



OSHA's Silica Rulemaking: Railroad Industry

The Silica Rulemaking

- NPRM published September 12, 2013.
- OSHA is proposing a new permissible exposure limit (PEL) for respirable crystalline silica of 50 micrograms/cubic meter of air in all industry sectors covered by the rule.
- OSHA is also proposing other elements of a comprehensive health standard, including:
 - requirements for exposure assessment,
 - preferred methods for controlling exposure,
 - respiratory protection,
 - medical surveillance,
 - hazard communication, and
 - recordkeeping



Exposure to Crystalline Silica

- OSHA claims that inhalation of very small (respirable) crystalline silica particles puts workers at risk for silicosis, lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease.
- Respirable crystalline silica – very small particles at least 100 times smaller than ordinary sand– is created during work operations involving stone, rock, concrete, brick, block, mortar, and industrial sand.
- Exposures to respirable crystalline silica can occur when cutting, sawing, grinding, drilling, and crushing these materials. These exposures are common in:
 - brick, concrete, and pottery manufacturing operations, operations using industrial sand products, such as in foundries, sand blasting, and
 - hydraulic fracturing (fracking) operations in the oil and gas industry.



The Silica Rulemaking: Key Points

- The proposed rule would cut the silica PEL by 50%, create significant new employer duties at this level, and create an “action level” (AL) at 25 ug/cubic meter, triggering sampling and analysis.
- At the PEL or above, the proposed rule would impose broad mandates, such as:
 - engineering controls,
 - medical monitoring,
 - restricted work areas,
 - dirty clothes protections,
 - respirator use,
 - employee notification,
 - training and
 - record-keeping requirements.



Railroad Employees Potentially Affected

- OSHA estimates:
 - Approximately 37% of employees engaged in ballast dumping or specified roadway maintenance machine activities are exposed to respirable silica dust above the proposed PEL, triggering mandatory engineering controls.
 - Approximately 73% of the specified employees are exposed to respirable silica dust above the proposed action level, which would trigger mandating monitoring, medical testing, notification, training, and record-keeping requirements.

OSHA's numbers are based on studies that OSHA conducted on two railroads in 1993 and 2001. AAR disputes the accuracy and relevancy of these numbers, especially after the issuance of FRA's 2003 final rule mandating that certain types of roadway maintenance machines be equipped with enclosed cabs with a positive pressurized ventilation system.



Railroad Employees Potentially Affected

OSHA claims in its Preliminary Economic Analysis:

- 5,629 railroad employees are potentially exposed to silica at or above the proposed PEL.
- 11,248 railroad employees are potentially exposed to silica at or above the proposed AL.

OSHA's numbers are based on studies that OSHA conducted on two railroads in 1993 and 2001. AAR disputes the accuracy and relevancy of these numbers, especially after the issuance of FRA's 2003 final rule mandating that certain types of roadway maintenance machines be equipped with enclosed cabs with a positive pressurized ventilation system.



Rail Industry is a Small Percentage of Population Affected by this Rulemaking

OSHA's claims in its Preliminary Economic Analysis estimates:

- Railroad employees potentially exposed at or above the PEL constitute 0.7% of the total of the population potentially exposed individuals at or above the PEL.
- Railroad employees potentially exposed at or above the AL constitute 1% of the total population of potentially exposed individuals at or above the AL.



OSHA Recommended Rail Industry Engineering Controls

- OSHA mandates that the employer shall use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL unless the employer can demonstrate that such controls are not feasible.
- For the rail industry, OSHA recommends:
 - using low-silica or silica-free ballast,
 - the use of dust suppression, and
 - improved work practices in conjunction with remotely controlled dumping.



OSHA Recommended Rail Industry Engineering Controls

To comply with the proposed regulation, OSHA recommends using low-silica or silica-free ballast

High cost of switching ballast material

- Estimated 64,400 miles of granite ballast in the U.S.
 - 140,000 ballast miles; OSHA estimates 46% of ballast is granite ballast
- One AAR member railroad estimates a cost of \$1 million per mile to replace granite ballast with limestone or slag ballast
 - Purchase of new ballast
 - Transportation
 - undercutting, replacing and surfacing the ballast
 - Disposal of existing ballast
 - Increased maintenance for limestone or slag ballast
- Approximately \$64 billion to change ballast material alone
- Limestone ballast needs to be replaced more frequently than granite ballast

OSHA claims that the annual cost of compliance with the proposed standards would be a mere \$2.4 million for the railroad industry



OSHA Recommended Rail Industry Engineering Controls

To comply with the proposed regulation, OSHA recommends dust suppression

- Ballast be washed before it is loaded into hopper cars
- The effectiveness of this method is questionable
 - Ballast can dry before it reaches the site
 - Problems can occur in colder climates where water freezes to ice before the ballast can be dumped



OSHA Recommended Rail Industry Engineering Controls

To comply with the proposed regulation, OSHA recommends dust suppression

- If ballast dries prior to reaching the dumping site, apply an additional layer of blanketing foam or sealing chemical suppressant on top of the rail car.
- The effectiveness of this method is questionable
 - Suppressant would only address the top layer of ballast
 - Dust suppression methods could create environmental and safety hazards
 - Clean Water Act permitting for use of blanketing foam or other sealing chemical suppressant
 - Would trigger the need for a National Pollutant Discharge Elimination System (NPDES) permit if run-off reaches a body of water



OSHA Recommended Rail Industry Engineering Controls

To comply with the proposed regulation, OSHA recommends dust suppression

- Use “water misting/spray systems at the dumping operation” due to the difficulty of transporting large quantities of water
- The effectiveness of this method is questionable
 - This idea does not take into account the infeasibility of creating a spray system throughout the 140,000 ballast miles of track
 - Walking conditions for employees
 - Could create opportunity for slips, trips and falls



Aggressive Railroad Programs Already Manage Exposure

- Technologically feasible engineering controls
 - FRA 2003 Rule mandates that certain types of roadway maintenance machines be equipped with enclosed cabs with a positive pressurized ventilation system
 - 49 C.F.R. § 214.505
 - Ballast regulators, tampers, mechanical brooms, rotary scarifiers, undercutters, and their equivalents
 - Must protect employees in the cabs from exposure to air contaminants in accordance with 29 C.F.R. § 1910.1000.
 - Some Class I railroads use GPS technology for remote ballast dumping
- Work practices
 - Robust respiratory protection
 - Industrial Hygienists analyze risk of occupational exposures



OSHA's Proposed Rule Does Not Consider Significant Economic Impact to Substantial Number of Small Entities

- 539 Class III railroads
- Ballast is heavy and locally sourced
 - High cost to ship if required to change from local sources
- Cost/Benefit to small businesses negative as most use contractors with FRA 40 C.F.R. Part 214 compliant equipment



OSHA's Proposed Rule Does Not Pass a Cost/Benefit Test for the Railroad Industry

- OSHA alleges that railroad employees constitute less than 1% of the population exposed to silica particulates above the PEL in the workplace
- OSHA's recommended engineering controls for the rail industry are cost prohibitive and impracticable
 - Estimated \$64 billion to switch to low-silica ballast
 - OSHA estimates the total annual cost of the rule for general industry to be about \$147 billion
- The Initial Regulatory Flexibility Analysis does not adequately address the costs of the proposed rule on small entities



Thank you!

