter of air (250 µg/m³) in construction and 100µg/m³ in general industry.
OSHA states that the scientific evidence indicates that employees exposed to respirable (very small) crystalline silica below the current PEL are at substantially increased risk for:

- Silicosis;
- Lung cancer and other cancers (larynx, stomach, esophageal);
- Non-malignant respiratory autoimmune diseases, such as chronic obstructive pulmonary disease (“COPD”), emphysema, chronic bronchitis;
- Kidney and renal disease; and
- Infectious tuberculosis.

Relied primarily upon 12 studies in industries unrelated to construction, such as gold mining.
Key Provisions

- On August 23, 2013, OSHA posted a proposed rulemaking ("NPRM") on its web site to limit and control silica exposures in general industry, maritime and construction.

- OSHA proposes reducing the PEL for both general industry and construction to 50µg/m³ with an Action Level of 25µg/m³.

- OSHA proposes engineering and work practice controls, such as the use of HEPA-vacuums, wet methods, and no dry sweeping.

- OSHA also proposed adopting ancillary provisions, such as exposure monitoring, respiratory protection, medical surveillance, protective clothing, regulated areas or access control plan, hazard communication, and recordkeeping.
OSHA identified 12 construction activities that are potentially affected by the proposed rule:

- Abrasive Blasting
- Drywall Finishers
- Heavy Equipment Operators
- Hole Drillers Using Hand-Held Drills
- Jackhammer and Impact Drillers
- Masonry Cutters Using Portable Saws
- Masonry Cutters Using Stationary Saws
- Millers Using Portable or Mobile Machines
Additional construction activities that are potentially affected by the proposed rule:

- Rock and Concrete Drillers
- Rock-Crushing Machine Operators and Tenders
- Tuckpointers and Grinders
- Underground Construction Work

OSHA organized construction workers into general activities that create silica exposures rather than organizing them by job titles because construction workers often perform multiple activities.
OSHA proposes reducing the PEL to 50µg/m³ for both general industry and construction.

Over the course of any 8-hour work shift, the average exposure to respirable crystalline silica cannot exceed 50µg/m³.
Options – Construction Industry

- Option #1: Follow requirements for the general industry and maritime proposed standard.

- Option #2: Follow Table 1
  - Employers choosing to follow Table 1 would be considered to be in compliance with the engineering and work practice control requirements of the proposed standard.
  - Employers choosing to follow Table 1 would not be required to conduct certain exposure monitoring activities.
  - Employees are presumed to be exposed above the PEL.
<table>
<thead>
<tr>
<th>Operation</th>
<th>Engineering and Work Practice Control Methods</th>
<th>Required Air-Purifying Respirator (Minimum Assigned Protection Factor)</th>
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</thead>
<tbody>
<tr>
<td>Using Stationary Masonry Saws</td>
<td>Use saw equipped with integrated water delivery system. NOTE: Additional specifications:</td>
<td>None</td>
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<td></td>
<td>• Change water frequently to avoid silt build-up in water.</td>
<td></td>
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<td></td>
<td>• Prevent wet slurry from accumulating and drying.</td>
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<td>• Operate equipment such that no visible dust is emitted from the process.</td>
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<td></td>
<td>• When working indoors, provide sufficient ventilation to prevent build-up of visible airborne dust.</td>
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<td></td>
<td>• Ensure saw blade is not excessively worn.</td>
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<tr>
<td>Using Hand-Operated Grinders</td>
<td>Use water-fed grinder that continuously feeds water to the cutting surface.</td>
<td>None</td>
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<td></td>
<td><strong>OR</strong></td>
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<tr>
<td></td>
<td>Use grinder equipped with commercially available shroud and dust collection system, operated and maintained</td>
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<tr>
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<td>to minimize dust emissions. Collector must be equipped with a HEPA filter and must operate at 25 cubic</td>
<td>Half-Mask (10)</td>
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<td>feet per minute.</td>
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</tbody>
</table>
| Using Portable Walk-Behind or Drivable Masonry Saws | Use saw equipped with local exhaust dust collection system.  
Used outdoors.  
Used indoors or within partially sheltered area.  
NOTE: Additional specifications:  
- Prevent wet slurry from accumulating and drying.  
- Operate equipment such that no visible dust is emitted from the process.  
- When working indoors, provide sufficient ventilation to prevent build-up of visible airborne dust.  
- Use dust collector in accordance with manufacturer specifications. | Half-Mask (10) | Half-Mask (10) |
| | None | None |
| Rock Crushing | Use water-fed system that delivers water continuously at the cut point.  
Used outdoors.  
Used indoors or within partially sheltered area.  
NOTE: Additional specifications:  
- Prevent wet slurry from accumulating and drying.  
- Operate equipment such that no visible dust is emitted from the process.  
- When working indoors, provide sufficient ventilation to prevent build-up of visible airborne dust. | None | None |
| | Use wet methods or dust suppressants.  
OR  
Use local exhaust ventilation systems at feed hoppers and along conveyor belts.  
NOTE: Additional specifications:  
- Operate equipment such that no visible dust is emitted from the process.  
For equipment operator working within an enclosed cab having the following characteristics:  
- Cab is air conditioned and positive pressure is maintained; | Half-Mask (10) | Half-Mask (10) |
| | | Half-Mask (10) | Half-Mask (10) |
Employers shall ensure that accumulation of crystalline silica are cleaned by HEPA-filter vacuuming or wet methods where such accumulations could, if disturbed, contribute to employee exposure to silica that exceeds the PEL.

