



**SARNIA REFINERY**  
**SILICA CONTROL**

Issue Date: September 11, 2019      Revision #: 5

## STANDARD

Document Number:  
4000-ZSD-S-MSAFEdca-00216  
Next Review Date: June 11, 2024

Document Owner: Manager, EH&S

Document Contact: Hygienist

---

### SCOPE AND PURPOSE

This Standard identifies controls required to reduce the risk of exposure to silica.

This Standard applies to all work activity that involves the disturbance of silica-containing material.

### ROLES & RESPONSIBILITIES

**Occupational Hygienist** is accountable to provide support, as necessary, to ensure appropriate control of worker exposure to silica and conformance to this Standard.

**Contractors** are accountable to ensure conformance to this Standard and compliance with all applicable requirements of the Ontario Ministry of Labour Guideline for Silica on Construction Projects.

### RISK ASSESSMENT

The presence of silica must be considered during the planning of all work activity that involves the disturbance of potential silica-containing materials, including but not limited to:

1. Crystalline silica-containing materials:
  - Cement and cement-containing materials;
  - Brick and mortar;
  - Rock and stone;
  - Sand; and
2. Amorphous silica-containing materials that have been exposed to significant heat:
  - Refractory;
  - Silica-containing catalyst.

---

### SILICA CONTROL

Current versions of approved documents are maintained in Livelink. Printed copies are uncontrolled.

All suspect materials must be assumed to be silica-containing unless verified otherwise.

Acceptable methods for deeming a suspect material silica-free may include:

1. Bulk sampling and analysis:

- Samples representative of all areas to be disturbed shall be collected and analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory. A suspect material may be deemed silica-free if it contains less than 1% silica by weight. Records of all samples collected shall be maintained by the Occupational Hygienist.

2. Safety Data Sheet (SDS) review;

- The material may be deemed silica-free if the SDS is available for review and it:
  - does not indicate the presence of silica; or
  - indicates the presence of silica in a concentration of less than 1% by weight.

**Notes:**

- Amorphous forms of silica (CAS#7631-86-9) may convert to crystalline silica upon exposure to significant heat. Therefore, materials that contain amorphous forms of silica and have been exposed to significant heat must be considered suspect materials.
- A cut-off concentration of 1% has been chosen in order to align with:
  - Laboratory limit of detection; and
  - IAPA guideline for Silica in the Workplace (2008) which states that “dusts containing more than 1% crystalline free silica by weight are considered to pose a potential exposure hazard”.

**RISK CONTROL**

All work involving the disturbance of silica-containing materials shall be classified as a Type 1, 2, 3 or low risk operation in accordance with Appendix A. The control measures prescribed in Appendix B must be followed.

Classification of work activities not adequately represented within Appendix A should be conducted in consultation with the Occupational Hygienist.

For long-term projects, air monitoring may be conducted periodically, and as appropriate, to verify the effectiveness of the implemented control measures.

## DEFINITIONS

### Silica

The following forms of crystalline silica:

- Quartz (CAS#14808-60-7)
- Tripoli (CAS#1317-95-9)
- Cristobalite (CAS#14464-46-1)
- Tridymite (CAS#15468-32-3)

**Silica-containing Material** Any material containing  $\geq 1\%$  crystalline silica by weight.

## REFERENCES

- [Respiratory Protection Standard](#)
- [MOL Guideline for Silica on Construction Projects](#)

**END OF STANDARD**



**REVISION LOG**

<b>Date</b> MM/DD/YYYY	<b>Revision</b>	<b>Section</b>	<b>Comment</b>
07/25/2009	Original		Transferred into "Standard" template. Revision# Original. Replaces S.O. #1.005.
03/01/2012	1	All	The original document addressed exposures to silica during sandblasting operations only which is no longer permitted on-site. The document was revised completely to address exposure to other, current, and sources of crystalline silica.
06/27/2012	2	All	Updated format but content was NOT altered.
07/24/2013	-	Header	Document Owner & Contact Updated. NO content change. (L. Lebert)
12/03/2014	3	Risk Assessment	Wording changed to allow for inclusion of silica-containing materials not specifically identified.
		Risk Control	Removed requirement to reference MOL Lead Guideline and replaced it with direction to new Appendices containing relevant information regarding work activity classification and control measures.
			Added direction to consult with OH for classification of work activities not adequately represented in Appendix A.
		Appendix A	New – silica work activity classification information for common site activities based on task description and duration of activity.
		Appendix B	New – summary of silica control measures as prescribed by the MOL Silica Guideline.
01/21/2016	-	Web site link	E-sign page lost due to edit to hyperlink. Approved by Peter Lynch
08/28/2017	4	Appendix B	Added requirement to decontaminate hard hat and footwear before leaving silica work area
09/11/2019	5	Risk Assessment	Removed reference to Canadian Ingredient Disclosure List (obsolete) Updated references to MSDS to SDS
		Appendix A	Reclassified the charging of mixers/hoppers with silica-containing material to Type 1 only Added OEL comparison information
		Appendices A and B	Changed the term "Non-Silica" to "Low Risk" Updated reference to most current version of MOL guideline Added colour coding for each class of activity
		Appendix B	Removed respirator requirement for Non-Silica/Low Risk classification

