

Silica Exposure Control Plan

Part 1 - Introduction

Crystalline silica is a common mineral that is found in materials that we see every day in roads, buildings, and sidewalks. It is a common component of sand, stone, rock, concrete, brick, block and mortar.

Health Hazards Associated with Silica Exposure

The health hazards of silica come from breathing in the dust. Exposures to crystalline silica dust occur in common workplace operations involving cutting, sawing, drilling and crushing of concrete.

Silica Exposures at Hoffman Bros., Inc.

Some activities performed on Hoffman Bros., Inc. Projects can result in the creation/release of silica dust, thus exposing our employees. These activities include, but are not limited to:

- Use of Excavator or Bobcat mounted with hammer attachment to break concrete
- Crushing/Recycling
- Jack-hammering
- Saw-cutting
- Drilling and Coring (of concrete)

Part 2 - Purpose

Hoffman Bros., Inc. is committed to providing a safe and healthy workplace to our employees, recognizing the right of workers to work in a safe and healthy work environment and ensuring that Hoffman's activities do not adversely affect the health and safety of others.

Part 3 - Responsibilities

Due to the risk posed by respirable silica, personnel involved in activities that could potentially create silica dust take specific actions to ensure that, as much as practicable, a hazard is not created. In recognition of this, the following (Silica related) responsibilities have been established.

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Hoffman Bros., Inc. senior management (Project Managers & Safety Manager) is responsible for:

- Implementing a suitable respirable silica exposure monitoring program. The purpose of the program is so that *(over time)* Hoffman has quantifiable silica exposure data available for all regularly occurring, as well as reasonably foreseeable, work activities.
- Ensuring project and/or task specific Exposure Control Plans (ECPs) are developed, communicated, and effectively implemented as appropriate.
- Ensuring that all required employees receive the necessary education and training related to this policy, as well as project/task specific ECPs.
- Maintaining all applicable records *(i.e. exposure sampling, inspections, respirator fit tests, training records, etc.)*.
- The Hoffman Bros., Inc. Corporate Safety Manager will be responsible for conducting a review of this Policy, as well as: (1) project/task specific ECP's, (2) available exposure monitoring data, (3) Industry/Regulatory information, and (4) new/emerging equipment/technologies on a regular *(i.e. annual)* basis.

Hoffman Bros., Inc. Supervisors (i.e. Superintendents/Foreman) are responsible for:

- Obtaining a copy of the project/task specific ECPs *(and/or other similar such information)*, made available at each work site.
- Ensuring that all the tools, equipment, PPE and materials *(including water)* necessary to implement the ECP is available *(and in good working order)* prior to allowing work activities to commence.
- Training all workers *(under the supervisor's direction and control)*.
- Ensuring that workers adhere to the project/task specific ECP, including PPE and personal hygiene *(i.e. including be clean shaven where the respirator seals to the user's face)* requirements.
- Informing senior management of any new or emergent work that has the potential for silica exposure.

Hoffman Bros., Inc. Employees are responsible for:

- Knowing the hazards of silica dust exposure.
- Using the assigned protective equipment in an effective and safe manner.
- Working in accordance with the project/task specific ECP.
- Reporting *(immediately)* to their supervisor, any hazards *(i.e. unsafe conditions, unsafe acts, improperly operating equipment, etc.)*.

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Part 4 - Exposure Limits

Exposure Limits/Considerations: The OSHA silica regulation (1926.1153 Respirable Crystalline Silica) lists a Permissible Exposure Limit (PEL) for respirable crystalline silica (including quartz) of 50 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) and an Action Level of 25 $\mu\text{g}/\text{m}^3$. This is a concentration to which nearly all workers could be exposed for eight hours a day, five days a week, without adverse health effects.

Part 5 - Risk Identification

Risk Identification: Silica is contained in several of the products used (or disturbed) on Hoffman jobsites. The Project Manager shall identify products/process that could result in potential exposure to both Hoffman and other contractor employees.

The health hazards of silica come from breathing in the dust. In addition to identifying the specific activities/areas where personnel could be exposed to silica dust, the “amount” of exposure and “duration” of exposure must also be considered. With consideration to these three factors, activities performed by Hoffman Bros., Inc. (as well as other contractors working near Hoffman work areas) that have the potential to expose employees to respirable silica dust include, but are not limited to:

- Use of Excavator or Bobcat mounted with hammer attachment to break concrete.
- Jack-hammering
- Crushing/Recycling.
- Saw-cutting
- Drilling and Coring (*of concrete*).

