

## Attachment A: Enforcement Guidance

### General Information

- 29 CFR 1926.1153, *Respirable Crystalline Silica* applies to all occupational exposures to respirable crystalline silica in construction work, *except where employee exposure will remain below 25 micrograms per cubic meter of air (25 µg/m<sup>3</sup>) as an 8-hour TWA under any foreseeable conditions.*
  - The exemption is based on *total* respirable crystalline silica exposures *from all sources* and must take into account all conditions that may add or contribute to the employee's overall exposure levels.
- 29 CFR 1926.1153, *Respirable Crystalline Silica* establishes an 8-hour TWA PEL of 50 µg/m<sup>3</sup> and an AL of 25 µg/m<sup>3</sup>. The standard also contains a unique, flexible option for employers whose employees are engaged in the construction tasks listed in Table 1 at 29 CFR 1926.1153(c)(1).
- If the employer fully and properly implements the engineering controls, work practices, and respiratory protection listed in Table 1, it is not required to conduct exposure assessments or otherwise comply with a PEL for employees engaged in those tasks.
- The employer must comply with paragraph (d) (the PEL, exposure assessment, and methods of compliance requirements) for employees who are engaged in tasks not listed on Table 1 or where it has not fully and properly implemented the engineering controls, work practices, and respiratory protection listed in Table 1 for all employees engaged in listed tasks.

### Inspection Guidance – Specified Exposure Control Methods [paragraph (c)] and Alternative Exposure Control Methods [paragraph (d)]

#### General Information

- CSHOs should be prepared to collect personal breathing zone samples on the first day of the inspection.
  - When sampling is warranted, CSHOs must perform air monitoring in accordance with the OSHA Technical Manual (OTM), Section II, Chapter 1, and OSHA sampling method ID-142.
  - CSHOs may contact the SLTC Laboratory through the regional office if they need guidance on developing a sampling strategy for unusual worksite conditions.
- CSHOs must review the employer's written silica Exposure Control Plan (ECP) and other relevant programs (*e.g.*, respiratory protection program, hazard communication program, etc.) as part of the investigation.
- If the employer has conducted an exposure assessment, CSHOs should also review the assessment to determine what levels might be expected before entering the work area. As noted above, employers are not required to assess the exposures of employees engaged in Table 1 tasks if the employer has fully and properly implemented the engineering controls, work practices, and respiratory protection listed in Table 1 for the employees engaged in those tasks.
- CSHOs should interview affected employees, including the competent person, as part of the overall assessment of the employer's implementation of its ECP.

### **For Employers Following Table 1 [paragraph (c)]**

- Where the construction employer is *fully and properly* implementing the engineering controls, work practices, and respiratory protections specified in Table 1 for each employee engaged in listed tasks, there is no requirement for the CSHO to collect personal air samples for those tasks.
  - *Fully and properly* implementing the controls specified in Table 1 includes following the requirements of paragraph (c)(2) relating to means of exhaust, water flow rates, and enclosed cabs.
- Where the construction employer: (1) has employees performing a task or using equipment that is not listed in Table 1; or (2) has not *fully and properly* implemented the engineering controls, work practices, and respiratory protection listed in Table 1 for all employees engaged in Table 1 tasks, CSHOs must collect personal air samples to measure the 8-hour TWA for the silica operations likely to exceed the PEL.

### **For Tasks Not Listed in Table 1 or Where the Employer Has Not *Fully and Properly* Implemented the Engineering Controls, Work Practices, and Respiratory Protection Described in Table 1 for All Employees Engaged in Listed Tasks [paragraph (d)]**

- These construction employers must comply with paragraph (d) of the standard, including the PEL, exposure assessment, and methods of compliance requirements.
- CSHOs must review the employer's air monitoring records, or other data the employer used to assess exposures. See Exposure Assessment options below.
- CSHOs must collect personal samples to measure the 8-hour TWA for the silica operations likely to exceed the PEL.

### **Exposure Assessment Options Under 29 CFR 1926.1153(d)(2)**

- Employers must assess the exposure of each employee who is or may be potentially exposed to respirable crystalline silica at or above the AL using either the performance option or the scheduled monitoring option.
- Performance Option
  - Provides some flexibility; the burden is on the employer to demonstrate that the data fully complies with the requirements.
  - Allows employers to assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or *objective* data sufficient to accurately characterize employee exposures to respirable crystalline silica.
    - Data must reflect worker exposures on each shift, each classification, and in each work area.
  - *Objective* data means information – such as air monitoring data from industry-wide surveys, or calculations based on the composition of a substance – demonstrating employee exposure to respirable crystalline silica associated with a particular product or material, or a specific process, task, or activity.
    - To qualify as *objective*, the data must reflect workplace conditions closely resembling, or with a higher exposure potential, than the processes, types of material, control methods, work practices, and environmental conditions present in the employer's current operations.

