OSHA’s Respirable Crystalline Silica Final Rule

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Overview

- New Standards codified at: 29 CFR 1910.1053 (GI/fracking), 1915.1053 (Maritime) and 1926.1153 (construction)
- Final OSHA rule: March 25, 2016 Fed Reg 606 pp long!
  - 30 pp of actual reg text and the rest is preamble/explanation of consideration of comments and alternatives/reg impact
  - Construction must comply by 6/23/17
  - General industry/maritime must comply by 6/23/18
  - Hydraulic Fracturing must fully comply by 6/23/21
- Will affect 2 million construction workers and 300,000 in general industry and maritime sectors, including hydraulic fracturing
- Litigation has commenced!
What is Crystalline Silica?

- 100 times smaller than ordinary sand on a beach
- Chemical compound is Silicon dioxide (SiO2)
- Makes up 70 percent of the planet’s crust (naturally occurring substance)
- Found at all fracking sites, most construction & mining ops
- Impact to health: Over-exposure possible in occupations such as mining, construction, fracking, oil and gas, transportation, sandblasting, concrete manufacturing, demolition, and even dentistry.
- Classified as Group One Human Carcinogen by IARC in 1997 (also by NTP) – warning must be included on SDS of silica-containing products
How Are Workers Exposed?

- Respirable dust means the particle is small enough to penetrate the respiratory system (can’t be expelled)
- Inhaled by workers during work activities and particles harm lungs
- Inhaled when cutting, sawing, grinding, drilling, and crushing the materials.
- Also present during extraction, processing, transfer for storage and transit, or use on a well pad of sand
Health Findings in OSHA Rule

- Over 600 deaths/yr and 900 new silicosis cases prevented by rule
- Crystalline Silica categorized as respiratory toxin that causes silicosis, COPD and lung cancer
  - Three types of silicosis: Chronic (15-20+ yrs), Accelerated (5-10 yrs), and Acute (months-2 yrs)
- OSHA also links occupational silica exposure with kidney disease
- Rule states more than 50 peer-reviewed studies were evaluated and found links between silica exposure and lung cancer in at least 10 industries
- Implications for litigation?
“Current” Exposure Limits

- OSHA (general industry) and MSHA (Permissible Exposure Limit) PEL equates to 100 ug/m³
- OSHA (construction and shipyard) PEL equates to 250 ug/m³
- NIOSH (Recommended Exposure Limit (REL) – since 1970s - is 50 ug/m³
- ACGIH dropped Threshold Limit Value (TLV) to 25 ug/m³
  - TLV = airborne concentration of substances / represents level where repeated exposure do not cause health effects
  - Action level means a concentration calculated as an eight (8)-hour time-weighted average
Changes to Final Rule

- Scope of standards revised to exclude tasks that involve low exposures
- OSHA opted not to include worker medical removal provisions
- OSHA removed provisions that barred worker rotation
- Standards do not apply where worker exposures remain below 25 ug/m3 for 8 hr TWA under foreseeable conditions (ER must have evidence to support this exception)
- Standard for GI/Maritime doesn’t apply to exposures from processing sorptive minerals
- GI/Maritime standard allows ER to comply with specified exposure control methods in construction rule instead of complying with PEL in certain circumstances
- No requirement for protective clothing
- All employers must have written exposure control plan (and construction must have competent person to implement plan)
Overall Compliance Deadlines

- Construction – 6/23/17 to achieve most requirements (can adopt “Table 1” controls in lieu of exposure monitoring)

- General Industry/Maritime: 6/23/18 to comply with most requirements (including medical exams for employees exposed above PEL for 30+ days/yr)

- OSHA allowed additional time:
  - for all fracking employers to install dust controls to meet new PEL (engineering controls only due 6/23/21)
  - for all GI employers to offer medical surveillance to employees exposed between PEL and the AL for 30+ days/yr (due 6/23/20)
Fracking: Compliance Deadlines

- Employers are required to comply with all obligations of the standard, except for engineering controls and the action level trigger for medical surveillance, by June 23, 2018.
- Employers are required to comply with requirements for engineering controls to limit exposures to the new PEL by June 23, 2021.
- From June 23, 2018 through June 23, 2021, employers can continue to have employees wear respirators if their exposures exceed the PEL.
- Employers are required to offer medical examinations to employees exposed above the PEL for 30 or more days beginning on June 23, 2018.
- Employers are required to offer medical examinations to employees exposed at or above the action level for 30 or more days a year beginning on June 23, 2020.
Fracking Silica Exposure Sources

