
Understanding the Use of Exposure Assessment Information Under the OSHA Silica Standard

Recently, an OSHA Regional Office challenged an asphalt mix production facility's reliance on data from an industry exposure assessment survey to demonstrate that its employees' exposure to respirable crystalline silica was below the Permissible Exposure Limit (PEL). While the use of such data is allowed, specific criteria and protocols must be followed and documented.

This Special Report focuses on the acceptability of using objective exposure assessment data for both construction activities and general industry activities under the OSHA Silica Standard. For additional information on compliance with OSHA's Silica Standard, visit www.AsphaltPavement.org/Silica.

The Silica Standard applies to two industrial sectors — [construction](#), which includes road construction activities, and [general industry](#), which covers asphalt mix production facilities. Requirements under the Silica Standard are basically identical for both sectors, with some minor exceptions as identified below.

Exposure Assessment

Under both the construction and general industry standards, employers must determine whether workers may reasonably be expected to be exposed to respirable crystalline silica at or above the 8-hour Time-Weighted Average (TWA) Action Level (AL) of 25 µg/m³, and employers must ensure employee exposure does not exceed the TWA PEL of 50 µg/m³.

Also under both standards, employers can choose between two options for assessing exposure: scheduled monitoring or performance.

Scheduled Monitoring

Scheduled monitoring includes typical industrial hygiene (IH) monitoring in an employee's breathing zone. This provides an exact assessment of exposure for that particular individual engaged in whatever tasks they conduct during their typical 8-hour workday.

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Under the construction standard, exposure assessment is not required if companies use approved [Table 1 controls](#), which is a series of OSHA-approved controls for certain construction activities, such as jackhammering and roadway milling.

There is no Table 1 for general industry activities; however, if general industry work “is indistinguishable from work covered by Table 1 in the construction silica standard, the employer may comply with the construction standard, including the specified exposure control methods in Table 1 for that task. The task must not be performed regularly in the same environment and conditions” ([OSHA, 2017, p. 2](#)).

For example, if the use of a bulldozer or skid-steer loader at a fixed facility is consistent with Table 1 and it is applying approved controls, such as an enclosed cab or water suppression, then the employer may not need to determine actual employee exposure.

Performance

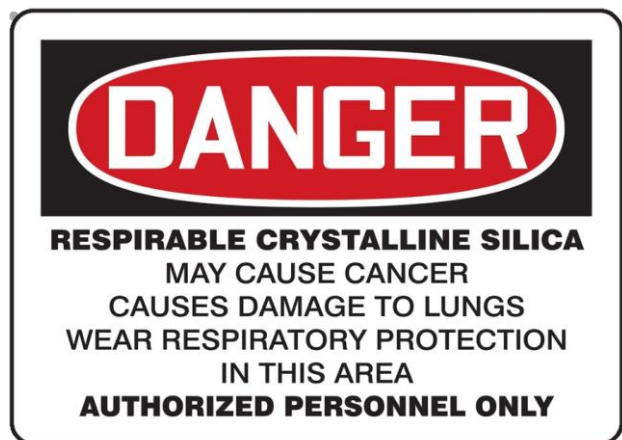
The Performance Option allows employers flexibility to determine employee exposure based on objective data, such as air monitoring data from industry-wide surveys. OSHA provides detailed instructions on the use of such objective data ([OSHA, 2017, p. 4](#)). OSHA has also published [enforcement guidance](#) and a [letter of interpretation](#) on the use of objective data.

Additional Requirements

The designation of a silica “[Competent Person](#)” is required for activities governed by the construction standard, but not the general industry standard. However, the identification of a silica Competent Person at an asphalt mix facility may be worthwhile.

Under the general industry standard, if silica exposure exceeds the PEL, the area must be adequately demarcated with appropriate and specific signage, such as the sign shown on this page.

Lastly, Written Exposure Control Plans are required for all construction and general industry activities with the potential to release silica-laden dust. NAPA has published examples of such [Exposure Control Plans](#).



NAPA Efforts to Develop Industry Objective Data for Fixed Assets

Over the past year, NAPA has encouraged its members to provide the association with exposure assessment data for typical activities at an asphalt pavement mixture facility. Recently, NAPA compiled these submissions into a set of preliminary data for industry use. The following graph represents, in many cases, more than a dozen individual exposure assessments

per activity/task. NAPA recently (September 2019) received additional data that will be further analyzed and then incorporated into the industry survey.

When using an industry objective data survey, OSHA states that an employer has the burden to make the case the data is representative of the conditions and controls used at their facility. This can be demonstrated by showing documentation that the equipment type; work practices; environmental conditions; materials handled; and processes, activities, or tasks performed are in all material ways essentially the same as those in the objective data upon which the employer is relying.