- Employers may use historical monitoring data as *objective* data if it meets these requirements.
- Employers must comply with remaining assessment provisions where applicable (e.g., employee notification of results, observation of monitoring).
  - *Note:* The requirements for methods of sample analysis in paragraph (d)(2)(v) are the only exception to the September 23, 2017, compliance date. These requirements begin on June 23, 2018.
- Employers may characterize employee exposure within a particular range (e.g., employee exposure is between the AL and the PEL).
- Scheduled Monitoring Option
  - Requires both initial and periodic monitoring.
    - Employers must perform initial monitoring as soon as work begins to determine exposure levels and where to implement control measures.
    - Employers must conduct periodic monitoring at specified intervals based on most recent monitoring results.
  - Monitoring must assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures on each shift, each job classification, and work area.
    - Where several employees perform the same tasks on the same shift and in the same work area, the employer may sample a representative group of employees to meet this requirement. Representative sampling must be of the employee(s) who are expected to have the highest exposure to respirable crystalline silica.
  - Discontinuing the air monitoring requirements is based on monitoring results. See 29 CFR 1926.1153(d)(2)(iii)(B) & (E).

### **Methods of Compliance [paragraph (d)(3)]**

- Requires employers to use engineering and work practice controls to reduce and maintain employee exposures to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible.
- Where controls are not sufficient to reduce employee exposure to or below the PEL, the employer must:
  - Use controls to reduce employee exposure to the lowest feasible level and supplement them with the use of respiratory protection.

*Note:* The respirable crystalline silica standards do not prohibit employers from rotating employees to different jobs to achieve compliance with the PEL.

### **Other Silica Construction Standard Provisions**

#### **Respiratory Protection [paragraph (e)]**

- For tasks not listed in Table 1 or where the employer has not *fully and properly* implemented the Table 1 controls, respiratory protection is required where exposures exceed the PEL.

- *Fully and properly* implementing the engineering controls, work practices, and respiratory protection listed in Table 1 for an employee engaged in a listed task includes ensuring that employees are using respiratory protection as specified in Table 1.
  - If Table 1 requires respiratory protection when the anticipated task duration exceeds four hours, employees engaged in the task must wear the respirator during the entire period of time they are performing the task, not just the period of time that exceeds four hours.
  - For the purpose of determining task duration, the duration begins when the employee first puts the tool or equipment into operation, and continues until the tool/equipment is no longer in use. For tasks conducted on an intermittent basis during a shift separated by extended intervals, do not include the time interval between Table 1 tasks in the task duration.
- Where the standard requires the use of respiratory protection, employers must institute a respiratory protection program in accordance with 29 CFR 1910.134.

#### **Housekeeping Practices [paragraph (f)]**

- The paragraph prohibits dry sweeping and dry brushing where such activities could contribute to employee exposures to respirable crystalline silica, *unless* wet sweeping, HEPA-filtered vacuuming, or other methods that minimize the likelihood of exposure are not feasible (*i.e.*, the other cleaning methods would not be effective, would cause damage, or would create a hazard in the workplace). The employer bears the burden of showing that the alternative methods are not feasible.
- Using sweeping compounds (*e.g.*, non-grit, oil- or waxed-based) is an acceptable dust suppression housekeeping method.
- The use of compressed air for cleaning is allowed where the compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air, or where no alternative method is feasible.
- The employer's exposure control plan must include the description of the housekeeping measures.

#### **Written Exposure Control Plan (Competent person) [paragraph (g)]**

- Employers must establish and implement a written exposure control plan (ECP) that contains certain specified elements.
- The employer must designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written ECP.
- The competent person must:
  - Be capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace;
  - Have authorization to take prompt corrective measures to eliminate or minimize identified hazards; and
  - Have the knowledge and ability necessary to fulfill his or her responsibilities.
- While the standard does not require employers to list the name of the competent person in the written ECP (because it could change daily), construction employees must be able to identify the designated competent person.

