

Respirable Silica Regulation: On the Horizon for Mine Operators

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COLORADO READY MIXED CONCRETE ASSOCIATION

Josh Schultz | Law Office of Adele L. Abrams
jschultz@aabramslaw.com | (303) 228-2170

WWW.SAFETY-LAW.COM



LAW OFFICE OF
ADELE L. ABRAMS P.C.

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Overview: OSHA / MSHA Respirable Silica Regulation

- 1974: NIOSH recommends exposure limit for respirable crystalline silica at 50 micrograms per cubic meter of air averaged during a 10-hour shift.
- 1985: MSHA codifies PEL for silica at 100 micrograms per cubic meter of air averaged during an 8-hour shift. Standard is based on the 1973 American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values formula.
- 1994: OSHA lists silica as a priority for rulemaking.
- 2013: OSHA announces proposed rule to protect workers exposed to crystalline silica.
- 2016: OSHA issues final silica rule.



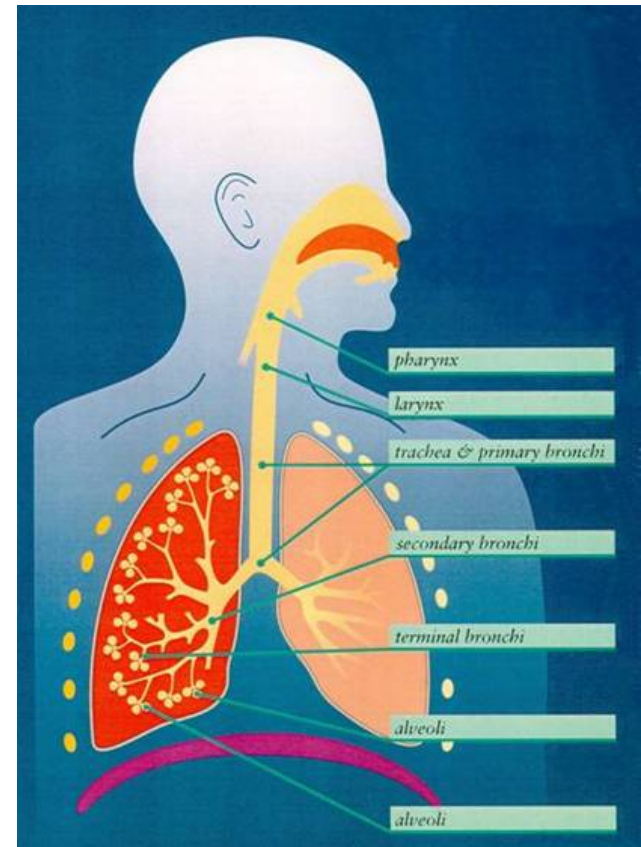
Overview: OSHA / MSHA Respirable Silica Regulation

- September 23, 2017: OSHA begins enforcing the silica standard for the construction industry.
- June 23, 2018: OSHA begins enforcement of the respirable crystalline silica standard for general industry and maritime.
- May 8, 2019: House Appropriations Committee "strongly encourages MSHA to develop a more protective silica monitoring standard."
- August 29, 2019: MSHA publishes request for information (RFI) on possible further regulatory action to address silica.
- October 28, 2019: Deadline for comments on MSHA RFI.



How Are Workers Exposed?

- ❑ Respirable dust means the particle is small enough to penetrate the respiratory system (can't be expelled)
- ❑ Inhaled when cutting, sawing, grinding, drilling, and crushing the materials.
- ❑ Also present during extraction, processing, transfer for storage and transit, or use during fracking
- ❑ “Silicosis” is caused by breathing of dust containing silica
- ❑ The dust causes “fibrosis” or scar tissue formation in the lungs
- ❑ This reduces the lung’s ability to extract oxygen from the air



What is the OSHA Permissible Exposure Limit (PEL) for Respirable Crystalline Silica (RCS)?



