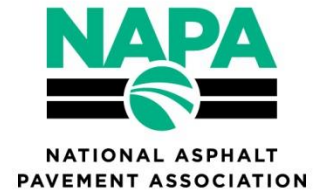


Interim Guidance

April 4, 2016



Understanding OSHA's Silica Rule and its Impact on the Asphalt Pavement Road Construction Industry

What is the Silica Rule?

The silica rule establishes OSHA's revised Permissible Exposure Limit (PEL) for respirable crystalline silica, a known human carcinogen, at 50 µg/m³ (micrograms per cubic meter) averaged over an 8-hour work-day. The rule or standard outlines allowable incremental exposure levels associated with specific compliance obligations. Employee exposure, both in general industry and during construction activities, must be below the enforceable PEL. The rule also recommends control technologies to help reduce employee exposure; implementation of these control technologies provides relief from some of the rule's more onerous compliance requirements. The rule can be found on OSHA's website at <https://www.osha.gov/silica/>.

What Is an Employer's Responsibility?

Under the rule, employers must be cognizant of and/or determine whether their employees have the potential for exposure to airborne silica. Specifically, an employer must perform an initial exposure assessment or monitor employees "who are, or may reasonably be expected to be, exposed to airborne concentrations of respirable crystalline silica at or above the action level." However, in certain instances an employer may opt to employ an OSHA-specified exposure control, exempting them from employee exposure assessment and other compliance obligations under the rule.

Is the Asphalt Paving Industry Covered by This Rule?

Yes. In the road construction, paving, and asphalt production industries, the primary source of airborne crystalline silica exposure occurs from fracturing aggregate or rock. Job tasks and activities with a potential for airborne silica exposure can range from monitoring aggregate crushing operations to operating a front-end loader when transferring aggregate piles to hauling materials over gravel roads. Other potential exposure activities include baghouse and drum maintenance, roadway sweeping, and milling operations, as well as roadway saw-cutting activities.

The final rule, released on March 23, 2016, applies to employees working on road construction sites and at asphalt pavement mix facilities. The silica standard is scheduled to become effective on June 23, 2017, for the construction industry (e.g., roadway milling and maintenance operations) and one year later for general industry (e.g., asphalt pavement mix production facilities). The rule is codified at 29 CFR 1926.1053 for general industry and at 29 CFR 1926.1153 for construction activities.

How Does Industry Comply With the Rule?

As with any PEL, it is the responsibility of the employer to: 1) understand potential employee exposure to airborne silica during various job tasks or activities; 2) ensure employees are adequately protected; and 3) ensure any employee exposure is below the regulatory PEL. Generally, an exposure

assessment or employee monitoring is conducted, by job task, to understand potential and actual exposures. In the case of the silica standard, employers can opt out of this assessment and are exempt from other portions of the rule if OSHA-specified controls are used during certain job tasks and activities. OSHA has predetermined that these identified controls satisfactorily reduce employee silica exposure below any regulatory threshold.

What Are the OSHA-Specified Controls for Various Activities in the Asphalt Paving Industry?

For many job tasks and activities across the asphalt paving industry, OSHA has identified various control technologies to reduce potential employee exposure to airborne crystalline silica. The OSHA-approved engineering controls for equipment and activities applicable to road construction activities are identified in Table 1 of the Standard, which can be found at <https://www.osha.gov/silica/SilicaConstructionRegText.pdf>.

Listed below are several asphalt paving and construction activities that have the potential for airborne silica exposure. Also provided below is any OSHA-specified control technology for that activity. If any job task or activity does not include the requisite control technologies, OSHA would require conducting an exposure assessment for that job task; if employee exposure is above one-half of the PEL, additional requirements would phase-in, including potential respiratory protection, medical monitoring, and other restrictions. Additional information on compliance obligations are noted below.