Due to the timeliness of current OSHA enforcement efforts, NAPA determined it best to distribute this preliminary industry survey data to its membership with the idea that individual facilities can use the data to identify activities at their facility that may require further evaluation through a formal exposure assessment.

The exposures associated with the activities in the figure on the following page are typical across U.S. asphalt mix facilities and represent the use of standard control procedures, such as watering dusty hardscape, local exhaust ventilation, and/or use of enclosed cabs on certain pieces of equipment.

As NAPA members voluntarily submit additional data to NAPA, the association will develop and publish a more robust industry objective data survey, identifying activity-specific controls. When recording exposure data of your own or relying on objective data gathered by others, be sure to document the type of equipment used; environmental conditions; work practices; materials handled; and processes, activities, or tasks performed.

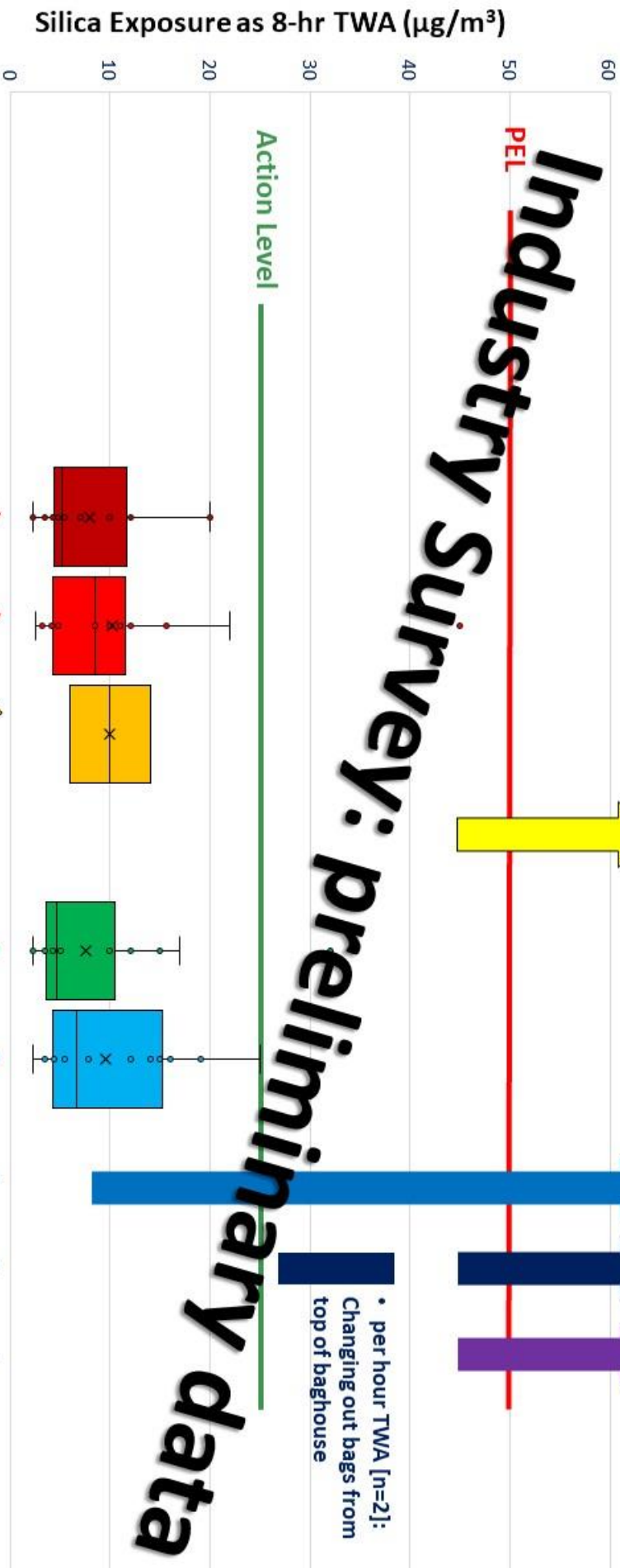
While the attached data is not complete enough to satisfy the performance exposure assessment option, NAPA recommends each facility review the attached data and confirm, when necessary, that a facility's activity-based exposure assessment is consistent with the preliminary industry survey data provided. Variance from the preliminary data may indicate an activity or control that needs further attention.

Reference

OSHA (2017). *Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime* ([Report No. OSHA 3911-07 2017](#)). Occupational Safety and Health Administration, Washington, D.C.

**For more information, contact NAPA Vice President for Environment, Health & Safety
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Asphalt Pavement Mix Production Facility Activities



- Values for non-detected exposure were entered at one-half LOD
- Standard Microsoft box-whisker plot identifies all datapoints with outliers / local max / 75th percentile / mean / median / 25th percentile / minimum