

## Silica Program Implementation

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### Exposure Assessments

Exposure assessment must be conducted for any employee who is or may reasonably be expected to be exposed to silica above the 'Action Level'.

- The Action Level is 25 micrograms per cubic meter (25  $\mu\text{g}/\text{m}^3$ ) of air as a 9-hour time-weighted average.

### Options to determine employee exposures:

- **Industrial hygienist**  
Conducts air sampling on and around potentially affected employees and sends those samples to a lab for analysis.
  - Samples should reflect the exposures of employees on each shift, for each job classifications, in each work area potentially exposed to silica.
  - Sample employees expected to have the highest silica exposure.
  - Track and record
    - Number, duration, and results of samples taken
    - Dates the samples monitored/
    - Sampling and analytical methods used
    - Identity of the lab performing the analysis
    - PPE worn by monitored employees
    - Names and job classifications of all employees represented by the monitoring and which employees were actually monitored.
- **Performance Option**
  - Allows the employer to rely on 'objective data' to conduct the assessment. Objective data means industry-wide surveys or calculations based on the composition of a substance that demonstrates employee exposure either on a particular product or for a specific job task or activity. Such data 'must reflect workplace conditions closely resembling or with a higher exposure potential than the products, job tasks, and environmental conditions in the employer's current operations.'

### Lab Results

- If lab results show that the exposure is below the Action Level
  - Assessment is complete and no further action required
- If the results show the exposure is above the Action Level but still below the "permissible exposure limit" (PEL), (50 micrograms per cubic meter (50  $\mu\text{g}/\text{m}^3$ ) of air as an eight-hour time-weighted average)
  - Repeat the monitoring within 6 months of the last monitoring.
  - Employees exposed to silica above the Action Level must undergo medical surveillance.



- If the lab results show that employees are exposed to silica above the PEL, repeat the monitoring within three months of the last monitoring. Employees exposed to silica above the PEL must also undergo medical surveillance. Begin planning to take all steps necessary to lower exposure levels to below the PEL. Begin formulating your company's silica exposure control plan (see below for information on silica exposure control plans). Begin respirator programs, and if you are covered by OSHA's General Industry or Maritime Standards, establish regulated areas.

#### **After the exposure assessment**

- Notify affected employees in writing within 15 working days or post the results in an appropriate location accessible to affected employees.
- If employee exposure is above the PEL, your notice must also describe the corrective action being taken to reduce employee exposure to an amount below the PEL.

#### **Medical Surveillance**

Medical surveillance is required for any affected employee exposed to silica above the Action Level for 30 or more days per year. Employers must schedule initial exams within 30 days after initial assignment unless the employee has already received a compliant medical examination within the last three years. Compliant medical exams consist of:

- A medical and work history, with an emphasis on past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and, finally, smoking status and history;
- A physical examination with special emphasis on the respiratory system;
- A chest x-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film—no less than 14 by 17 inches and no more than 16 by 17 inches—or by a digital radiography system), interpreted and classified according to the International Labour Office's International Classification of Radiographs of Pneumoconioses by a National Institute for Occupational Safety and Health (NIOSH)-certified "B" reader;
- A pulmonary function test, including forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and the FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH-approved spirometry course;
- Testing for latent tuberculosis infection; and
- Any other tests deemed appropriate by the physician or other licensed health care professional (PLHCP).

Medical exams must occur at least every three years or sooner if recommended by a PLHCP. Employers must provide PLHCPs with a copy of the OSHA silica standard, along with the following, for each affected employee:



- A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to respirable crystalline silica;
- The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;
- A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and
- Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

Within 30 days of the exam, the PLHCP must provide two reports:

- A written medical report to the employee detailing the results of the medical examination, any recommended limitations on the employee's use of respirators, any recommended limitations on the employee's exposure to silica, and a referral to a specialist if the chest x-ray is classified as 1/0 or higher by the B reader or if referral to a specialist is otherwise deemed appropriate by the PLHCP; and
- A written medical opinion to the employer stating the date of the exam, an affirmation that the exam met the requirements of the silica standard, and providing any recommended limitations on the employee's use of respirators. If the employee provides written authorization, the report may also contain any recommended limitations on the employee's exposure to silica, and a statement of whether the employee should be examined by a specialist.