Part 6 - Risk Assessment

Hoffman Bros., Inc. will implement a suitable respirable silica exposure monitoring program. This program will ensure that (*over time*) Hoffman Bros., Inc. has quantifiable silica exposure data available that is representative of all regularly occurring, as well as reasonably foreseeable work activities. Exposure monitoring may be conducted “in-house” or may be obtained through outside consultants/hygienists.

Part 7- Risk Control

Control Methods: When determining measures to reduce or eliminate worker exposure to silica dust, Hoffman Bros., Inc. will generally select a combination of controls, listed in order of preference:

- Elimination and Substitution.
- Engineering.
- Administrative.
- Personnel Protection Equipment (PPE).

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Substitution and Elimination: Whenever possible, Hoffman will substitute products containing silica with products that do not contain (*or contain a lower percentage of*) crystalline silica. When substitution is not feasible, during the planning process, Hoffman will make efforts to reduce the need and/or duration of activities that produce exposures to respirable silica.

Engineering Controls: Engineering controls are those controls which aim to control or otherwise minimize the release of crystalline silica. Two “common” engineering control options available are Local Exhaust Ventilation (LEV) and Wet Dust Suppression (WDS) systems.

Local Exhaust Ventilation Systems: Some tools/appliances have LEV systems built in or available as an accessory. Such LEV systems are generally comprised of a shroud assembly, a hose attachment, and a vacuum system. Dust-laden air is collected within the shroud, drawn into the hose attachment, and conveyed to the vacuum, where it is filtered and discharged. “Large scale” LEV systems, such those available on some Vacuum Trucks and Mobile Sweepers are also available.

When/if LEV systems are used, Hoffman Bros., Inc. will employ the following systems and safe work practices:

- Vacuum attachment systems that capture and control dust at its source whenever possible.
- Dust control systems will be maintained in optimal working condition.
- High Efficiency Particulate Air (HEPA) or good quality, multi-stage vacuum units (*approved for use with silica dust*) will be used in accordance with the manufacturer’s instructions.
- Whenever possible, concrete grinding will be completed when the concrete is wet (*thus dust release will be significantly reduced*).

Wet Dust Suppression Systems: There are many tools/appliances available that are equipped with WDS systems (*i.e. hand held/portable power chop saws*). When WDS Systems are not available, (*as a standard or retrofitted part of a tool/appliance*), similar effects can also be achieved by manually wetting the surface (*i.e. with a mister*).

When WDS systems are used, Hoffman Bros., Inc. will employ the following systems and safe work practices:

- If water is not readily available on the specific project, the project manager/superintendent will arrange to have a water tank delivered to the site for use.
- Pneumatic or fuel (*i.e. gasoline*) powered equipment will generally be used instead of electrically powered equipment if water is the method of dust control, unless the electrical equipment is specifically designed to be used in such circumstances.
- Wet slurry will be cleaned from work surfaces when the work is complete, if/when necessary.
- When sawing concrete, tools that provide water directly to the blade will be used if possible.

Administrative Controls: Administrative controls are those that aim to control or otherwise minimize the release of silica using work procedure and work methods, rather than by affecting the actual physical work. Common examples of administrative controls include, but are not limited to:

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- Rescheduling of work as to avoid the activities of others.
- Relocating unprotected workers away from dusty areas.
- Avoid using compressed air to clean and dry sweeping of silica containing material. Wet sweep whenever feasible.

When administrative controls are used, Hoffman Bros., Inc. will employ the following systems and safe work practices:

- As able, work activities will be scheduled to minimize the silica related affect on, and from, others.
- Suitable housekeeping, restricted work area, hygiene practices, training and supervision procedures/ standards will be determined and implemented on Hoffman projects.

Personal Protective Equipment Controls: When engineering and administrative controls are not effective in reducing exposures below the PEL, use of respiratory protective equipment will be required. Typically, a ½ face N95 respirator will provide adequate protection.

OSHA Table 1 Compliance Option: If performing work practices listed in *OSHA Table 1: Specified Exposure Control Methods When Working With Material Containing Crystalline Silica*, representative monitoring does not need to be performed as long as work practices, methodology, and engineering controls are followed for each task listed. Table 1 is provided in Attachment A.

Part 8 - Education and Training

Education and Training: Prior to performing activities, or working on project sites where personnel could be exposed to silica dust, Hoffman will ensure that personnel receive suitable education and training. While not necessarily an exhaustive list, education and training may include:

- The health hazards and risks associated with exposure to silica dust.
- The specific tasks that could result in silica exposure
- General and specific silica exposure reduction methods/strategies (*i.e. as detailed in the general/specific exposure control plans*).
- The use of specific pieces of equipment and control systems (*i.e. LEV and WDS systems*).
- The use and care of respiratory (and other) personal protective equipment.
- The general provisions of the OSHA silica standard.
- The employee identified as the competent person for the Silica Exposure Control Plan.

