

## CCS Administrative Procedure

### 2.30.05-Y Silica Exposure Control Plan

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#### Implementing Board Policy [2.30.05](#)

Contact: Environmental Health & Safety, 533-8686

#### 1.0 Purpose

Community Colleges of Spokane is committed to the health and safety of its faculty and staff, and in maintaining a safe and efficient workplace that complies with all local, state and federal safety and health regulations, programmatic standards, and with any special safety concerns identified at the unit level. CCS complies with all federal and state silica exposure regulations regarding respirable crystalline silica management in order to prevent illness to employees.

The purpose of this procedure is to protect students, employees and visitors from exposure to respirable crystalline silica.

#### 2.0 Definitions

- 2.1 Action Level (AL): A concentration of airborne respirable crystalline silica of 25 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), calculated as an 8-hour TWA. The terms of action level is used by [OSHA](#) and [NIOSH](#) to express a health or physical hazard. It indicates the level of a harmful or toxic substance/activity which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring.
- 2.2 Crystalline silica: Naturally occurring component in soils, sand, granite and many other minerals.
- 2.3 Exposure assessment: The initial assessment used to determine if an employee was exposed to respirable crystalline silica at or above the permissible exposure level.
- 2.4 Hazard Communication Standard (HCS): Also known as the Right-to-Know Law and more commonly as HAZCOM, [29 CFR 1910.1200](#), is a federal regulation that governs the evaluation and communication of hazards associated with chemicals in the workplace.
- 2.5 High-Efficiency Particulate Air (HEPA) Filter: A filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter.
- 2.6 Permissible Exposure Limits (PEL): The amount of an airborne chemical, toxic substance, or other harmful agent that must not be exceeded during any part of the workday. The OSHA limit for silica dust exposure is set at  $50\mu\text{g}/\text{m}^3$ , averaged over an 8-hour workday, as a TWA.
- 2.7 Regulated area: An area, demarcated by the employer, where an employee's exposure to airborne concentrations of respirable silica exceeds or can reasonably be expected to exceed the PEL.
- 2.8 Respirable crystalline silica: 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.
- 2.9 Silica containing material: Any material that has the potential to contain silica at levels which may pose a hazard to employees, student or visitors when the material is manipulated to create airborne particles

- 2.10 Silicosis: A lung disease caused by inhalation of silica dust. This dust can cause fibrosis or scar tissue formations in the lungs that reduce the lung's ability to work to extract oxygen from the air. The disease is not curable, but can be prevented through the use of protective systems.
- 2.11 Time-Weighted Average (TWA): It is employee's average value of exposure over the course of an 8-hour work shift.

### 3.0 Crystalline Silica and Health Hazards

Crystalline silica is a common mineral found in the earth's crust. In general, quartz is the predominant form of crystalline silica; however, cristobalite does exist in certain materials. Materials like sand, stone, concrete, and mortar contain crystalline silica. It is also used to make products such as glass, pottery, ceramics, bricks, and artificial stone.

Breathing in crystalline silica dust over time can lead to a disabling lung disease such as silicosis and lung cancer. Exposure to silica is usually in the form of an airborne dust; however, other forms of airborne exposures are possible as well, such as mists. Silica inhalation is concerned with the respirable fraction of the dust. This is the fraction that is small enough to get deep into the lung where gas exchange takes place.

### 4.0 Tasks that involve exposure to respirable crystalline silica

- 4.1 Crystalline silica occurs naturally in the earth's crust, and it is present as an ingredient in the following:

- Brick and mortar
- Concrete
- Slate
- Dimensional stone (granite, sandstone)
- Engineered stone products (countertops etc.)
- Stone aggregate
- Tile
- Asphalt filler
- Roofing granules
- Plastic composites
- Soils
- Wallboard joint compounds, paint, plaster, caulking and putty

- 4.2 CCS employees, students and visitors can be exposed to silica when conducting activities such as:

- Abrasive blasting
- Jack hammering
- Concrete crushing
- Hoe ramming
- Rock drilling
- Mixing of concrete or grout
- Concrete drilling
- Sawing concrete or bricks
- Chipping or scarifying concrete
- Rock crushing
- Moving or dumping piles of concrete, rock or sand
- Demolition of concrete or brick
- Using coatings containing silica
- Removing coatings containing silica

### 5.0 Engineering Controls

In many cases, engineering controls offer the most effective exposure control. This is because exposure can be very significant, which means using respiratory protection is less successful. Another reason is the challenge of managing exposures to adjacent personnel. In some instances, engineering controls can be very simple and highly effective, such as the use of wet operations to prevent dust generation.

Common engineering controls that are applicable to silica exposure control include (but not limited to) the following:

- Wet Dust Suppression (WDS) systems
- Wet methods such as using water to keep dust down
- Enclosed processes;
- Enclosed people spaces;
- Local exhaust ventilation;
- General ventilation
- Vacuum methods with HEPA filters
- Barriers;
- Dust control products such as mats
- Substituting non-silica containing materials for use while abrasive blasting.