- OSHA Permissible Exposure Limit (PEL) = 0.05 mg/m³ TWA
- **Calculated as an 8-hour Time Weighted Average**
- 0.05 mg/m³ = 50 micrograms (µg)/m³
- 1 m³ of air = 1,000 liters
- Normal breathing rate (moderate work, 1 work day) = 10 m³ (10,000 liters of air)
- 50 micrograms x 10 m³ = 500 µg



OSHA Silica “Permissible Exposure Limits” (PEL)

- OSHA Construction Job Sites

<input type="checkbox"/>	<u>1971 Standard</u>	<u>September 23, 2017</u>
	250 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$ (80% ↓)

- OSHA General Industry (Mfg) and Maritime

<input type="checkbox"/>	<u>1971 Standard</u>	<u>June 23, 2018</u>
	100 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$ (50% ↓)

- If less than the 25 $\mu\text{g}/\text{m}^3$ Action Level (AL), then rule does not apply



OSHA's 2016 GI/Maritime Rule

➤ Includes provisions for:

- Measuring worker exposures to silica if at or above 25 ug/m³ action level and workers get notification of results within 15 working days;
- Using engineering controls (e.g., water, ventilation) and work practices to limit exposures from exceeding 50 ug/m³ over 8 hr time-weighted average workday;
- Limiting access to areas where workers could be exposed above the PEL;
- Using respirators when necessary after implementing engineering and administrative controls;
- Restricting housekeeping practices that expose workers to silica if feasible alternatives are available;
- Medical exams for highly exposed workers;
- Worker training on work ops that result in exposure and ways to limit exposure; and
- Recordkeeping of workers' silica exposure and medical exams.



Exposure Monitoring – GI

- Initial monitoring to assess 8 hr TWA for silica exposure of representative employees for each job classification (picking EE with highest expected exposure)
 - If initial monitoring shows below AL, employer may discontinue monitoring for those employees
 - IF most recent monitoring indicates exposure $>$ AL but $<$ PEL, repeat monitoring within 6 mo.
 - IF most recent monitoring indicates exposures $>$ PEL, repeat within 3 mon.
 - Where non-initial monitoring indicates exposures $<$ AL, repeat monitoring within 6 mo. until 2 consecutive are $<$ AL ... then discontinue monitoring.



Exposure Monitoring – GI

- Reassess exposures whenever change in production, process, control equipment, personnel or work practices indicate new or additional exposures above AL, or if ER has reason to believe exposures above AL have occurred.
- Sample analysis must conform to Appendix A.
- Employee representative has right to observe air monitoring and must be provided with appropriate PPE at no cost.
 - Exposure records and medical surveillance must be maintained and made available in accordance with 29 CFR 1910.1020



Medical Surveillance

- ER must make medical surveillance available at no cost to EE for each worker exposed to respirable CS at or above AL for 30+ days/yr.
- All exams and procedures must be performed by PLHCP – after initial, exam must be repeated every 3 years or more often if recommended
Baseline exam includes:
 - past, present and anticipated exposure to RCS, dusts, and other agents affecting respiratory system,
 - history of resp system dysfunction and TB,
 - smoking status and history,
 - physical exam,
 - chest X-ray,
 - pulmonary function test,
 - testing for latent TB infection,
 - any other tests determined appropriate by PLHCP.



Medical Surveillance

- PLHCP must explain exam results to worker and any limitations on exposure, and provide written medical opinion to ER within 30 days that includes:
 - Date of exam
 - Statement that exam meets requirements of standard
 - Any recommended limitations on worker's use of respirators
 - IF employee provides written authorization, info on any recommended limitations to worker's RCS exposure, a statement that worker should be examined by specialist if chest X-ray is 1/0 or higher by B reader
- Employer must ensure worker gets copy of written medical opinion within 30 days.



Employee Training

- Each covered employee must be trained, under OSHA's Haz Com Standard (29 CFR 1910.1200) on hazard of RCS containing products and have access to labels and SDSs.
- Workers must also be trained on:
 - Health hazards associated with exposure to RCS.
 - Specific tasks in workplace that could result in exposures.
 - Specific measures ER has implemented to protect EE from exposure, including engineering and WPC, and respirators to be used.
 - Contents of OSHA rule.
 - Purpose and description of medical surveillance program.



Written Exposure Control Plan

- Plan must include following elements:
 - Description of tasks involving exposure to respirable crystalline silica
 - Description of engineering controls, work practices, and respiratory protection used to limit worker exposure for each task – engineering and WPC must be used unless employer demonstrates not feasible.
 - Description of housekeeping measures used to limit employee exposure – dry sweeping, dry brushing, and use of compressed air not allowed (unless compressed air is part of ventilation system that captures dust cloud).
- ER must review and evaluate effectiveness of written plan at least annually and update as necessary.
- Plan must be available for exam and copying by OSHA rep.



