

Date Revised:	May 2022	Overall Task Risk Rating:	Before Controls	<b>B</b>	After Controls	<b>C</b>
Description:	Crystalline Silica is a designated substance under Regulations of the Occupational Health and Safety Act. It is the second most common mineral in the earth's crust and is a major component of sand, rock and mineral ores. Crystalline Silica is present in the workplace in open environment as a mineral found in sand, stone, gravel and the earth's crust in general. Overexposure to crystalline silica can cause silicosis, lung cancer and other respiratory/breathing disorders.					
Location(s):	Asphalt Plant & Construction Projects					
Associated Documents: Housekeeping WTS, Hazardous Agents (Chemical) WTS, Trenching & Excavating WTS, Asphalt Milling WTS, Asphalt Plant Operations WTS, Equipment & Machinery WTS, Concrete Work WTS, Removal & Demolition WTS, Loading & Unloading WTS, Crushing & Screening Operations WTS						

**RED FLAGS (HOLD WORK UNTIL CORRECTED):**

Note:

- If the worker has not been trained in WHMIS that worker must not use, transport or handle hazardous products
- the required PPE to be worn when working with a hazardous agent, do not proceed before obtaining and donning that PPE

PERSONAL PROTECTIVE EQUIPMENT (CSA APPROVED)									
Head Protection	Foot Protection	High-Vis Protection	Hearing Protection	Hand Protection	Eye Protection	Respiratory Protection	Skin Protection	Face Protection	Fall Protection
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- When onsite one must adhere to the minimum site requirements (i.e. Safety Boots, Hard Hat & High Visibility Protection). Respiratory protection maybe required when silica exposure levels cannot be controlled by engineering or administrative controls.									

## SAFE WORK PRACTICES (SWP)

**Important Legislations & References:**

- Regulation for Designated Substances, O. Reg. 490/09
- Workplace Hazardous Materials Information System. (R.R.O. 1990, Reg. 860)

**Overview:**

- Silica is a concern in the construction industry as it is found in numerous materials that are used on a daily basis. Some of these materials include brick, concrete, cement, granite, rock, sand, and asphalt. Activities such as chipping, drilling, loading and unloading, hauling, grinding, and sweeping can produce airborne silica that is easily inhaled by individuals. The most common route of entry of silica into the body is through inhalation.

**Gazzola Paving Ltd. workers may be exposed to Silica hazards from airborne dust containing silica working on or near the following tasks:**

- Chipping, hammering, crushing, loading, hauling, drilling and dumping of rock, sand and gravel
- Sawing, hammering, drilling, grinding, and chipping of concrete or masonry structures
- Dry sweeping or pressurized air blowing of concrete, rock, or sand dust
- Road construction
- Sweeping, cleaning, and dismantling equipment
- Tunneling, excavation, and earth moving of soils with high silica content.

**Effects:**

- To exert a toxic effect, a substance or a hazardous agent must contact and, in most cases, enter the body (except those that are only skin irritants). Once inside the body they can enter the bloodstream and be carried to organs where they may cause damage.
- Occupational exposure to silica occurs through inhalation of small airborne particles of silica dust, mainly in the range of 5.0 mm to 0.5 mm, which are not expelled from the lung when inhaled. Crystalline silica may be harmful following high exposure levels received over a period, ranging from a few weeks to years or after long-term exposures to lower levels. There are three major types of silicosis: Chronic, Accelerated and Acute

**Controls:**

- When it is not possible to use a silica substitute, changing how a process is performed can lower silica exposures.
- Wet methods will be used to reduce dust and should be used whenever practical, particularly in cutting, grinding, and drilling operations.
- Compressed air or dry sweeping should be avoided when cleaning a work area. Compressed air should not also be used for cleaning dust from clothing
- Ventilation must be adequate with all work operations involving silica. Regular operations in the asphalt plant and construction projects are usually occurring in an open environment with natural ventilation, however, local ventilation must be provided if necessary as required.
- Equipment operators should remain inside their cabins at all times when at the asphalt plant unless it is necessary to do otherwise.
- Continuous spraying of water must be maintained using water trucks to keep dust at minimal levels.
- If a process cannot be modified to reduce exposure, it may have to be isolated or enclosed if possible. Dusty operations can be isolated by carrying them out in areas that are physically separated from non-dusty areas and keeping workers not involved in the operation out of the area.
- Where isolation is not effective, the process can be completely sealed off from the rest of the workplace with an enclosure.
- Most dust-generating tools are equipped with dust collection systems to prevent dust from spreading or becoming airborne. An essential component of these systems are the cleaning devices, such as filters, which will effectively remove the dust.
- Maintenance schedule of equipment must be strictly followed to ensure effectiveness of air-filtering devices providing protection from airborne dust.
- Respiratory protection may be required to be used if exposure levels to crystalline silica cannot be controlled using engineering and administrative controls. Workers must be trained in the fit, care and use of the appropriately selected respirator and cartridges.
- Silica can accumulate on the hands, clothing and hair. From there it can be disturbed, re-suspended in air and inhaled. Workers exposed to silica should be provided with or have access to washing facilities equipped with clean water, and soap
- Contaminated personal protective clothing and equipment should be handled with care to prevent disturbing the silica dust and the generation of airborne silica dust
- Adequate washing facilities must be provided and used by workers to enhance protection.
- No smoking, eating, drinking in contaminated areas and lunches should be stored in an uncontaminated area.
- Hygiene practices and good housekeeping must be practiced whenever silica is present.