### Medical Surveillance [paragraph (h)]

- Employers must make medical examinations available to employees who will be *required* to wear a respirator for 30 or more days a year according to 29 CFR 1926.1153, *Respirable Crystalline Silica*. The 30-day trigger applies *per employer* (exposures with previous employers do not count toward the 30-day total).
  - Any partial day of respirator use (even if for only one hour or less) is considered one day of respirator use for the purposes of medical surveillance requirements.
- The employer must make the initial (baseline) medical examination available within 30 days after initial assignment (unless the employee has received a medical examination in accordance with the standard within the past three years).
- The medical opinion provided to the employer must contain only the date of the exam, a statement from the physician or other licensed health care professional (PLHCP) that the exam met the requirements of the standard, and any limitations on the employee's use of respirators.
- If the employee has provided the PLHCP with *written authorization*, then the written medical opinion for the employer must also contain the following: (1) any recommended limitations on the employee's continued exposure to silica; and (2) any PLHCP recommendation that the employee should be referred to a specialist.

### Communication of Hazards [paragraph (i)]

- Required for all employees who are or could foreseeably be exposed to respirable crystalline silica at or above the AL of  $25 \mu\text{g}/\text{m}^3$  as an 8-hour TWA.
- Requires employers to include respirable crystalline silica in their hazard communication program; ensure that employees have access to labels on containers of crystalline silica and related safety data sheets; and train their employees as specified in the Hazard Communication Standard (HCS), 29 CFR 1910.1200, and paragraph (i)(2) of 29 CFR 1926.1153, *Respirable Crystalline Silica*.
- 29 CFR 1910.1200 (HCS) applies and CSHOs should cite employers for hazard communication deficiencies where employees are exposed or potentially exposed to respirable crystalline silica at levels below the AL.

### Citation Guidance

#### Tasks Listed in Table 1

- Where the employer *has fully and properly* implemented the engineering controls, work practices, and respiratory protections specified in Table 1, the CSHO **will not cite** the employer for any PEL or exposure assessment violation.
- Where the employer has *not fully and properly* implemented the engineering controls, work practices, and respiratory protections specified in Table 1 *and* the employer *has not* conducted an exposure assessment under 29 CFR 1926.1153(d), the CSHO will cite 29 CFR 1926.1153(c) and (d)(2) as a grouped violation, along with citing any other noted deficiencies (*e.g.*, respiratory protection, hazard communication) as separate violations.
  - The CSHO will cite deficiencies in the employer's assessment under paragraph (d)(2) as a grouped violation with 29 CFR 1926.1153(c), along with citing any other noted deficiencies (*e.g.*, respiratory protection, hazard communication).

- Where the employer has *not fully and properly* implemented the engineering controls, work practices, and respiratory protections specified in Table 1, and sampling shows exposure over the PEL, the CSHO will cite 29 CFR 1926.1153(c) and (d)(1) as a grouped violation.
- Where the employer has *not fully and properly* implemented the engineering controls, work practices, and respiratory protections specified in Table 1 but the employer *has* conducted an exposure assessment under 29 CFR 1926.1153(d):
  - If CSHO sampling shows an overexposure and the employer has *not* instituted all feasible engineering and work practice controls or adequately protected employees via an effective respiratory protection program, the CSHO will cite the overexposure as a violation of 29 CFR 1926.1153(d)(1) and (d)(3) grouped with 29 CFR 1926.1153(c).
  - If, in the CSHO's opinion, the employer's exposure data may not be representative (*e.g.*, new or different operations are occurring in the workplace that do not closely resemble the operations represented in the employer's exposure data), the CSHO should also cite 29 CFR 1926.1153(d)(2), as appropriate, and group with 29 CFR 1926.1153(c). Where appropriate, cite any other deficiencies.
  - If CSHO sampling shows an over exposure and the employer *has* instituted all feasible engineering and work practice controls *and* employees are adequately protected via an effective respiratory protection program, then the CSHO **will not cite** the employer for a PEL violation.

#### **Tasks Not Listed In Table 1**

- If CSHO sampling shows an overexposure and the employer has *not* instituted all feasible engineering and work practice controls or adequately protected employees via an effective respiratory protection program, the CSHO will cite the overexposure as a violation of 29 CFR 1926.1153(d)(1).
  - Deficiencies in any of the requirements for engineering and work practice controls and respiratory protection must follow the citation procedures for combining and grouping violations in CPL 02-00-160, *Field Operations Manual (FOM)*.
  - The CSHO should cite 29 CFR 1926.1153(e)(1)(ii)(C) when the employer did not provide necessary respiratory protection where engineering and work practice controls were not sufficient to reduce exposures to or below the PEL.
- If, in the CSHO's opinion, the employer's exposure data may not be representative (*e.g.*, new or different operations are occurring in the workplace that do not closely resemble the operations represented in the employer's exposure data), the CSHO should cite 29 CFR 1926.1153(d)(2).