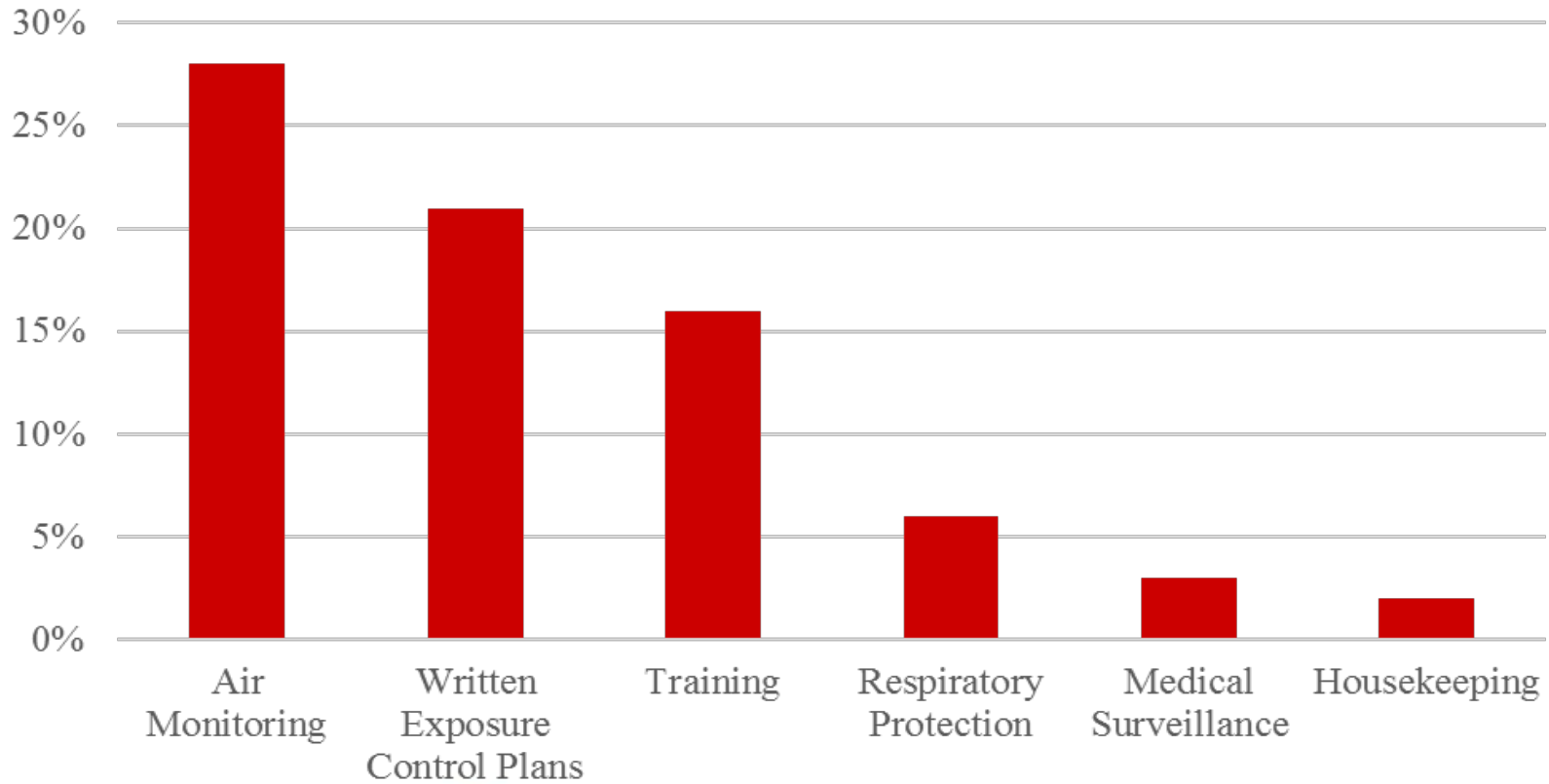
Regulated Areas

- Employer must establish regulated area if worker exposures are expected to be above PEL, and demarcate area from rest of workplace so minimizes number of exposed employees.
- Must post signs at all entrances with: **DANGER – RESPIRABLE CRYSTALLINE SILICA. MAY CAUSE CANCER. CAUSES DAMAGE TO LUNGS. WEAR RESPIRATORY PROTECTION IN THIS AREA. AUTHORIZED PERSONNEL ONLY.**
- Limit access to persons authorized by employer and required by work duties to be present, anyone who is employee's designated representative to observe monitoring, anyone authorized by OSH Act or regs to be in area.
- Each person in regulated area must be provided by employer with appropriate respirator and it must be used while in regulated area.



