

Silica Exposure Safety Program & Written Exposure Control Plan

Subcontractor:

Masonry 'Subcontractor'

General Contractor:

Hensel Phelps Construction Co.

Project Name and Address:

SB1022 – Classrooms & Vocational Training Center Project
2456 Claybank Road
Fairfield, CA

PURPOSE

The purpose of this Silica Exposure Safety Program and Written Exposure Control Plan (ECP) is to identify potential sources of employee exposure to Respirable Crystalline Silica dust ("Silica") and specify the appropriate engineering controls and/or work practices to limit exposure of both work personnel and bystanders. This plan also addresses the use of personal protective equipment requirements where exposures may exceed applicable limits set out in 29 CFR 1926.1153.

**A Section should be added here to include the following items:*

- *Background on Crystalline Silica to understand what this material is, where it may come from, and how it can be a health hazard to those exposed to it.*
 - *Ex. All work involving chipping, cutting, sawing, drilling, grinding, crushing, or similar activities on materials containing Crystalline Silica can lead to the release of respirable-sized particles of Crystalline Silica (i.e. Respirable Crystalline Silica). Crystalline Silica is a basic component of soil, sand, stone, brick, block, mortar concrete, granite and many other minerals. Quartz is the most common form of Crystalline Silica. Many materials found on constructions sites include Crystalline Silica; including but not limited to – cement, concrete, asphalt, pre-formed structures and others.*
 - *Ex. Respirable silica exposure occurs through inhalation of small (non-visible) silica containing particles that can result in silicosis and other health hazards. Silicosis is an irreversible, often disabling and sometimes fatal fibrotic lung disease. The fine particles are deposited in the lungs, causing thickening and scarring of the lung tissue. The scar tissue restricts the lungs' ability to extract oxygen from the air. This damage is permanent, but the symptoms of the diseases may not appear for many years.*

- Definitions of specific terms that are included in CFR 1926.1153 which is also referenced in this plan to keep definitions consistent: (commonly used terms that should be included)
 - Action Level means a concentration of airborne Respirable Crystalline Silica of 25 $\mu\text{g}/\text{m}^3$, calculated as an 8-hour TWA.
 - Competent Person means an individual who is capable of identifying existing and foreseeable Respirable Crystalline Silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. This person must also have the knowledge and ability necessary to fulfill the responsibilities set forth in the Written Exposure Control Plan
 - Employee Exposure means the exposure to airborne Respirable Crystalline Silica that would occur if the employee were not using a respirator.
 - High-Efficiency Particulate Air (HEPA) Filter means a filter that is at least 99.97 percent efficient in removing monodispersed particles of 0.3 micrometers in diameter.
 - 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. 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 in the employer's current operations.
 - Permissible Exposure Limit (PEL) means the employer shall ensure that no employee is exposed to an airborne concentration of Respirable Crystalline Silica in excess of 50 $\mu\text{g}/\text{m}^3$, calculated as an 8-hour TWA.
 - Physician or Other Licensed Health Care Professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by the Medical Surveillance Section of the OSHA Respirable Crystalline Silica Standard.
 - Respirable Crystalline Silica means Quartz, Cristobalite, and/or Tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size- selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality-Particle Size Fraction Definitions for Health-Related Sampling.
 - Specialist means an American Board-Certified Specialist in Pulmonary Disease or an American Board-Certified Specialist in Occupational Medicine.

RESPONSIBILITIES

**The responsibilities section may vary depending on the subcontractor Company structure, but the (4) typical roles that should be included are:*

- 1. The Subcontractor/Health & Safety Department*
- 2. Competent Person*
- 3. Supervisors/Foreman*
- 4. All Employees*

'Subcontractor'/Health & Safety Department Responsibilities:

- Conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments in order to determine if an employee's exposure will be above 25 µg/m³ as an 8-hour TWA under any foreseeable conditions

**Some missing responsibilities of the Subcontractor/Health & Safety Department that should be included, but is not limited to:*

- *Development, implementation, administration, evaluation, and maintenance of this Silica Program.*
- *Ensure that the materials, tools, equipment, personal protective equipment (PPE), and other resources (such as worker training) required to fully implement and maintain this Respirable Crystalline Silica Program are in place and readily available if needed.*
- *Ensure that Project Managers, Site Managers, Foremen, Competent Persons, and employees are educated in the hazards of Silica exposure and trained to work safely with Silica in accordance with OSHA's Respirable Crystalline Silica Construction Standard and OSHA's Hazard Communication Standard. Managers, Foremen, and Competent Persons may receive more advanced training than other employees.*
- *Maintain written records of training (for example, proper use of respirators), ECPs, inspections (for equipment, PPE, and work methods/practices), medical surveillance (under lock and key), respirator medical clearances (under lock and key) and fit-test results.*
- *Conduct an annual review (or more often if conditions change) of the effectiveness of this program and any active project ECP's that extend beyond a year. This includes a review of available dust control technologies to ensure these are selected and used when practical.*
- *Coordinate work with other employers and contractors to ensure a safe work environment relative to Silica exposure.*

Competent Person Responsibilities:

** Specific personnel(s) are required to be designated as the Competent Person for this Subcontractor*

- Make frequent and regular inspections of job sites, materials, and equipment to implement the written ECP.