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The education and training detailed will be delivered to Hoffman employee's through a variety of forums, including but not necessarily limited to:

- New Employee Orientations.
- Project/Site Orientations.
- Equipment/task specific training.
- Start of shift "Pre Task Planning".
- Tool Box Talks
- Notifications and Bulletins (*those developed in house and those acquired from other reputable sources*).

Part 9 – Competent Person

The Hoffman jobsite supervisor will serve as the silica competent person and be responsible for the implementation of this written control plan.

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APPENDIX A – OSHA Table 1

(1) For each employee engaged in a task identified on Table 1, the employer shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1.

Equipment/Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours/shift	≥ 4 hours/shift
(i) Stationary masonry saws	<p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	None	None
(ii) Handheld power saws (any blade diameter)	<p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <ul style="list-style-type: none"> – When used outdoors. – When used indoors or in an enclosed area. 	<p>None</p> <p>APF 10</p>	<p>APF 10</p> <p>APF 10</p>

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<p>(iii) Handheld power saws for cutting fibercement board (with blade diameter of 8 inches or less)</p>	<p>For tasks performed outdoors only:</p> <p>Use saw equipped with commercially available dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.</p>	<p>None</p>	<p>None</p>
<p>(iv) Walk-behind saws</p>	<p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <ul style="list-style-type: none"> - When used outdoors. - When used indoors or in an enclosed area. 	<p>None</p> <p>APF 10</p>	<p>None</p> <p>APF 10</p>
<p>(v) Drivable saws</p>	<p>For tasks performed outdoors only:</p> <p>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	<p>None</p>	<p>None</p>

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<p>(vi) Rig-mounted core saws or drills</p>	<p>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p>	<p>None</p>	<p>None</p>
<p>(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)</p>	<p>Use drill equipped with commercially available shroud or cowling with dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>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.</p> <p>Use a HEPA-filtered vacuum when cleaning holes.</p>	<p>None</p>	<p>None</p>
<p>(viii) Dowel drilling rigs for concrete</p>	<p>For tasks performed outdoors only:</p> <p>Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</p> <p>Use a HEPA-filtered vacuum when cleaning holes.</p>	<p>APF 10</p>	<p>APF 10</p>

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<p>(ix) Vehicle-mounted drilling rigs for rock and concrete</p>	<p>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.</p>	<p>None</p>	<p>None</p>
	<p>OR</p> <p>Operate from within an enclosed cab and use water for dust suppression on drill bit.</p>	<p>None</p>	<p>None</p>

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<p>(x) Jackhammers and handheld powered chipping tools</p>	<p>Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</p> <ul style="list-style-type: none"> - When used outdoors. - When used indoors or in an enclosed area. <p>OR</p> <p>Use tool equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>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.</p> <ul style="list-style-type: none"> - When used outdoors. - When used indoors or in an enclosed area. 	<p>None</p> <p>APF 10</p> <p>None</p> <p>APF 10</p> <p>None</p> <p>APF 10</p>	<p>APF 10</p> <p>APF 10</p> <p>APF 10</p> <p>APF 10</p>
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<p>(xvi) Crushing machines</p>	<p>Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points).</p> <p>Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.</p>	<p>None</p>	<p>None</p>
<p>(xvii) 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</p>	<p>Operate equipment from within an enclosed cab.</p> <p>When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.</p>	<p>None</p> <p>None</p>	<p>None</p> <p>None</p>
<p>(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: demolishing, abrading, or fracturing silicacontaining materials</p>	<p>Apply water and/or dust suppressants as necessary to minimize dust emissions.</p> <p>OR</p> <p>When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.</p>	<p>None</p> <p>None</p>	<p>None</p> <p>None</p>

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(2) When implementing the control measures specified in Table 1, each employer shall:

- 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:
 - a) Is maintained as free as practicable from settled dust;
 - b) Has door seals and closing mechanisms that work properly;
 - c) Has gaskets and seals that are in good condition and working properly;
 - d) Is under positive pressure maintained through continuous delivery of fresh air;
 - e) Has intake air that is filtered through a filter that is 95% efficient in the 0.3 10 μm range (e.g., MERV-1 or better); and
 - f) Has heating and cooling capabilities.

(3) Where an employee performs more than one task on 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.