

<i>Potential Hazard Review</i>	
<u>Chemical Hazards</u>	
• Inhalation	
<i>Related Safe Work Practices</i>	
• Hazardous Substances	
• Machine Operation	
<i>Personal Protective Equipment</i>	
• Respiratory protection	
<i>Authority</i>	
• CCR Title 8 Section 1532.3	
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This Safe Work Practice (SWP) addresses the hazards of silica exposure. It is dedicated to helping you avoid an injury or illness from known hazards and their consequences - Inflammation of the lungs, respiratory failure, death.

You are advised to follow these recommendations, read and follow this SWP and any related SWPs, complete any required or recommended training, and to obtain advice from a Qualified Person if you have any questions.

A Qualified Person is a person **designated** by the employer; and by reason of **training**, experience, or instruction who has demonstrated the ability to perform safely all assigned duties; and, when required is properly licensed in accordance with federal, state, or local laws and regulations.

All tasks require that you:

- Use the equipment in accordance with the guidelines set forth by the manufacturer. This includes following all signs and labels and reviewing any manufacturer's operating manuals.
  - If the instructions provided in the operating manual conflict with this SWP, then follow the instructions in the manual. The manufacturer's instructions prevail over this SWP.

- Review the safety data sheets (SDSs) for each chemical.
  - Be trained on this SWP and those listed above as related. Training on SWPs must be completed before initial assignment. It is also recommended that you complete refresher training every two years.
1. This SWP applies to cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar. Activities such as abrasive blasting with sand; sawing brick or concrete; sanding or drilling into concrete walls; grinding mortar; manufacturing brick, concrete blocks, stone countertops, or ceramic products; and cutting or crushing stone can also result in exposure to respirable crystalline silica.
  2. Employees involved in the disturbance of silica containing materials will be enrolled in a medical monitoring program at the ZSFGH – OHS Clinic. This includes an initial exam and one every three years after, in accordance with Cal OSHA regulatory requirements.
  3. Where respiratory protection is required follow the Respiratory Protection section of the Personal Protective Equipment SWP.
  4. Activities with potential silica exposure will be conducted to be consistent with Cal OSHA's *Specified Exposure Control Methods when Working with Materials Containing Crystalline Silica* (see the end of the SWP).
    - a. Supervisors will ensure each employee under their supervision and engaged in a task identified on the Cal OSHA table have fully and properly implemented the engineering controls, work practices, and respiratory protection specified for the task.
  5. When implementing the control measures specified in the table:
    - a. For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust.
    - b. For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust.
    - c. For measures implemented that include an enclosed cab or booth, ensure that the enclosed cab or booth:
      - i. Is maintained as free as practicable from settled dust;
      - ii. Has door seals and closing mechanisms that work properly;
      - iii. Has gaskets and seals that are in good condition and working properly;
      - iv. Is under positive pressure maintained through continuous delivery of fresh air;
      - v. Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0  $\mu\text{m}$  range (e.g., MERV-16 or better); and
      - vi. Has heating and cooling capabilities.

- d. Where an employee performs more than one task included on the table 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.
  - e. If the total duration of all tasks on the table 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.
6. For tasks not listed in the table, or where the engineering controls, work practices, and respiratory protection described in the table cannot be fully and properly implemented, exposure monitoring will need to be conducted. Contact EHS.
7. Housekeeping shall be performed to avoid accumulation of crystalline silica dust:
- a. Clean up of silica containing dust shall be performed using wet methods or a HEPA filtered vacuum system when feasible.
  - b. No dry sweeping or dry brushing is allowed for silica containing dust, unless using a HEPA filtered vacuum system or wet methods are not feasible.

