

## 1. Silica—Identifying and managing crystalline silica dust exposure

This information guide provides brief guidance on the legislative requirements for identifying and managing respirable crystalline silica (RCS) dust exposure in workplaces.

### What are risks from silica?

Health risks from RCS exposure include chronic obstructive pulmonary disease (including chronic bronchitis and emphysema), silicosis, lung cancer, and renal disease. Lung defence mechanisms against the very fine dust that penetrates to the alveolar oxygen exchange part of the lung can be overwhelmed by silica particles, which can be toxic to macrophages. (*macrophages are a type of white blood cell, of the immune system, that engulfs and digests cellular debris*)

Workplaces supplied with products comprising silica (such as sand) and all workplaces where silica containing dust is generated in a process will be subject to the WHS Regulation.

Section 36 of the WHS Regulation specifically requires that the duty holder to use methods **other than the use of personal protective equipment to prevent or reduce the exposure**. What this implies is that duty holder must consider each of the higher order controls – substituting, isolating or engineering through ventilation before reaching the conclusion that personal protective equipment in the form of respirators is the most appropriate way to control the exposure to the silica.

For many workplaces with an RCS issue, such as concrete construction, elimination and even substitution of silica containing sands is an impractical control strategy. In addition, preventing exposure totally is likewise an impractical control aim, **as some crystalline silica dusts will be produced wherever sands are encountered**.





Respirators for particles are graded in terms of their performance in removing particles from air to be inhaled. The Australian New Zealand Standard 1715 Selection Use and Maintenance of Respiratory Protective Equipment (2009) contains the full guidance on selecting respiratory equipment suitable for dealing with mechanically generated particulates such as silica dusts.






Though Crystalline Silica has been the subject of regulation in Queensland’s workplaces since 1995. Although cases of silicosis have decreased substantially over the last three to four decades, increases in mechanisation have resulted in potentially very high exposures in some workplaces with a recent rise in detected health issues.

**Inhaling RCS can lead to silicosis : Silicosis is a serious and irreversible lung disease that causes permanent disablement and early death, and it is made worse by smoking.**



### Work activities likely to expose workers to RCS on site:

-  Stripping Formwork
-  Cutting & grinding concrete
-  Cutting and grinding bricks, blocks and Hebel.
-  Working with cement

-  Cutting & grinding tiles
-  Sanding of cement based jointing or patching products
-  Excavating, drilling & rock hammering/ breaking
-  Cutting & grinding recesses in cement fibre sheeting
-  Mixing acrylic modified render

## How do we manage the risks on site?

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Ross at



The hierarchy of controls should be used where you work to eliminate the risk first working to PPE as the last line of defence.

### Elimination:

If the work generating RCS doesn't need to happen on site, **don't do it!**

### Substitution:

Using products that do not contain silica where possible. (Use of polystyrene cladding instead of compressed fibre sheeting)

### Engineering:

**Bricklayers:** All cutting of blocks must be completed with a wet saw within the excluded area. Dry cutting should be avoided. All loose cement dust or debris from block cuts or mixing mortar must be shoveled and vacuumed. If not practical to vacuum the area must be wet down to control airborne dust and then shoveled into a bin while wet.

**Tilers:** All tiles must be cut with a grinder fitted with a shroud and vacuum attachment. All dust and debris left in the tile cutting bay must be shoveled (larger tile off cuts) and dust vacuumed.



**Carpenters:** All drop and circular saws must be fitted with a shroud (must fully encapsulate the blade down to the sheet during cutting) and a vacuum attachment to prevent dust generation. All off cuts of silica- based products must be contained/ binned.

**Renderers:** Install covers on pump hoppers and hippos to limit the generation of silica dust when breaking render bags. Avoid mixing in buckets where possible

**Floor grinding & patching:** All floor grinders must be fully encapsulated units with cover down to the floor surface prevent the escape of dust during work. Grinders used for preparation/ patching of exposed soffits and slab edges must be fitted with correct sized shrouds and vacuums. Any concrete rectification with hand held scrapers and masonry stones should be controlled by wetting the surface first and keeping the surface damp during work to prevent dust from becoming airborne.

**Formwork Stripping:** All stripped formwork and floors should be vacuumed not swept. If vacuums are not practicable all surfaces should be dampened with water before sweeping and shoveling dust.

### Changes being implemented.

-  Greater use of shrouds & vacuum attachments.
-  Dry cutting by Quick Cut Saws will be outlawed

### By Isolation:

**Bricklayers:** All mixers and block saws to be set up in well ventilated areas away from other work or main access ways and amenities and emptied cement bags need to be discarded into a lidded waste bin.