**Some missing responsibilities of the Competent Person that should be included, but is not limited to:*

- *Identify existing and foreseeable Respirable Crystalline Silica hazards in the workplace and take prompt corrective measures to eliminate or minimize them.*
- *Follow recognized work procedures (such as the Construction Tasks identified in OSHA's Construction Standard Table 1 and other control methods established in this project's ECP and this program).*
- *Notify the Project Manager and/or Safety Department of any deficiencies identified during inspections in order to coordinate and facilitate prompt corrective action.*
- *Assist the Project Manager and Safety Department in conducting job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments in order to determine if an ECP, exposure monitoring, and medical surveillance is necessary.*

** A "Supervisors/Foreman Responsibilities" should be included with the following responsibilities:*

- *Ensure all applicable elements of this Respirable Crystalline Silica Program are communicated and made available to employees in order to properly implement on the project.*
- *Assist the Safety Department in conduct job site assessments for Silica containing materials and perform employee Respirable Crystalline Silica hazard assessments in order to determine if an ECP, exposure monitoring, and medical surveillance is necessary.*
- *Ensure employees are provided appropriate PPE when conducting such work.*
- *Ensure that employees using respirators have been properly trained, medically cleared, and fit-tested in accordance with the company's Respiratory Protection Program. This process will be documented.*
- *Ensure that work is conducted in a manner that minimizes and adequately controls the risk to workers and others. This includes ensuring that workers use appropriate engineering controls, work practices, and wear the necessary PPE.*
- *Ensure employees are properly trained on the applicable contents of this program, the project-specific ECP, and the applicable OSHA Standards (such as Hazard Communication).*

Employee Responsibilities:

- Use the assigned PPE in an effective and safe manner.

**Some missing responsibilities of the Competent Person that should be included, but is not limited to:*

- *Follow recognized work procedures (such as the Construction Tasks identified in OSHA's Construction Standard Table 1 and other recognized hazards as established in the project's ECP and this program.*
- *Participate in Respirable Crystalline Silica exposure monitoring and the medical surveillance program.*
- *Report any unsafe conditions, acts, or improper operation of equipment to the Supervisor and/or Safety Department*
- *Report any exposure incidents or any signs or symptoms of Silica illness.*

A section needs to be added for **Training to ensure that the Competent person(s) and other employee personnel are trained in Silica Awareness and other tasks such as specific equipment handling for tools that may involve Respirable Silica. This should track the individual's trainings and their renewal frequency.*

RISK/EXPOSURE ASSESMENT

Specified Exposure Control Methods

When possible and applicable, 'Subcontractor' will conduct activities with potential Silica exposure to be consistent with OSHA's Table 1 – Specified Exposure Control Methods and other recognized hazards as established in the project's ECP and this program.

[As the OSHA Table 1 is referenced in this section, it would be beneficial to have a copy of the Table inserted here for quick reference or added to the end of the Plan as an Attachment].

**There are also specific tasks required to be performed for control measures specified in Table 1 which include:*

- *For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust.*
- *For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust.*
- *For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:*
 - *Is maintained as free as practicable from settled dust;*
 - *Has door seals and closing mechanisms that work properly;*
 - *Has gaskets and seals that are in good condition and working properly;*

- Is under positive pressure maintained through continuous delivery of fresh air;
- Has intake air that is filtered through a HEPA filter that is 99.7% efficient in the 0.3-10.0 μm range (e.g., MERV-16 or better); and
- Has heating and cooling capabilities.
- Where an employee performs more than one task included on OSHA's Construction Standard Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

An **Alternate Exposure Control Methods Section needs to be added for tasks not listed in OSHA's Construction Standard Table 1, or where 'Subcontractor' cannot not fully and properly implement the engineering controls, work practices, and respiratory protection described in the Table 1.*

*The (2) Methods to Assess the Exposure of Silica are the **Performance Option** or the **Scheduled Monitoring Option**.*

The following information should be included under these Options in order to give an understanding of what each option includes:

Performance Option:

- 'Subcontractor' will 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.