**Inspections:**

- Supervisors must monitor the use/exposure to hazardous agents in the workplace, to ensure workers are not overexposed to respective allowable levels
- Workers must inspect equipment before use to ensure equipment is in good working order and all safety devices are functioning properly

**Training:**

- Employee Orientations (including roles, responsibilities, applicable workplace task standards, WHMIS, etc.)
- Workers exposed to, or required to work with WHMIS controlled products / material, must be trained in WHMIS accordingly.
- Workers required to use respiratory protection must be trained on the use, fit and care of respirators.

**Personal Protective Equipment:**

- Workers on construction projects must wear, at a minimum, Safety Boots, Hard Hat & High Visibility Protection).
- Respiratory protection maybe required when exposure levels can not be controlled using engineering or administrative controls.
- All employees shall wear the appropriate PPE where the potential exposure of a designated substance cannot be reduced below the occupational exposure limit
- When there is likelihood of exposure, appropriate PPE will be provided with instructions covering use, care and maintenance
- No modification or removal of the specified PPE will be tolerated inside identified area

JOB HAZARD AND RISK ANALYSIS		RISK RATING SYSTEM	
		<b>A</b>	High risk of injury or equipment / property damage.
		<b>B</b>	Medium risk of injury or equipment / property damage.
		<b>C</b>	Low risk of injury or equipment / property damage.
TASK HAZARDS	RATING BEFORE CONTROLS	TASK CONTROLS	RATING AFTER CONTROLS
<ul style="list-style-type: none"> <li>Lack of training and education</li> </ul>	<b>B</b>	<ul style="list-style-type: none"> <li>Workers receive adequate training during employee orientations &amp; specific, task-related training</li> <li>Only trained workers to perform work in the presence of a designated substance</li> </ul>	<b>C</b>
<ul style="list-style-type: none"> <li>Lack of proper PPE</li> </ul>	<b>B</b>	<ul style="list-style-type: none"> <li>Ensure any PPE as mandated is worn while handling the respective hazardous agent</li> <li>Ensure all workers are trained in the PPE that they require</li> </ul>	<b>C</b>
<ul style="list-style-type: none"> <li>Airborne Dust</li> </ul>	<b>B</b>	<ul style="list-style-type: none"> <li>Use Soap and Water to Wet the Material</li> <li>Mister machines. Water trucks and sweepers will apply water in quantities necessary to prevent airborne dust</li> <li>Workers will wear appropriate PPE</li> </ul>	<b>C</b>
<ul style="list-style-type: none"> <li>Poor Housekeeping</li> </ul>	<b>C</b>	<ul style="list-style-type: none"> <li>Keep a clean working area</li> <li>Ensure proper clean up / wash procedures followed</li> </ul>	<b>C</b>
<ul style="list-style-type: none"> <li>Lack of Maintenance/Air filtering Equipment Failure</li> </ul>	<b>B</b>	<ul style="list-style-type: none"> <li>Equipment shall be maintained as per the manufacturer's instructions and minimum regulatory requirements</li> </ul>	<b>C</b>
<ul style="list-style-type: none"> <li>Inadequate Ventilation</li> </ul>	<b>B</b>	<ul style="list-style-type: none"> <li>Work performed in an open environment with natural ventilation</li> <li>Local ventilation implemented where natural ventilation is not sufficient</li> <li>Wear respiratory protection when exposure levels are in excess</li> <li>Respiratory protection and filters are to be selected according to the material/ dust</li> </ul>	<b>C</b>

**SAFE JOB PROCEDURES (SJP)**

- Pre-Task Commencement:**
1. Gather and wear the required PPE for the task - all must wear head, foot, high visibility protection – Respiratory protection as required
  2. Ensure the site-specific workplace violence assessment is complete
  3. Complete the Daily GAZZ Card and review with all workers the shift's tasks with any associated hazards and control strategies
  4. Ensure all workers understand the GAZZ Card contents, and sign off in acknowledgement
  5. Ensure controls are in place prior to commencing work so risks are mitigated / eliminated
  6. Determine what equipment / machinery / tools and material, are required for the completion of the task
  7. Inspect all equipment / machinery / tools prior to use and document the inspections on appropriate forms when required
  8. Ensure preventative maintenance activities have been completed where required, prior to using equipment / machinery / tools
  9. If equipment / machinery / tools are observed to be damaged, remove it from use and notify the Foreman / Superintendent
  10. Install fencing, signage and hoarding where needed
  11. Locate utilities – Call Before You Dig
  12. If material being demolished contains a designated substance, handle and dispose of it in accordance with regulatory requirements

**During Task:**

1. Consult your supervisor if required and wear all appropriate additional PPE
2. Commence activities when it is safe to do so
3. Supervisors are to monitor all hazardous agents within the workplace and if exposure levels are exceeded, implement corrective actions
4. Operate equipment, machinery and/or tools as per manufacturer's instructions
5. When in operation, do not leave equipment or controls unattended

**Task Completion:**

1. Implement storage requirements in the designated location
2. Ensure all equipment / machinery / tools are maintained and stored appropriately in the designated locations
3. Implement clean-up and any housekeeping or maintenance as required