Compressed air, dry sweeping, and dry brushing shall not be used to clean clothing or surfaces contaminated with crystalline silica where such activities could contribute to employee exposure to silica that exceeds the PEL.

Employers shall not rotate employees to different jobs to achieve compliance with the PEL.
Regulated Work Areas

- Establish “Regulated Areas” or a written access control plan when exposure is, or can reasonably be expected to be, in excess of the PEL.
  - Regulated areas should be marked and access limited to essential personnel.
  - Approved respirators shall be provided and required to be used in all regulated areas.

- Written access control plan:
  - Must include provisions for a competent person to identify the presence and location of any areas where respirable crystalline silica exposure are, or can reasonably be expected to be, in excess of the PEL.
  - Describe how employees and other workers will be notified of the presence and location of exposed area and how the area will be demarcated.
  - Describe procedures for limiting access to exposed areas and providing respirators.
  - Must be reviewed and updated annually or when necessary.
Employers must provide either (1) protective work clothing where there is the potential for employees’ work clothing to become grossly contaminated with crystalline silica; or (2) a means to remove excessive silica dust from contaminated clothing when exiting the regulated area.

- Dry sweeping would not be acceptable.

“Gross contamination” refers to a substantial accumulation of dust on clothing worn by an employee working in a regulated area such that movement by the individual results in the release of dust from the clothing.

- Dust would be plainly visible.
Respiratory Protection

- Require employees to use employer provided respirators when:
  - (i) exposures exceed the PEL during period necessary to install engineering and work practice controls,
  - (ii) exposures exceed the PEL during work operations for which engineering controls are infeasible,
  - (iii) work operations where engineering and work place controls are not sufficient to reduce exposure to or below the PEL,
  - (iv) the employee is in the regulated area, and
  - (v) the employee is in an area where respirator use is required under an access control plan (i.e., when reasonably expected to exceed the PEL).
Medical Surveillance

- Provide no-cost medical surveillance for any employee exposed above the PEL for 30 days per year.

- Initial medical exam within 30 days of initial assignment (according to listed requirements), unless employee received a similar medical exam in the last 3 years.

- Periodic exams at least every 3 years or as recommended by physician or licensed health care provider.

- Provide medical opinions to employer within 30 days of after examination and to employees no later than 45 days after examination.
Medical Exam

- Medical Exam shall consist of –
  
  (i) a medical and work history, with emphasis on present, past, and anticipated exposure to respirable crystalline silica and any history of respiratory dysfunction; history of TB; smoking;

  (ii) a physical examination of the respiratory system;

  (iii) chest x-ray, interpreted and classified according to ILO International Classification of Radiographs of Pneumoconioses by a NIOSH-Certified “B” Reader;

  (iv) pulmonary function test; and

  (v) test for latent TB infection.

- Additional Exams: If the physician indicates that an employee should be examined by a pulmonary specialist, the employer shall make available a medical exam by a specialist within 30 days after receiving the physician’s written medical opinion.
Hazard Communication and Training

- Silica must be included in the employer’s HazCom Standard (29 C.F.R. 1910.1200) program.

- Provide silica-specific initial and periodic training
  - Cancer, lung effects, immune system effects, and kidney effects are hazards that need to addressed along with the signs and symptoms of these diseases.
  - Specific operations in the workplace that could result in exposure and specific procedures the employer has implemented to protect employees form exposure to silica.

- Purpose and description of the medical surveillance program

- Employer must ensure that each affected employee can demonstrate knowledge of the specified training elements.
  - E.g., discussion of the required training subjects, written tests, or oral quizzes.
Recordkeeping

- Mandates recordkeeping and retention of air monitoring data and objective data on employee exposure.
  - Maintained for at least 30 years in accordance with 29 CFR 1910.1020(d)(1)(ii).

- Mandates the employer to establish and maintain an accurate record for each employee subject to medical surveillance.
  - Maintained for at least 30 years in accordance with 29 CFR 1910.1020(d)(1)(i).
Thank You!

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