**SILICA CONTROL**

Current versions of approved documents are maintained in Livelink. Printed copies are uncontrolled.



## APPENDIX A SILICA WORK ACTIVITY CLASSIFICATION

Document Number:  
4000-ZSD-S-MSAFEca-00216

Description of Work Activity	Daily Duration of Activity			
	<9min	9-48min	49-96min	>96min
Drilling holes in concrete or rock that is not part of road construction	Low Risk		Type 1	
Cutting concrete with a wet saw				
The use of a power tool outdoors to chip or break and remove concrete, masonry or stone				
Charging mixers/hoppers with material containing ≥95% silica	Type 1			
Removal of silica-containing refractory materials with a jackhammer or similar tool	Low Risk	Type 1		Type 2
Drilling holes in concrete that is part of road construction				
The use of a power tool to cut, grind or polish concrete, masonry or refractory materials				
The use of a power tool indoors to chip or break and remove concrete, masonry or stone				
The use of a power tool to remove silica containing materials				
Abrasive blasting of a silica-containing material	Type 3			

**Note:**

The above classifications were determined by calculating maximum daily time-weighted average worker exposures based on the presumed airborne concentrations as provided in the MOL Guideline for Silica on Construction Projects (2011), as follows:

	Cristobalite and Tridymite	Quartz and Tripoli	Comparison to OEL
Low Risk	<0.05mg/m <sup>3</sup>	<0.10mg/m <sup>3</sup>	<OEL
Type 1	>0.05-0.50mg/m <sup>3</sup>	>0.10-1.0mg/m <sup>3</sup>	OEL – 10X OEL
Type 2	>0.50-2.50mg/m <sup>3</sup>	>1.0-5.0mg/m <sup>3</sup>	10-50X OEL
Type 3	>2.5mg/m <sup>3</sup>	>5.0mg/m <sup>3</sup>	>50X OEL

### SILICA CONTROL

Current versions of approved documents are maintained in Livelink. Printed copies are uncontrolled.



## APPENDIX B SILICA CONTROL MEASURES

Document Number:  
4000-ZSD-S-MSAFEca-00216

	Low Risk	Type 1	Type 2	Type 3
<b>General Controls</b>	Cleaning only by wet wiping or HEPA vacuuming (no compressed air or dry sweeping); Hard hats and footwear to be decontaminated by wet wiping or HEPA vacuuming before leaving work area when performing silica work activity that requires disposable coveralls to be worn; and Workers required to use washing facilities when leaving work area			
<b>Respirator</b>	Not required (must be provided if requested)	Half-face APR with P100 filters	Full-face APR with P100 filters	Abrasive blasting helmet-style SAR
<b>Disposable Coveralls</b>		Required for refractory work. Otherwise recommended if significant dust is generated	Required	
<b>Signage</b>	Not required	Required. Must display the following at each entrance to the work area: <i>There is a silica dust hazard;</i> <i>Access to the work area is restricted to authorized persons; and</i> <i>Respirators must be worn in the work area</i>		
<b>Barrier/Enclosure</b>	Not required	Barrier around immediate work area required	Enclosure or 10m barrier required	Enclosure or 25m barrier required
<b>Changehouse</b>	Not required		Recommended if significant dust is generated	Required

**Note:**

The above table represents a summary of the Suncor Sarnia Refinery's interpretation of the control measures provided in the MOL Guideline for Silica on Construction Projects (2011).

### SILICA CONTROL

Current versions of approved documents are maintained in Livelink. Printed copies are uncontrolled.



The following individuals have approved and signed this document.

UserName: Todd Murray (toddmurray)

Title: Mgr EH&S Sarnia Refinery

Date: Monday, 23 September 2019, 11:33 AM Mountain Time

Meaning:

=====