



## Silica Exposure Control Plan

Department of Public Safety - Environmental, Health and Safety  
Standard Operating Procedure (SOP) #43

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### **PURPOSE**

The purpose of this program is to identify tasks involving silica exposure and establish and implement methods to protect employees. The requirements of this SOP apply to all Lafayette College employees whose duties may result in an occupational exposure as defined under the Occupational Safety and Health Administration's (OSHA) standards pertaining to Respirable Crystalline Silica (General Industry 29 CFR 1910.1053; Construction Industry 29 CFR 1926.1153).

### **DEFINITIONS**

Engineering Controls - means controls to reduce and maintain employee exposure to respirable crystalline silica below the PEL.

High-Efficiency Particulate Air (HEPA) Filter - means a filter that is at least 99.97 percent efficient in removing particles of 0.3 microns in diameter.

Occupational Exposure - means the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

Permissible exposure limit (PEL) - the employer shall ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 µg/m<sup>3</sup>, calculated as an 8-hour TWA.

Respirable crystalline silica - means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable

Work Practice Controls - means controls that reduce the likelihood of exposure by altering the manner in which a task is performed.

### **RESPONSIBILITIES**

#### Environmental, Health and Safety

- Review and update the College's Silica Exposure Control Plan annually.
- Coordinate initial medical clearance for employees if respirator use is required.
- Conduct respirator fit testing for occupationally exposed employees, as needed.
- Maintain training records in accordance with applicable regulations.

#### Supervisors

- Implement and ensure procedures are followed in accordance with this Plan.
- Ensure staff are aware of this Plan, instructed on details of implementation, and provided with equipment and methods of control (e.g., engineering controls, work practice controls, and respirators).
- Contact EHS to request technical assistance and/or to evaluate health and safety concerns within their department.

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### Occupationally Exposed Employees

- Comply with this Plan and any further safety recommendations provided by supervisors and/or EHS regarding the Silica Exposure Control Plan.
- Know the tasks that have an occupational exposure.
- Contact supervisor or EHS to request technical assistance and/or to evaluate health and safety concerns within their department.

### **EXPOSURE CONTROL METHODS**

For each Lafayette College employee working with materials containing crystalline silica and engaged in a task using the equipment and machines listed below, the following engineering controls, work practices and/or respiratory protection shall be fully and properly implemented.

#### Stationary Masonry Saws

- **Engineering Control:** Water continuously fed to the blade
- **Respiratory Protection:** None Required

#### Drivable Saws

- **Engineering Control:** Water continuously fed to the blade
- **Respiratory Protection:**
  - Enclosed Area: Do Not Use Saw in Enclosed Areas
  - Outside Area: None Required

#### Handheld Power Saws

- **Engineering Control:** Water continuously fed to the blade
- **Respiratory Protection** – Less than 4 hours per shift:
  - Enclosed Area: N95 Dust Mask
  - Outside Area: None Required
- **Respiratory Protection** – More than 4 hours per shift:
  - Enclosed Area: N95 Dust Mask
  - Outside Area: N95 Dust Mask

#### Walk-Behind Saws

- **Engineering Control:** Water continuously fed to the blade
- **Respiratory Protection** – Less than 4 hours per shift:
  - Enclosed Area: N95 Dust Mask
  - Outside Area: None Required
- **Respiratory Protection** – More than 4 hours per shift:
  - Enclosed Area: N95 Dust Mask
  - Outside Area: None Required

#### Ring-Mounted Core Saw or Drill

- **Engineering Control:** Water continuously fed to the blade
- **Respiratory Protection:** None Required

#### Handheld and Stand-Mounted Drill

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- **Engineering Control:** Commercial shroud or cowling with dust collection system
- **Respiratory Protection:** None Required

### Dow Drilling Rigs for Concrete

- **Engineering Control:** Commercial shroud or cowling with dust collection system
- **Respiratory Protection** – Less than 4 hours per shift:
  - o Enclosed Area: Do Not Use Drill in Enclosed Areas
  - o Outside Area: N95 Dust Mask
- **Respiratory Protection** – More than 4 hours per shift:
  - o Enclosed Area: Do Not Use Drill in Enclosed Areas
  - o Outside Area: N95 Dust Mask