## 6.0 Administrative Controls

CCS employees must follow established practices and procedures to limit contact with or exposure to silica. In general, proximity and duration of exposure can be managed by way of administrative controls. Common examples of administrative controls include, but are not limited to:

- Rescheduling of work as to avoid the activities of others
- Relocating unprotected workers away from dusty areas
- Control zones indicating where personnel are permitted, and when and what type of respiratory protection is required
- Limiting access and limiting time in the areas
- Maximizing distance from sources
- Posting warning signs that indicate silica hazard is present

## 7.0 Exposure Assessment

This section applies to all occupational exposures except for tasks performed according to the requirements in [WAC 296-840-110, Table 1](#). In other words, when CCS follows Table 1 correctly, it is NOT required to measure worker exposure to silica, and it is NOT subject to PEL. Otherwise 50 ug/m<sup>3</sup> PEL and 25 ug/m<sup>3</sup> AL apply.

- 7.1 CCS ensures that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of the 8-hour TWA.
- 7.2 CCS assesses the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level.
- 7.3 According to [WAC 296-840-105, part \(2\) \(b\)](#), for silica exposure monitoring, CCS follows the steps below.
  - 7.3.1 Initial monitoring will be performed to assess the 8-hour TWA for each employee on the basis of personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area.
  - 7.3.2 Where several employees perform the same tasks on the same shift and in the same work area, CCS samples a representative fraction of these employees in order to meet this requirement.
  - 7.3.3 In representative sampling, CCS should sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

- 7.3.4 If initial monitoring indicates that employee exposures are below the action level, CCS discontinues monitoring for those employees whose exposures are represented by such monitoring.
- 7.3.5 Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, CCS repeats such monitoring within six months of the most recent monitoring.
- 7.3.6 Where the most recent exposure monitoring indicates that employee exposures are above the PEL, CCS repeats such monitoring within three months of the most recent monitoring.
- 7.3.7 Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the action level, CCS repeats such monitoring within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the action level, at which time CCS may discontinue monitoring for those employees whose exposures are represented by such monitoring.
- 7.4 The departments will reassess exposures whenever a change in the process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

## 8.0 Personal Protective Equipment (PPE)

Please refer to [PPE Provision, Use and Care](#) and [CCS Respiratory Protection](#) procedures.

## 9.0 Housekeeping

- 9.1 In areas where silica containing dust may be present, all surfaces must be maintained free from accumulations of dust to minimize potential silica exposure. Dust and other silica containing debris must be removed from the work area as soon as possible.
- 9.2 Acceptable method of silica dust removal includes the use of HEPA vacuum or wet methods such as wet mopping.
- 9.3 Unacceptable methods of silica dust removal include dry sweeping, vacuum cleaners, shop vacuums, and compressed air.
- 9.4 Employees are required to follow all recommended procedures and utilize recommended PPE during silica containing debris cleanup activities.

## 10.0 Medical Surveillance

- 10.1 Medical surveillance will be available at no cost to the employee who is exposed to respirable crystalline silica at or above the Action Level (25 µg/m<sup>3</sup>) for thirty or more days per year.
- 10.2 All medical surveillance will be performed by a Physician or Other Licensed Health Care Professional (PLHCP), and results must be provided to the affected employee and their supervisor within thirty days of each medical examination.
- 10.3 A baseline medical examination will be available to the affected employee. The examination consists of the following:
- Medical and work history
  - A medical examination with special emphasis on the respiratory system

- Chest X-ray
- Pulmonary function test
- Testing for latent tuberculosis infection
- Any other test deemed appropriate by the physician

10.4 Employees enrolled in the medical surveillance program should be examined every three years or more frequently if recommended by a PLHCP to track any changes as a result of exposure to silica dust.

**Note:** In periodic examination, there is no need to retest for latent tuberculosis infection.

## 11.0 Communication of Hazards to Employees

11.1 In accordance with [WAC 296-840-150](#), silica hazards will be communicated to employees during the activities that produces silica dusts.

11.2 Signs will be posted at all entrances to the regulated areas by the Environmental Health and Safety Office, Facilities Department or the contractor. The signs will include the following information:

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

11.3 Please refer to [CCS Administrative Procedure 2.30.05- G Hazard Communication Program](#) for more information about CCS Hazard Communication.

## 12.0 Training

12.1 Covered employees will be trained under OSHA's HAZCOM Standard on hazard of respirable crystalline silica containing products and have access to labels and SDSs.

12.2 Employees will also be trained on:

- Health hazards associated with exposure to respirable crystalline silica
- Specific tasks in workplace that could result in exposures
- Specific measures CCS has implemented to protect employee from exposure, including engineering, work practices, and respirators to be used
- Contents of OSHA rule
- Purpose and description of medical surveillance program

## 13.0 Record keeping

13.1 The Environmental Health and Safety Office and the Facilities Department will maintain air monitoring records, medical surveillance information and training records.

## 14.0 Related Information

- [NIOSH Silica](#)
- [OSHA Crystalline Silica](#)
- [WA L&I Silica](#)