**Tilers:** Tile cutting bays need to be excluded and in well ventilated areas away from access and amenities.

**Carpenters:** Saw benches need to be set up in well ventilated areas away from access/ egress points and amenities.

**Renderers:** Mixers and render pumps need to be set up away from access areas and amenities. Area must be well ventilated space and all emptied render bags or cement

**Floor grinding and patching work:** Area of work must be excluded from general access with clear delineation and signage. Close doors where required to prevent unauthorised access to the area.

**Formwork stripping:** 'Form workers Only' or 'Formwork Stripping – No Entry' signs must be erected and the area barricaded to prevent unauthorised entry.

### PPE : Personal Protective Equipment:

P2 respiratory protection masks & protective eyewear should always be used in conjunction with Isolation and engineering controls. In order to use P2 face masks all workers required to wear respiratory protection must have their face clean shaven Australian standard AS/NZS 1715:2009 sections 4.4.3.1 and 8.3 states this requirements very clearly.



*The new CleanSpace2™ is a powered respirator suitable for most working environments, providing protection against airborne hazards as it's a powered air purifying respirator (PAPR) designed to provide high protection.*

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## 2. Legislation that underpins the Safety Management System for :”Your Company”

Work Health and Safety Act 2011:	
Work Health and Safety Regulation 2011 Revised September 2018	
(- relevant only): Codes of Practice (Qld) harmonised to Safe Work Australia	
Confined Spaces Code of Practice 2011	<b>Electrical Safety Act 2002:</b>
First Aid in the Workplace Code of Practice 2014	<b>Electrical Safety Regulation 2013</b>
Hazardous Manual Tasks Code of Practice 2011	Electrical safety COP 2010 - Working near overhead & underground electric lines
Managing the Risk of Falls at Workplaces Code of Practice 2011	Electrical safety code of practice 2010 - Works
How to Manage and Control Asbestos in the Workplace Code of Practice 2011	Electrical safety code of practice 2013 - Managing electrical risks in the workplace
How to Manage Work Health and Safety Risks Code of Practice 2011	
Managing Noise and Preventing Hearing Loss at Work Code of Practice 2011	<b>National Construction Code 2016; Vols. One; Two; Three.</b>
Managing Risks of Plant in the Workplace Code of Practice 2013	
Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2013	
Work Health and Safety Consultation, Co-operation and Co-ordination COP 2011	
Managing the Work Environment and Facilities Code of Practice 2011	
Scaffolding Code of Practice 2009	
<b>Note! Expect new Code of Practice for Dry Cutting/ Silica in 2019</b>	

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### 3. Codes of Practice : (1st Level =the WHS Act 2011: 2nd Level = WHS Regulation. 3rd= C.O.P.)

From 1 July 2018 persons conducting a business or undertaking (-) **are required to comply with an approved code of practice** under the [Work Health and Safety Act 2011 C'](#) . Alternatively duty holders can follow another method, such as a technical or an industry standard, to manage hazards and risks, as long as it provides an equivalent or higher standard of work health and safety to the standard required in the code.

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### All SWMS must include the following:

- a) identify the work that is high risk construction work
- b) nominate roles and responsibilities such as plant pre-start check list, hazard identification.
- c) specify hazards relating to the high-risk construction work and risks to health and safety associated with those hazards
- d) describe the measures to be implemented to control the risks
- e) describe how the control measures are to be implemented, monitored and reviewed
- f) review the section **Understanding Hazard Analysis and Risk Assessment** to assist in your Site evaluation.

### Administration:

All trades: Safe Work Method Statements must be developed and process for managing RCS dust during work should be communicated/ trained to the relevant work groups.

### The 'Daily Prestart Meeting for – "Your Company"

All necessary equipment must be provided and no work must commence if required controls are not available. The 'Daily Prestart Meeting' must detail information regarding any excluded or barricaded areas.

Where necessary toolbox talk/ training should be completed prior to the work, especially where a new control is implemented or if the workplace requires current controls to be modified. A record of the toolbox talk and training must be kept with the other relevant safety documentation for the subcontract worker.

### Items to be discussed & re-enforced to all Workers at toolbox talks

- ✚ *There is no such thing as a 'Good Dust'*
- ✚ *Substituting one type of Dust for another is unacceptable. Claims that 'brand X' is not as bad as it doesn't have silica: What that really means is that new products haven't had the 20-30 years of Data yet to prove the claims.*
- ✚ *Respiratory Specialists say that any dust ingested into the lungs through nose or mouth will eventually cause hardening of the lung tissue which is irreversible and will cause at a minimum, bronchitis. (breathing difficulties -which can be made worse by smoking).*