Scheduled Monitoring Option

- Initial exposure monitoring should be conducted to quantitatively evaluate the exposure to airborne silica. Objective data may also be used to characterize employee exposures to respirable crystalline silica. Monitoring may be discontinued if the initial monitoring indicates that employee exposure is below 25 $\mu\text{g}/\text{m}^3$.
- Periodic exposure monitoring will be performed every six months whenever silica exposure levels are at or above 25 $\mu\text{g}/\text{m}^3$, but below the PEL of 50 $\mu\text{g}/\text{m}^3$. Periodic exposure monitoring will be performed every three months whenever silica exposure levels are at or above the PEL of 50 $\mu\text{g}/\text{m}^3$.
- Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below 25 $\mu\text{g}/\text{m}^3$, additional exposure monitoring will be performed within six months of the most recent monitoring until two consecutive measurements (taken seven or more days apart), are below 25 $\mu\text{g}/\text{m}^3$. At which time, monitoring may be discontinued.
- 'Subcontractor' will reassess exposures whenever a change in production, process, control equipment, personnel or work practices may reasonably be expected to result in new or additional exposures at or above 25 $\mu\text{g}/\text{m}^3$.

This work task below can be broken into a separate section specific for the **Written Exposure Control Plan requirement per CFR 1926.1153(g)(1)*

The requirements of the Written Exposure Control Plan per OSHA are to include the following:

- Description of the tasks to be performed that involve silica exposure*
- Description of the engineering controls, work practices, and respiratory protection to be used*
- Description of Housekeeping measures*
- Description of procedures to minimize other worker's exposure to that work being performed*

Cutting CMU Block *(One of the tasks that may be performed – Good)*

- Concrete Masonry Unit blocks will be field cut with either a Stationary Masonry saw or Handheld Power Saw.
- All control measures specified in table 1 of Title 8 section 1532.3(c)(1) Silica standard will be followed for section (i) Stationary Masonry saw *(May also include section (ii) for Handheld power saws as this is another means of cutting the block)*

**What other tasks are involved in the Masonry scope that involve silica exposure? Are these tasks covered under OSHA's Construction Standard Table 1? If not, how are the exposure's being limited to the Regulation Requirements? These items are required to be listed in the Written Exposure Control Plan similar to the "Cutting CMU Block" Task.*

Other Tasks that could be included on the Written Exposure Control Plan Section:

- *Handling/Mixing Cement for Mortar*
 - *Since this task is not specifically listed on Table 1, an Alternate Exposure Control Method by Performance or Scheduled Monitoring needs to be performed to ensure that the PEL is not exceeded and the other requirements listed above.*
- *Concrete Drilling*
 - *Comply with Table 1*
- *Concrete Chipping/Hammering*
 - *Comply with Table 1*
- *Surface Grinding*
 - *Comply with Table 1*
- *Substrate Preparation and Cleaning*
 - *Since this task is not specifically listed on Table 1, an Alternate Exposure Control Method by Performance or Scheduled Monitoring needs to be performed to ensure that the PEL is not exceeded and the other requirements listed above.*
- *Tuck-Point Grinding*
 - *Comply with Table 1*

A section needs to be included that covers **General Housekeeping per CFR 1926.1153(f). Specific items included for housekeeping are:*

- No dry sweeping/brushing unless wet sweeping, HEPA-filtered vacuuming or methods to minimize exposure are not feasible*
- No compressed air for cleaning surfaces or clothing unless in conjunction with ventilation system capturing dust created; or no alternative method is feasible (must prove infeasibility)*
- Wash hands, arms, and face prior to eating, drinking or something outside dusty areas*
- Do not wear contaminated clothes in your vehicle and your household*

Respiratory Personal Protection Equipment (PPE)

Where respiratory protection is required by this program, ‘Subcontractor’ will provide each employee an appropriate respirator that complies with the requirements of the company’s Respiratory Protection Program and the OSHA Respiratory Protection Standard (29 CFR 1910.134).

**This does not clearly indicate when Respiratory PPE is required to be implemented. This should list the following:*

- Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls*
- Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible; and*
- During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.*

**Missing PPE documentation/requirements such as being “fit-tested” and having a clean shaved face in order for the respirator to provide a proper seal to the face. Employee must be trained and understand the different filters that may be used (N-95, half face piece, or full-face piece) and the specific HEPA cartridges to be used for certain operations.*

Another section that should go with Personal Protection Equipment is the **Medical Surveillance Requirement per CFR 1926.1153(h) with specific requirements including, but not limited to:*

- Medical examinations are performed by a PLHCP and provided at no cost to the employee at a reasonable time and place*
- Employers must make medical examinations available to employees who will be required to wear a respirator for 30 or more days a year.*
- A baseline examination will be conducted within 30 days after initial assignment (unless employee received an examination in the past three years per standard)*
- Requirements of what is required to be provided by PLHCP to the employer per the CFR*

Hazard Communication

'Subcontractor' will include Respirable Crystalline Silica in the company's Hazard Communication Program established to comply with the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**What will be included? This should have specifics such as Material Safety Data sheets involving crystalline silica, labeling of these containers, and specific training for employees on these materials.*

A **Record Keeping Section needs to be included that tracks any Silica Training Records, Competent Persons Training, Air-Monitoring data, Objective Data, Medical Surveillance records, etc.*