If the employer violates any other provision of 29 CFR 1926.1153, *Respirable Crystalline Silica*, the CSHO must issue the citation(s) in accordance with the FOM.

#### **Exposure Variability**

- If a CSHO obtains a sample showing exposures above the PEL, but has reason to think, based on the employer's air monitoring data, that the results may be due to *unpreventable* exposure variability, then the Area Director may consider whether to conduct a follow-up inspection in lieu of issuing a citation.

- The CSHO will compare the employer's exposure data with CSHO sampling results to determine whether the employer's data are representative. To be representative, the employer's samples must have been obtained under conditions that closely resemble or have a higher exposure potential than CSHO samples.
- The CSHO should confer with the Area Director regarding whether re-sampling is appropriate.
- The burden is on the employer to demonstrate that the CSHO's samples are not representative of normal exposure levels.

### **CSHO Protection**

CSHOs must use appropriate PPE for potential hazard exposures. They must not enter a respirable crystalline silica-regulated area, or other area where exposures are likely to exceed the PEL, unless it is absolutely necessary and then only if using appropriate PPE. For inspection and air sampling activities, CSHOs should use remote operations when practical. CSHOs should be conservative about time spent in areas where high concentrations of silica exist or are suspected.

## Attachment B: Flow Charts for Evaluating Construction Employer Methods of Controlling Exposure to Respirable Crystalline Silica

### Flowchart A: Specified Exposure Controls for Table 1 Tasks

If employees are performing Table 1 tasks, and the employer has not implemented controls, *and* has not conducted an exposure assessment, then the employer is in violation of paragraphs (c) and (d). For each employee with occupational exposure to respirable crystalline silica (RCS), CSHOs should consider the following questions.