**Specified Exposure Control Methods When  
Working with Materials Containing Crystalline Silica**

Construction Task or Equipment Operation	Required Engineering and Work Practice Control Methods	Required Respiratory Protection	
		≤ 4 hours/shift	>4 hours/shift
Stationary masonry saws	<ul style="list-style-type: none"> <li>• Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	None
Handheld power saws (any blade diameter) when used outdoors	<ul style="list-style-type: none"> <li>• Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	N95 half face
Handheld power saws (any blade diameter) when used indoors or in an enclosed area	<ul style="list-style-type: none"> <li>• Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	N95 half face	N95 half face
Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) for tasks performed outdoors only	<ul style="list-style-type: none"> <li>• Use saw equipped with commercially available dust collection system.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>• Dust collector must provide the air flow</li> </ul>	None	None

Construction Task or Equipment Operation	Required Engineering and Work Practice Control Methods	Required Respiratory Protection	
		≤ 4 hours/shift	>4 hours/shift
	recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.		
Walk-behind saws when used outdoors	<ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	None
Walk-behind saws when used indoors or in an enclosed area	<ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	N95 half face	N95 half face
Rig-mounted core saws or drills	<ul style="list-style-type: none"> <li>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	None
Handheld and stand-mounted drills (including impact and rotary hammer drills)	<ul style="list-style-type: none"> <li>Use drill equipped with commercially available shroud or cowling with dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>Use a HEPA-filtered vacuum when cleaning holes.</li> </ul>	None	None
Dowel drilling rigs for concrete for tasks performed outdoors only	<ul style="list-style-type: none"> <li>Use shroud around drill bit with a dust collection system.</li> <li>Dust collector must have a filter with 99% or greater efficiency and a filter cleaning mechanism.</li> <li>Use a HEPA-filtered vacuum when cleaning holes.</li> </ul>	N95 half face	N95 half face
Vehicle-mounted drilling rigs for rock and concrete	<ul style="list-style-type: none"> <li>Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.</li> </ul>	None	None
Jackhammers and handheld powered chipping tools when used outdoors	<ul style="list-style-type: none"> <li>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</li> </ul>	None	N95 half face
Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	<ul style="list-style-type: none"> <li>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</li> </ul>	N95 half face	N95 half face
Jackhammers and handheld powered chipping tools when	<ul style="list-style-type: none"> <li>Use tool equipped with commercially available shroud and dust collection system.</li> </ul>	None	N95 half face

Construction Task or Equipment Operation	Required Engineering and Work Practice Control Methods	Required Respiratory Protection	
		≤ 4 hours/shift	>4 hours/shift
used outdoors	<ul style="list-style-type: none"> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> </ul>		
Jackhammers and handheld powered chipping tools when used indoors or in an enclosed area	<ul style="list-style-type: none"> <li>Use tool equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> </ul>	N95 half face	N95 half face
Handheld grinders for mortar removal (i.e., tuckpointing)	<ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul>	N95 half face	Powered Air-Purifying Respirator (PAPR) with P100 Filters
Handheld grinders for uses other than mortar removal for tasks performed outdoors only	<ul style="list-style-type: none"> <li>Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	None
Handheld grinders for uses other than mortar removal when used outdoors	<ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul>	None	None
Handheld grinders for uses other than mortar removal when used indoors or in an enclosed area	<ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or</li> </ul>	None	N95 half face

Construction Task or Equipment Operation	Required Engineering and Work Practice Control Methods	Required Respiratory Protection	
		≤ 4 hours/shift	>4 hours/shift
	greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.		
Walk-behind milling machines and floor grinders	<ul style="list-style-type: none"> <li>Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>	None	None
Walk-behind milling machines and floor grinders	<ul style="list-style-type: none"> <li>Use machine equipped with dust collection system recommended by the manufacturer.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.</li> </ul>	None	None
Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	<ul style="list-style-type: none"> <li>Operate equipment from within an enclosed cab.</li> </ul>	None	None
Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials	<ul style="list-style-type: none"> <li>When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul>	None	None
Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	<ul style="list-style-type: none"> <li>Apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul>	None	None
Heavy equipment and utility vehicles for tasks such as grading and excavating but not including demolishing, abrading, or fracturing silica-containing materials	<ul style="list-style-type: none"> <li>When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.</li> </ul>	None	None

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**For any questions, please contact EHS at 415-831-2780.**

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References:

1. City and County of San Francisco General Services Agency, Silica Program; Issue Date 6/1/2018