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Job Steps	Potential Hazards	Risk			Controls/Work Methods	Responsible person/s	Residual Risk		
		L	C	R			L	C	R
<b>Site Induction and Access to site.</b>	<ul style="list-style-type: none"> <li>Known site hazards.</li> <li>Breach of site rules.</li> <li>Unauthorised access to site.</li> </ul> Knowledge of project	B	4	E 8 4	<ul style="list-style-type: none"> <li>All staff that are to perform work activities onsite MUST hold a general safety induction card.</li> <li>All “Your Company” are to be inducted into the principal contractor’s safety system.</li> <li>All “Your Company” are to be inducted into “Your Company” safety system.</li> <li>Ensure all workers have read and can implement this SWMS.</li> <li>Commence work activity under adequate supervision and SWMS guidelines.</li> </ul>	Worker  “Your Company” Supervisor  Principal Contractor/  PCBU	C	2	M 3 2
<b>Fit for Work</b>	Risk of Fatigue	B	4	E 8 4	<ul style="list-style-type: none"> <li>All “Your Company” Employees must meet standards of <b>“Your Company” HS&amp;E Management Plan Section 9 Health and Welfare of the “Your Company” Team</b> before starting work at this Site</li> <li>S 9.1- Drug and Alcohol Policy &amp; Fatigue Policy</li> </ul>	“Your Company” Supervisor “You”	C	2	M 3 2
<b>Sanding down Plaster Joints</b>	<b>Exposure to Dust Particles</b>	<b>C</b>	<b>5</b>	<b>E</b> <b>9</b> <b>2</b>	The following tasks must be discussed on each job site: <ul style="list-style-type: none"> <li>Sanding equipment to have dust extractors fitted &amp; working.</li> <li>Avoid working above or near other Trades</li> <li>All work areas to be ventilated</li> <li>P2 Masks to be worn during Sanding processes</li> <li>Face shields + P2 masks to be used when sanding overhead.</li> <li>Dust-off of persons clothes to be done before removing P2 Masks</li> <li>Wash down at meal breaks &amp; end of shifts</li> </ul>	<b>“Your Company” Supervisor and All Workers</b>	<b>C</b>	<b>2</b>	<b>M</b> <b>3</b> <b>2</b>
<b>Dry Cutting of Concrete Grinding of Concrete</b>	<b>Exposure to Dust Particles</b>	<b>C</b>	<b>5</b>	<b>E</b> <b>9</b> <b>2</b>	The following tasks must be discussed on each job site: <ul style="list-style-type: none"> <li>Avoid use of Dry Cutting with Quick Cut Saws.</li> <li>Avoid working near other Trades</li> <li>All work areas to be ventilated</li> <li>P2 Masks to be worn during Cutting/Grinding processes</li> <li>Face shields + P2 masks to be used while Dust in the air.</li> <li>Dust-off of persons clothes to be done before removing P2 Masks</li> <li>Wash down at meal breaks &amp; end of shifts</li> </ul>	<b>“Your Company” Supervisor and All Workers</b>	<b>C</b>	<b>2</b>	<b>M</b> <b>3</b> <b>2</b>

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Risk Matrix						
1.	IDENTIFY the risks or hazards	Low Risk (L-4 TO L-24)		Manage via routine procedures		
2.	ASSESS the risks or hazards	Medium Risk (M-28 to M- 52)		Manage via planned action/s		
3.	CONTROL the risks or hazards	High Risk (H-56 to H-80)		Manage by prioritised action/s		
		Extreme Risk (E-84 to E-100)		Manage via immediate actions		
(Assess the risks or hazards using likelihood and consequence)		CONSEQUENCES				
		1.Insignificant	2.Minor	3.Moderate	4.Major	5.Catastrophic
LIKELIHOOD	Risk Category	Little or no impact, injury, disruption or inconvenience	Minor impact, injury, disruption or inconvenience requiring minimal effort to manage	Moderate impact, injury, disruption and inconvenience manageable under normal circumstances	Major impact, injury, disruption & inconvenience requiring considerable management effort	Extensive impact, injury, disruption or inconvenience requiring massive effort to manage
	<b>A. Almost Certain</b> <i>Is expected to occur</i>	M-28	M-40	H-60	E-88	E-100
	<b>B. Likely</b> <i>Will occur at most times</i>	L-16	M-36	H-56	E-84	E-96
	<b>C. Possible</b> <i>Might occur at some time</i>	L-12	M-32	M-52	H-72	E-92
	<b>D. Unlikely</b> <i>Could occur at some time</i>	L-8	L-24	M-48	H-68	H-80
	<b>E. Rare</b> <i>May occur in rare events</i>	L-4	L-20	M-44	H-64	H-76
The use of this Matrix is to be able to apply a 'Risk Treatment' to a hazard on site to reduce the likelihood and consequence to a manageable level. Your observations should be recorded and reviewed with a lesser score being the target. That is, with the aim to shift the risk from the Red area to Green by control measures.						
Hierarchy of Risk Control						
Increasing effectiveness and sustainability	<b>ELIMINATE</b>	Increasing participation and Supervision	Remove the need to work near services by safe design, early identification, detection, protection & monitoring			
	<b>SUBSTITUTE</b>		Identify alternative infrastructure; processes; tools for working with services			
	<b>ISOLATE</b>		De-energise services /energy sources. Relocate services a safe distance away from work activities			
	<b>ENGINEER</b>		Non-destructive service identification and exploratory techniques. Service information and plans / drawings			
	<b>ADMINISTRATIVE</b>		Safe systems of work (SWMS; Permits). Service information and plans / drawings. DBYD			
	<b>PPE</b> (Personal Protective Equipment)		Task specific PPE (Personal Protective Equipment)			