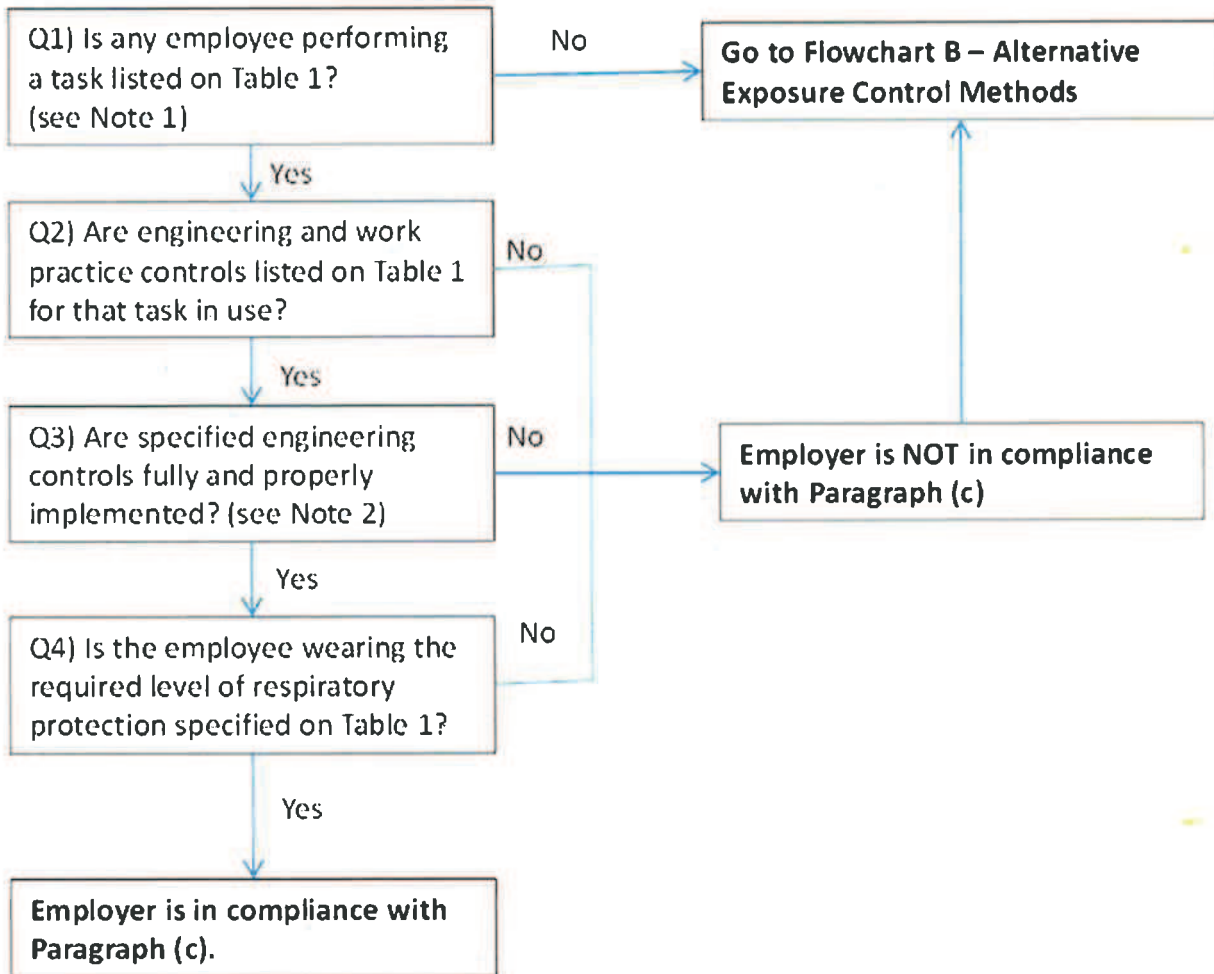
1. Is any employee performing a task listed in Table 1?  
If Yes, go to Q2.  
**If No, evaluate compliance with 29 CFR 1926.1153(d) – see Flowchart B.**
2. Are the engineering controls and work practices listed for that Table 1 task in use?  
If Yes, go to Q3.  
**If No, evaluate compliance with 29 CFR 1926.1153(d) – see Flowchart B.**
3. Are the engineering controls *fully and properly* implemented?  
If Yes, go to Q4.  
**If No, evaluate compliance with 29 CFR 1926.1153(d) – see Flowchart B.**
4. Is the employee wearing the required level of respiratory protection?  
If Yes, employer is in compliance with Table 1.  
**If No, evaluate compliance with 29 CFR 1926.1153(d) – see Flowchart B.**

Note 1: CSHOs should repeat Flowchart A for each employee engaged in a Table 1 task.

Note 2: To determine whether the engineering controls, work practices, and respiratory protection specified in Table 1 are *fully and properly* implemented, CSHOs should consult 29 CFR 1926.1153(c)(2), which contains additional requirements for tasks performed indoors or in an enclosed area, and for control measures involving wet methods or an enclosed cab or booth.



**Flowchart A: Specified Exposure Controls for Table 1 Tasks**



## Flowchart B: Alternative Exposure Control Methods

1. Are workers performing tasks with foreseeable exposure to RCS at or above the action level? (Note that the use of engineering controls to maintain exposure to below the AL indicates that the standard covers the operation.)  
If Yes, go to Q2.  
**If No, the standard does not apply to exposures below the AL.**
2. Has the employer conducted an exposure assessment for each employee who may be exposed at or above the AL?  
If Yes, go to Q3.  
**If No, the employer is not in compliance with paragraph (d)(2). Conduct exposure monitoring.**
3. Is the exposure assessment representative of current conditions?  
If Yes, go to Q4.  
**If No, the employer is not in compliance with paragraph (d)(2). Conduct exposure monitoring.**
4. Does the employer's exposure assessment show that employees are exposed at or below the PEL?  
If Yes, there is no need to conduct exposure monitoring.  
**If No, conduct exposure monitoring and go to Q5.**
5. Does the CSHO's exposure monitoring show employee exposure at or below the PEL?  
If Yes, the employer is in compliance with paragraph (d)(1).  
**If No, go to Q6.**
6. Has the employer implemented all feasible controls to reduce RCS exposure to at or below the PEL?  
If Yes, go to Q7.  
**If No, the employer is not in compliance with paragraphs (d)(1) and (d)(3).**
7. If respiratory protection is required, are workers wearing the required level of respiratory protection?  
If Yes, the employer is in compliance with paragraph (d)(3).  
**If No, the employer is not in compliance with paragraphs (d)(1), (d)(3), and (e).**

Flowchart B- Alternative Exposure Control Methods