The rule requires employers to ensure that employees also receive a copy of this second report within 30 days of the exam.

If there is a referral to a specialist, the employer is required to make a medical exam by a specialist available within 30 days after receiving the PLHCP's written opinion. The rule requires the employer to provide the specialist with the same information provided to the PLHCP. The specialist must prepare separate reports similar to the reports prepared by the PLHCP and send those reports to the employee and employer within 30 days of the specialist's exam.

#### **Recordkeeping Requirement for the Samples, Lab Reports, and Medical Exam Reports**

Keep all records for at least the duration of the employee's employment *plus* 30 years.

#### **Silica and Hazard Communication Training**

- Silica must be included in the Hazard Communication Program.
- Employees must have access to labels on containers of silica and access to Safety Data Sheets (SDS) on silica.
- The hazard communication program must, at the very least, address the hazards of cancer, lung effects, immune system effects, and kidney effects.



### **Employees Exposed to Silica Above the PEL and Establish Regulated Areas**

For all areas of the workplace in General Industry and Maritime where employee exposure to silica is or can reasonably be expected to be above the PEL, the employer must demarcate them off as “regulated areas.”

Access to these areas must be limited to authorized personnel, i.e., those employees whose work duties require them to work in the area, any designated employee representatives, and OSHA officials. All employees working in regulated areas must be provided with appropriate respirators.

Warning signs must be posted at all entrances to regulated areas with the following language:

**RESPIRABLE CRYSTALLINE SILICA**  
**MAY CAUSE CANCER**  
**CAUSES DAMAGE TO LUNGS**  
**WEAR RESPIRATORY PROTECTION IN THIS AREA**  
**AUTHORIZED PERSONNEL ONLY**

### **Employees Exposed to Silica Above the PEL**

OSHA requires employers to utilize the hierarchy of controls to reduce employee exposure to below the PEL. The hierarchy of controls directs employers to first consider engineering controls to eliminate hazards. If engineering controls cannot be utilized, employers may consider work practice controls.

### **If Engineering and Work Practice Controls Won't Get Employees Below the PEL**

Respirator use is required whenever employees are installing or implementing your engineering and work practice controls, or during certain maintenance and repair tasks for which engineering and work practice controls are not feasible. Finally, if all of an employer's engineering and work practice controls still do not reduce employee exposure to or below the PEL, the employer must outfit affected employees with respirators.

### **Other Alternatives**

If the job task is listed on Table 1, located in the silica rule for construction, then the employer may follow OSHA's methods (engineering and work practice controls, as well as respiratory protection) and be deemed in compliance. For instance, if employees are using a stationary masonry saw, if the employer uses a saw equipped with an integrated water delivery system that continually feeds water to the blade, and employees operate and maintain the blade in accordance with manufacturer's instructions to minimize dust emissions, OSHA will deem the employer to have implemented sufficient engineering and work practice controls for silica-related job tasks involving stationary masonry saws. Table 1 contains a list for 18 different pieces of equipment or job tasks.

### **Written Exposure Control Plan Requirements**

The silica rule requires employers to create written exposure control plans. Such plans must include three things:

1. Description of the tasks in the workplace that involve exposure to respirable crystalline silica;



2. Description of the engineering controls, work practices, and respiratory protections used to limit employee exposure to respirable crystalline silica for each task
3. Description of the housekeeping measures used to limit employee exposure to respirable crystalline silica.

Employers must review written exposure control plans at least annually and update them as necessary. Written exposure control plans must be made available upon demand to employees, union representatives, and DSPS.

### **Special Housekeeping Rules**

The rule allows dry sweeping and brushing, but only when the employer can show wet sweeping or HEPA-filtered vacuuming are not feasible. For instance, wet sweeping will not work in outdoor work sites when temperatures are below freezing.

Employers may use compressed air cleaning, but only in conjunction with a ventilation system that effectively captures dust clouds created by the compressed air.