- Seven primary sources of silica dust exposure:
  1. Dust ejected from thief hatches (access ports) on top of sand movers during refilling operations
  2. Dust ejected and pulsed through open side fill ports on sand movers during refilling operations
  3. Dust generated by on-site vehicle traffic
  4. Dust released from transfer belt under sand movers
  5. Dust created as sand drops into, or is agitated in, blender hopper and on transfer belts
  6. Dust released from operations of transfer belts between sand mover and blender
  7. Dust released from top of end of sand transfer belt (dragon’s tail) on sand movers
Fracking RCS Exposures

- NIOSH Sampling (116 samples) revealed:
  - 47% were greater than current 100 ug/m3 PEL
  - 79% were greater than revised 50 ug/m3 PEL
  - 9% of all samples showed silica exposures 10X the current 100 ug/m3 PEL (some as high as 25X)
  - 31% of all samples showed silica exposures 10X the revised 50 ug/m3 PEL

- NOTE: half-face respirators are not effective for silica levels 10X the exposure limit – must use respirators with a higher APF rating.
OSHA’s Economic Analysis

- Total Annualized Costs: $1.030 billion including:
  - Engineering controls: $661.5 million
  - Respirators: $32.9 million
  - Exposure assessment: $96.2 million
  - Medical Surveillance: $96.4 million
  - Familiarization & Training: $95.9 million
  - Regulated Area: $2.6 million
  - Written Exposure Control Plan: $44.3 million

- Annualized benefits monetized: $8.687 billion
  - Costs of prevented fatal lung cancers, silicosis and other respiratory diseases, renal disease and other silica-related mortality

- Net benefits: $7.657 billion
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.
OSHA’s 2016 Construction Rule

- High risk tasks: masonry saws, grinders, drills, jackhammers, chipping tools, drilling rigs, milling crushing, heavy equipment used for demolition & other tasks

- Rule includes provisions for:
  - Use of control methods in Table 1 OR measure worker exposure and decide which controls work bets to limit exposures to PEL in workplace
  - Written exposure control plan with implementation by designated competent person
  - Restriction on housekeeping practices that expose workers to silica
  - Medical exams (chest X-ray and lung function tests) every 3 years for workers who wear respirator 30+ days/yr.
  - Worker Training & Recordkeeping
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

Chart lets employers know what they need to do, including use of water and ventilation, sometimes supplemented with respiratory protection.
## Table 1 Task Example

<table>
<thead>
<tr>
<th>Equipment/task</th>
<th>Engineering &amp; WPCM</th>
<th>Resp protection and APF</th>
</tr>
</thead>
</table>
| Handheld power saw | - 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 | < 4 hrs: none if used outdoors,             
                   |                                                   | < 4 hrs: APF 10 if used indoors or in an enclosed area | > 4 hrs: APF 10 whether indoors or outdoors |
Construction Tasks Not in Table 1

- For tasks not listed in Table 1, or if ER does not fully implement controls and PPE:
  - Must ensure no exposures above 50 ug/m3 PEL
  - Must assess EE exposure if > AL following either “performance option” or “scheduled monitoring option” … if exposures > PEL, repeat within 3 mo. If > AL and < PEL, repeat within 6 mo.
  - Reassess as needed whenever changes in production, equipment, etc.
Other Construction Requirements

- Use of Respiratory Protection as needed by Table 1, where engineering/WPC not able to reduce below PEL, or when exposures exceed PEL during implementation of engineering/WPC
- Housekeeping controls and bans on methods
- Written exposure control plan – competent person designed by ER must conduct frequent and regular inspections of job sites, materials and equipment to implement WECP
  - In lieu of regulated areas, construction ER must include in WECP procedures to restrict access to work areas to minimize number of exposed EE
- Medical surveillance
- Employee training under HazCom & new rule
- Recordkeeping – air monitoring data and medical surveillance data in accord with 1910.1020
Interface with Consensus Standards

- Industry voluntarily recognized the need for comprehensive standards addressing the hazards of crystalline silica.

- Voluntary consensus standards have been adopted for general industry (ASTM E 1132) and construction (ASTM E 2625).
  - There were referenced by OSHA in the proposal and final rule but were not incorporated by reference.

- These voluntary standards include provisions for exposure measurement, use of dust controls, respiratory protection, medical surveillance, and training.
Will Rule Survive Legal Challenge?