Road Construction and Maintenance

Paving activities

OSHA does not specify or identify control technologies for use in the application of asphalt pavement mix by self-propelled paving machines. A cursory review of existing data indicates there is no meaningful exposure to airborne crystalline silica during asphalt pavement mix application. NAPA is working with select industry members to compile objective exposure assessment data that can be used to support the exclusion of this activity from the silica rule.

Milling activities

During roadway milling activities, employers are exempt from portions of the silica standard if a milling machine is fitted with both ventilation control and enhanced water-spray systems as specified by OSHA. As part of the industry-agency-labor Asphalt/Silica Milling Machine Partnership, all milling machine manufacturers have pledged to incorporate these NIOSH-specified control systems on half-lane and larger machines starting in January 2017. Many manufacturers already incorporate these controls on existing models. For individuals operating older milling machines, a retrofitted enhanced water-spray system with surfactant will also exempt operators from conducting an exposure assessment and other portions of the silica rule in most circumstances. Furthermore, OSHA has also identified certain approved controls for other milling machines (small drivable and walk-behind units), along with other road construction activities. Implementing these controls will exempt employers from certain compliance obligations under the silica standard. Depending on the type of

milling activity and milling machine, OSHA specifies the following control technologies under Table 1 (with additional notes and information):

- Half-lane and larger milling machines that possess BOTH ventilation control exhaust **AND** supplemental water sprays can cut any depth of asphalt pavement without the need for employee exposure assessment. All machines built after January 2017 (and most currently produced) have these systems as standard.
- Half-lane and larger milling machines that do NOT possess ventilation control exhaust are limited to a 4-inch cut on any substrate (asphalt or concrete) **AND** must possess supplemental water sprays that utilize a surfactant, in order to be exempt from employee exposure assessment. Milling machines that do not have ventilation controls would be encouraged to get a retrofit supplemental water spray system that uses surfactants.
 - Although not defined in the rule, a “surfactant” is generally considered a wetting agent or soap-like material. Simple surfactants can include liquid dishwashing soaps. OSHA does not specify the load rate of any surfactant.
- Employees working on and around any large drivable milling machine that lacks ventilation control or a retrofitted supplemental water spray system must be monitored or assessed for silica exposure per the standard.
- Small (drivable and less than half-lane) milling machines must possess supplemental water sprays that utilize a surfactant in order to be exempt from employee monitoring requirements. These controls are no different than those required for larger machines milling pavement milling up to 4-inches in depth.
- All exposure control devices on equipment must be well-maintained and in good operational order. NAPA provides a generic maintenance checklist for some milling machines — <http://www.silica-safe.org/training-and-other-resources/manuals-and-guides/asset/Field-Guide-for-Controlling-Silica-Dust-Exposure-on-Asphalt-Pavement-Milling-Machines.pdf> — but each milling machine manufacturer should be able to provide more specific maintenance requirements.

Other Milling, Sawing, and Jackhammering Activities

For walk-behind milling machines and other sawing, cutting, and various types of pavement impact machinery, such as jackhammers, the equipment must possess integrated water delivery systems that continuously feed water to the cutting or impact edge.

The use of a rotating mill attached to the front of an open-cab skid steer is unlikely to meet OSHA’s approved control equipment and thus an employee exposure assessment would need to be conducted.

Earth-Moving and Grading Activities

OSHA-approved controls on heavy equipment is dependent on whether or not the process has the potential to demolish, shear, abrade, or fracture silica-containing materials like aggregate:

- For earth-moving or grading/excavation equipment that does not fracture or abrade materials, in order to forgo an exposure assessment and be exempt from some portions of the standard, OSHA requires the control method as “apply water and/or dust suppressants as necessary to minimize dust emissions” OR “when the equipment operator is the only employee engaged in the task, operating equipment from within an enclosed cab.”
- For heavy equipment, like hoe-ramming and rock ripping, OSHA requires the operation of the equipment “from within an enclosed cab” and “when employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.”
- When an enclosed cab is used as part of an OSHA-preferred control technology, the cab must be well-maintained and well-sealed, have positive pressure with heat and air-conditioning, utilize a HEPA-type filter, and have a minimal amount of settled dust within the cab, among other requirements (see 29 CFR 1926.1153(c)(2)(iii)).