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**Understanding Hazard Analysis and Risk Assessment.**

As part of normal duties, workers at sites where “Your Company” has been engaged will be required to carry out ‘Site Specific’ Hazard Analysis and Risk Assessments. There is a requirement to record and act on evaluations as individuals or as a work group; to record incidents or sightings that may impact on the collective safety of the group. These matters will be recorded on local Safe Work Method Statements.

At some Work Sites controlled by Major Contractors, the Safety Policy may insist on Job Hazard Analysis (JHA’s) being completed for all tasks not covered by a Safe Work Method Statements, or when a particular work place has hazards which vary from the usual working conditions.

In addition, Safe Work Method Statements of known risks will be available to of “Your Company” to assist in improving the overall Site Safety.

A coloured Risk Matrix is used as part of the Job Hazard Analysis (JHA) and Risk Assessment to achieve a process of standardisation of evaluations. JHA’s involve listing the individual tasks of a job and identifying the hazards associated with those tasks. The listed tasks are then risk assessed (using the risk assessment process discussed below) to identify at-risk tasks. Controls are then implemented to reduce the risk to an acceptable level.

The use of this Matrix is to be able to apply a ‘Risk Treatment’ to a hazard on site to reduce the likelihood and consequence to a manageable level. Your observations should be recorded and reviewed with a lesser score being the target. That is, with the aim to shift the risk from the Red area to Green by control measures.

Risk Assessments are completed during the JHA process to determine the level of risk (called the risk ranking score) associated with an identified hazard. The risk ranking score is determined by the **LIKELIHOOD** and the possible **CONSEQUENCE** of the risk. Risk Assessments are expected to be conducted by “Your Company” Worker carrying out their work.

**LIKELIHOOD** can be described as:

LIKELIHOOD		EXPLANATION
Almost Certain		Is expected to Occur
Likely		Will occur at most times
Possible		Might occur at some time
Unlikely		Could occur at some time
Rare		May occur in rare events.

*[Caution: Supervisor’s need to check that that all Workers understand this and take time to assist where employee’s first language is other than English. LOTE]*

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**CONSEQUENCE (Result or Outcome)**

CONSEQUENCE		EXPLANATION
Catastrophic		Extensive impact, injury, disruption or inconvenience requiring massive effort to manage
Major		Major impact, injury, disruption and inconvenience requiring considerable management effort
Moderate		Moderate impact, injury, disruption and inconvenience manageable under normal circumstances
Minor		Minor impact, injury, disruption or inconvenience requiring minimal effort to manage
Insignificant		Little or no impact, injury, disruption or inconvenience

***If the risk ranking score is very high, work must cease immediately until the risk is reduced.***

A risk ranking score of very low may not require the introduction of controls. The recording of minor risks can be beneficial in the JHA process as they may occur concurrently and make another risk more severe.

The next process is to implement management controls to bring down the risk ranking score of each particular hazard. The following hierarchy of controls should be used as a guide to suggest potential risk-reducing control measures. Follow order suggested, so that PPE is last control to be instigated. ***(Not First Choice or the Lazy Choice!)***

**Control Method Hierarchy**

Eliminate	To completely eliminate hazard from Site
Substitute	Replacing process or product with something less hazardous
Redesign	Redesign work process or equipment
Separate	Guarding /shielding:(used frequently on construction sites)
Administrative	Re-arranging work shift: Limiting time of exposure
Personal Protective Equipment	PPE: The use of Personal Protection as a last resort or in combination with other measures for harm minimisation.



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➤ **Sign off Panel.**

Name: <i>I have read and understand this Safety Instruction</i>	Signature: (In Consultative Group - Tool Box Meeting)	Date	Name <i>I have read and understand this Safety Instruction</i>	Signature (In Consultative Group - Tool Box Meeting)	Date