- Congress could attempt to rescind under Congressional Review Act (e.g., ergonomics) but President Obama would veto
  - Hearing on silica rule held 4/19/16 in House Education & Workforce Committee – US Chamber, NAHB, Masons testified rule was infeasible technologically/economically

- Congress has not (yet) placed budget constraints (riders) on OSHA funding precluding enforcement of new rule

- Legal challenges by associations, employers and unions in US Court of Appeals (multiple Circuits) have been filed – consolidated in DC Circuit
  - In July 2016, US Chamber and other groups added as *amicus curiae*
Grounds for Legal Challenges

- Questions about scientific basis for rule (best available science) and lack of proof that 50 ug/m3 will prevent disease or that disease is caused at current PEL
- Challenges to technical and economic feasibility of rule, cost projections
- Failure to include fracking sector in SBREFA review and initial regulatory impact analysis
- Questions about laboratory proficiency and whether sufficient labs are available to meet demand for employer exposure monitoring and additional OSHA enforcement.
Silica Litigation

- Latency periods for silica-exposed workers can reach as long as 35 to 40 years, and symptoms often do not appear until after retirement (ticking time bomb for worker’s comp and tort claim purposes).

- Silica-related claims allow reparations from parties responsible for silica dust exposure.

- Litigation often focuses on inadequacy of warnings:
  - SDSs and product labels have been required to carry silica warnings since 1980s (HazCom).
  - Latency period of disease means exposures predate HazCom standards.

- Documenting lack of overexposures historically can be key to defending against frivolous lawsuits!
Silica Tort Litigation

- Silicosis can have widespread impact across industry groups
- A decade ago, some tort lawyers attempted to make it the “next” asbestosis litigation for class actions, seeking huge settlements
- In 2005: Judge Jack – in Texas consolidated 10,000 cases from Texas and Mississippi and dismissed the majority, slowing tide of mass silica tort suits
- What impact of OSHA final rule and health “findings”?
MSHA Regulatory Plan

- Reg Agenda: “As an example of intradepartmental collaboration, MSHA intends to consider OSHA’s work on the health effects of occupational exposure to silica and OSHA’s risk assessment in developing the appropriate standard for the mining industry.”

- MSHA now indicates that a proposed rule could be released in 2016, using same Risk Assessment as OSHA
  - Expect similar PEL, AL and requirements, but enforcement issues include dealing with strict liability, no consideration for PPE (under MSHA enforcement) and feasibility.
MSHA Current Regulation

- Requires HazCom training on potential hazards of silica exposure (including training under GHS warning system)
- Conducts sampling at mines and enforces based on single sample based on 1973 ACGIH TLV (MNM) and 1972 ACGIH TLV (coal)
- In accordance with 30 CFR 56.5002 and 57.5002, MSHA expects all MNM operators to conduct dust, gas, mist and fume surveys “as frequently as necessary” to determine if their controls are adequately protecting miners.
- To conduct an effective survey, persons conducting the surveying must be knowledgeable or experienced on how to and how often to measure the particular contaminant.
- If the results of any samples taken in the course of a survey under §§ 56/57.5002 indicate that exposure of a dust, gas, mist or fume is greater than the exposure limit, MSHA expects the operator to adjust control measures and conduct additional surveys to determine whether or not control measures are adequate.
Fracking: Engineering & Work Practice Controls

Equipment changes
- Enclose points where dust is released
- Use enclosed cabs and booths where feasible
- Use local exhaust ventilation
- Replace transfer belts with screw augers on sand movers in new designs or retrofits

Work practice controls
- Mandate capping of unused fill ports on sand movers
- Reduce drop height between sand transfer belt and T-belts and blender hoppers
- Limit number of workers and duration of time spent in higher exposure areas
- Perform dusty operations remotely where possible
- Apply fresh water to roads and around well sites to reduce dust
Issues To Consider

- Employers must sample for silica and implement preventative measures **NOW** to protect workers and third parties from adverse effects of possible overexposures – provide appropriate PPE
- Train workers about the hazards of silica and other chemicals (HazCom standard requires this **NOW**)
- Design & implement effective occupational health programs that include medical evaluations, surveillance, and exposure monitoring
- Awareness of national consensus standards and application of these “best practices,” where appropriate, may help provide defense to citations and tort litigation, and will assist in designing compliant programs

✓ A proactive approach to silica risk reduction is key to reducing worker injuries, as also for fending off OSHA/MSHA citations, toxic tort lawsuits, and worker’s compensation claims.
Questions?

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