Road Brooming and Sweeping Activities

Although OSHA does not identify specific control technologies to be used during road brooming or sweeping activities, OSHA does specify various controls when using “heavy equipment” which moves earthen-type materials. To be exempt from conducting an exposure assessment during brooming operations, an employer would need to determine how a sweeper is categorized with respect to various OSHA-approved controls for heavy equipment (above). During the year-long phase-in for the silica standard, NAPA intends to work with industry representatives to understand and document the exposure potential during brooming and sweeping operations.

Operations at Asphalt Pavement Mix Facilities

OSHA does not identify or specify any particular control technology to be used during activities associated with asphalt pavement mix facility operations. However, because certain asphalt plant activities have the potential to abrade or fracture aggregate, OSHA’s expectation would be for employers to document employee exposure potential during certain activities. Some asphalt plant activities that may require exposure assessment include: baghouse maintenance, chipping drum flights, and processing aggregate piles. NAPA is currently working to document exposure potentials of various plant and construction activities.

What Happens if OSHA Doesn’t Specify a Control Technology or the Equipment Doesn’t Have the Specified Control?

As identified above, if OSHA doesn’t specify a control technology, or the employer chooses not to use equipment with requisite controls, it is the responsibility of the employer to perform an initial exposure assessment or monitor employees “who are, or may reasonably be expected to be, exposed to airborne concentrations of respirable crystalline silica at or above the action level.” As identified above, there are certain instances when an employer may opt for an OSHA-specified exposure

control, and therefore would be exempt from employee exposure assessment as well as all other aspects of the rule.

Conducting an Exposure Assessment

As part of the silica PEL and similar with PELs for other occupational inhalation hazards, OSHA has set an Action Level of 25 µg/m³ TWA (8-hours), which is one-half the PEL. If employee exposure is below the action level, no further compliance obligations are required. Employee exposure in any job task or activity is typically determined by conducting industrial hygiene tests using certified testing procedures and laboratories.

Industrial hygiene testing can be conducted for/on individual employees, called “personal sampling,” or through area samples. Results from the former sampling is required to be communicated to the employee and the information protected for 30 years as it becomes part of an employee’s exposure assessment. Although results from area sampling are not necessarily part of an individual employee’s exposure assessment, the standard identifies that objective data must be “maintained and made available in accordance with 29 CFR 1910.1020” (Access to Employee Exposure and Medical Records), which requires employers to maintain area sampling records, as well as MSDSs (now called Safety Data Sheets or SDSs), for 30 years. Area sampling can assist in circumstances where a job task is standardized or similar and would provide accurate information regarding potential exposure for any employee. Historic and other industry exposure assessment information, if conducted on similar job tasks/activities, can also be used to document potential silica exposure.

Additional sampling may be required when changes in processes, work practices, conditions, or personnel occur that could affect exposures. Samples must be analyzed by accredited labs using standardized methods. Workers must be notified of any personal industrial hygiene results within five days of sampling and of any corrective actions to be taken if exposure levels are above the PEL. Employee representatives for union contracts have the right to observe monitoring.

Use of Objective Data

In some circumstances, instead of conducting an initial exposure assessment, employers may use objective data, such as “air monitoring data from industry-wide surveys ... demonstrating employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, operation, or activity. The data must reflect workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer’s current operations.” If appropriate, this type of objective data can suffice for an initial exposure assessment.

NAPA is aware of a number of industrial hygiene sampling programs to monitor airborne silica during asphalt paving operations. Although NAPA has not reviewed this data, it is understood that potential airborne silica exposure during paving activities is well below the standard’s Action Level. NAPA plans to work with paving contractors to document such minimal exposure; however, in the interim, it may be necessary for employers to substantiate such minimal exposure with monitoring.