### Vehicle-Mounted Drilling Rigs

- **Engineering Control Options:**
  - o Use dust collection system with close capture hood;
  - o Shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector; OR
  - o Operate from within an enclosed cab and use water for dust suppression on drill bit.
- **Respiratory Protection:** None Required

### Jackhammers and Handheld Power Chipping Tools

- **Engineering Control Options:**
  - o Water continuously fed to the point of impact; OR
  - o Commercial shroud or cowling with dust collection system.
- **Respiratory Protection** – Less than 4 hours per shift:
  - o Enclosed Area: N95 Dust Mask
  - o Outside Area: None Required
- **Respiratory Protection** – More than 4 hours per shift:
  - o Enclosed Area: N95 Dust Mask
  - o Outside Area: N95 Dust Mask

### Walk-Behind Milling Machines and Floor Grinders

- **Engineering Control Options:**
  - o Water continuously fed to the point of impact; OR
  - o Commercial shroud or cowling with dust collection system
- **Respiratory Protection:** None Required

### Small Drivable Milling Machines (Less than Half-Lane)

- **Engineering Control:** Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant.
- **Respiratory Protection:** None Required

### Large Drivable Milling Machines (Half-Lane and Larger)

- **Engineering Control Options:**
  - o Use a machine equipped with exhaust ventilation on drum enclosure and supplemental water spray designed to suppress dust; OR

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- o Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant.
- **Respiratory Protection:** None Required

#### Crushing Machines

- **Engineering Control:**
  - o Use equipment designed to deliver water spray or mist at crusher and other points where dust is generated, **AND**
  - o Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote-control station.
- **Respiratory Protection:** None Required

#### Heavy Equipment (Hoe-Ramming, Rock Ripping, and Demolition)

- **Engineering Control:**
  - o Apply water and/or dust suppressants as necessary to minimize dust emissions, **AND**
  - o When the equipment operator is the only employee engaged in the task, operate from within an enclosed cab.
- **Respiratory Protection:** None Required

#### Heavy Equipment (Grading and Excavating)

- **Engineering Control Options:**
  - o Apply water and/or dust suppressants as necessary to minimize dust emissions, **OR**
  - o When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed tab.
- **Respiratory Protection:** None Required

#### Handheld Grinders for Mortar Removal

- **Engineering Control:** Commercial shroud or cowl with dust collection system
- **Respiratory Protection** – Less than 4 hours per shift:
  - o Enclosed Area: N95 Dust Mask
  - o Outside Area: N95 Dust Mask
- **Respiratory Protection** – More than 4 hours per shift:
  - o Enclosed Area: Full Face Air Purifying Respirator
  - o Outside Area: Full Face Air Purifying Respirator

#### Handheld Grinders for Uses Other than Mortar Removal

- **Engineering Control Options:**
  - o Water continuously fed to the grinding surface, **OR**
  - o Commercial shroud or cowl with dust collection system
- **Respiratory Protection** – Less than 4 hours per shift:
  - o Enclosed Area: None Required
  - o Outside Area: None Required
- **Respiratory Protection** – More than 4 hours per shift:
  - o Enclosed Area: N95 Dust Mask
  - o Outside Area: None Required

#### Housekeeping

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Lafayette College does not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica. Acceptable cleaning methods include wet sweeping or HEPA-filtered vacuuming.

Lafayette College does not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica. Acceptable cleaning methods include wet wiping or laundering.

**\*\*\* If you're exposed to respirable crystalline silica and engaged in a task using equipment and machines not identified in the list above, contact EHS for an exposure assessment to determine the engineering controls, work practices, and respiratory protection requirements to safely do your job.**

### **RESTRICTED WORK AREAS**

Any indoor construction worksite with potential exposure to silica dust will have restricted access with floor to ceiling partitions (i.e. plastic or hard wall portable system). Return ventilation grids will be blocked off and the area will be setup to be negative pressure to adjacent areas. Outdoor construction sites will have construction fences/cones to restrict access.

### **RESPIRATOR INFORMATION**

Federal regulations require a medical evaluation of all personnel who are required to wear respiratory protection. This evaluation must take place before fit testing and subsequent use of the respirator. Refer to the **Respiratory Protection Program** document for further details regarding medical clearance and respirator fit-testing requirements.