Federal OSHA Silica Enforcement: 674 Citations FY 2019 & \$1.4M Fines

Percent of all construction silica citations since 9/23/17 – by category



MSHA's RFI

- House FY 2020 Appropriations Report chastised MSHA for failing to move forward on silica rule.
- MSHA published RFI on 8/29/19 – comment deadline was 10/28/19.
- MSHA solicited information and data on feasible, best practices to protect miners' health, including examination of “appropriately reduced” PEL, potential new or developing protective technologies & technical/educational assistance.
- RFI notes specific activities, including: “cutting, sanding, drilling, crushing, grinding, milling, sawing, scraping, jack hammering, excavating, or disturbing materials that contain quartz.”
- MSHA's RFI restates NIOSH recommendation of recommended exposure limit of 50 $\mu\text{g}/\text{m}$ and notes OSHA PEL of 50 $\mu\text{g}/\text{m}$.



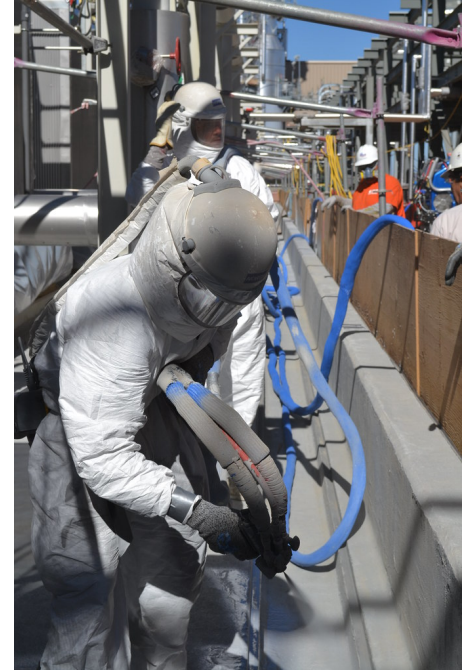
Will MSHA Rule Consider PPE?

- OSHA rule allows for respirator use in regulator areas where worker exposures are expected to be above PEL.
- Section 202 (h) of the Mine Act states: "Use of respirators shall not be substituted for environmental control measures in the active workings."
(Application to underground coal only)
- MSHA issues citations for overexposures regardless of whether miners utilized respirators or other PPE.
- Commenters noted that it is often difficult or even impossible to wear respiratory equipment in mines, thus the burden should be placed on operators to create an environment where respirators are not required.



Powered Air Purifying Respirators?

- RFI addresses Powered Air Purifying Respirators (PAPRs), noting that they were considered in the preamble to the 2014 Respirable Dust Rule, but the final rule does not allow PAPRs as supplementary controls to achieve compliance with the respirable dust standards.
- A PAPR uses a blower to pass contaminated air through a HEPA filter, which removes the contaminant and supplies purified air to a facepiece.
- PAPRs were not invented when Mine Act was written in 1977.
- Advocates note that PAPRs serve as a “mini–environmental control” and are less intrusive than other respirators; PAPRs do not require fit testing or medical clearance to be used effectively.



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Will MSHA Create Separate Rules for Metal/Nonmetal and Coal?

- MSHA has blurred the lines between the two sectors with “One MSHA” initiative
- RFI does not distinguish between coal mining and metal/non-metal mining
- Coal has different hazards than metal/non-metal mining including coal dust and black lung disease (coal workers pneumoconiosis or CWP)
- MSHA issued Coal Mine Dust Rule in 2014
- Differences in underground vs. surface mining



Will MSHA Create Compliance Directives Similar to OSHA's Table 1?

- OSHA Rule includes "Table 1" for Construction, which is list of tasks and clear protective measures to comply with the Rule.
- Employers who follow Table 1 correctly are NOT required to measure worker exposure to silica and are NOT subject to PEL. Otherwise 50 ug/m³ PEL and 25 ug/3 AL apply.
- Table 1 lists:
 - Equipment/Task (18 tasks included),
 - Engineering & Work Practice Control Methods, and
 - Required Respiratory Protection and Minimum Assigned Protection Factor (APF) for shifts <4 hr and those > 4 hrs
- Mine operators could choose between adopting their own controls and being held accountable to a PEL or to follow the pre-set controls in the table to know they are compliant with MSHA requirements.



MSHA Enforcement Issues

- Whether to issue overexposure citations based solely on operator's own sampling results – strict liability issues.
- Plaintiffs' attorneys can easily search the MSHA website in the hopes of finding companies that have a history of violations, and even if they are non-S&S, no likelihood to result in any injury, it still can come in in any tort or worker's comp litigation.
- Adopting additional training requirements may lead to additional citations.



Questions?

Josh Schultz

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jschultz@aabramslaw.com

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