Exclusions to the Exposure Assessment Through the Use of Exposure Controls

OSHA requires exposures be reduced first by the use of engineering controls and then by work practices. Exposure monitoring is not required if employers follow the controls identified in Table 1 — <https://www.osha.gov/silica/SilicaConstructionRegText.pdf> — of the proposed standard, summarized below for various construction-type activities:

Compliance Obligations If Exposure Is Between the Action Level and PEL

If an initial exposure assessment of objective data or direct monitoring indicate an employee's job task exposure is above the Action Level but below the PEL, then the employer must re-assess those exposures either under a fixed schedule option (with monitoring at least every six months) or in accordance with the performance-based requirement which allows for the use of objective data (see above).

Compliance Obligations If Exposure Exceeds the PEL

If an employee's exposure exceeds the PEL, there are a number of obligations required by the employer. If the PEL is exceeded, NAPA recommends a thorough review of an employer's obligations under the standard. In brief, the employer must notify the employee of the PEL exceedance and develop a corrective action plan to reduce exposure below the PEL. The employee must then be outfitted with respiratory protection as managed through a respiratory protection program. Furthermore, a medical surveillance program must be initiated if the employee will be exposed to respirable silica above the PEL for 30 or more days per year.

Regulated Areas

Any area where the PEL may be exceeded has to be restricted to prevent bystander exposures. A regulated area can be established with access limited to authorized employees, employee reps, and OSHA. Respirators and protective clothing (whenever clothing can become "grossly contaminated") must be worn in regulated areas. Alternatively, a written access control plan, overseen by a competent person, can be developed and implemented.

Employee Rotation Used as an Administrative Control

Although "OSHA does not consider employee rotation to be an acceptable alternative to avoid the costs associated with implementation of engineering and administrative controls, nor does the Agency consider that pervasive exposures to respirable crystalline silica justify allowing rotation. OSHA has nonetheless concluded that there may be situations where employee rotation may be an acceptable measure to limit the need for respiratory protection." (81 Fed Reg 16789).

Other Compliance Obligations

Hazard Communication Training

Regardless of whether or not OSHA-preferred engineering controls are utilized for job tasks and activities, workers must receive enhanced hazard communication training on silica and its health effects (see 29 CFR 1926.1153(i)). Such information includes, but is not limited to: "(A) The health hazards associated with exposure to respirable crystalline silica; (B) Specific tasks in the workplace that could result in exposure to respirable crystalline silica; (C) Specific measures the employer has

implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used; ... (E) The identity of the competent person designated by the employer in accordance with paragraph (g)(4) of this section.”

Recordkeeping

OSHA’s recordkeeping requirements can be found at 29 CFR 1926.1153(j). Among other data, records of air monitoring results and objective data must be kept for 30 years. Medical records must be maintained for the length of employment plus 30 years.

Bottom Line and Additional Information

The final silica rule or standard is more than 600 pages of background information and regulatory criteria. NAPA provides this summary as a tool to assist employers in meeting upcoming compliance obligations under the rule. However, this summary should not be used by itself for assessing a company’s compliance requirements. It is up to each employer to understand the rule’s compliance requirements and nuances regarding OSHA recommended controls. During the two years OSHA took to finalize the rule, the agency provided some relief in a variety of situations.

The silica rule can be summarized quickly as follows:

- 1) Each employer is required to understand potential employee exposure to airborne crystalline silica and required to ensure an employee’s exposure is below the PEL;
- 2) OSHA has approved certain control technologies in various (construction) activities that, if used, will exempt the employer from some additional requirements under the silica rule (e.g., the necessity to conduct an exposure assessment); and
- 3) There are certain aspects of the rule that all employers will need to follow (e.g., Hazard Communication), regardless of whether they use equipment with OSHA-approved controls.

NAPA will continue to work with industry members and organizations to document potential silica exposure during typical road construction and asphalt plant activities. Once distributed, this type information could be used as objective data for exposure assessment purposes.

For additional information, contact NAPA Vice President for Environment, Health & Safety, [Dr. Howard Marks](#).