

Respirable Crystalline Silica – Information Sheet

Scope and Purpose

This information has been compiled to inform Monash staff, students and contractors who work with materials containing crystalline silica of the health risks associated with exposure to respirable crystalline silica dust.

This information serves as a guidance only. Areas must complete risk assessment for the specific silica processes undertaken in their area.

Victorian Legislation

The Occupational Health and Safety (OHS) Regulations (Part 4.5, Crystalline Silica) aim to prevent adverse health effects in workers who undertake processes involving crystalline silica.

To achieve this, the OHS Regulations:

- make permanent Victoria's prohibition on uncontrolled dry-cutting of engineered stone;
- introduce Australia's first licensing regime for engineered stone;
- increase manufacturer and supplier duties; and
- include additional regulatory oversight of high risk crystalline silica work outside of engineered stone across all industries, including the construction and earth resources industries.

What is Crystalline Silica:

Crystalline silica is sometimes known as quartz. It is naturally occurring and commonly found in sand, stone, granite, concrete, mortar and other building materials. It is also used to make a variety of domestic and commercial products including reconstituted (engineered) stone to fabricate kitchen and bathroom benchtops. It is also used in bricks, concrete, tiles and even some plastics.

What is a crystalline silica process?

The OHS Regulations define a 'crystalline silica process' as one or more of the following processes carried out at a workplace:

1. the use of a power tool or other forms of mechanical plant to
 - cut, grind, polish or crush material containing crystalline silica or
 - carry out any other activity involving material that containing crystalline silica that generates crystalline silica dust
2. the use of a roadheader on an excavated face if the material in the face contains crystalline silica
3. a process that exposes a person to crystalline silica dust arising from the manufacture or handling of material that contains crystalline silica
4. the mechanical screening of crushed material containing crystalline silica
5. a quarrying process involving material containing crystalline silica
6. a tunnelling process involving material containing crystalline silica
7. a process determined by WorkSafe to be a crystalline silica process

What is high risk crystalline silica work?

High risk crystalline silica work is defined as work performed in connection with a crystalline silica process as outlined above that is reasonably likely to result in:

1. an airborne concentration of respirable crystalline silica that exceeds half the exposure standard for respirable crystalline silica or
2. a risk to the health of a person at the workplace.

If a crystalline silica process has been identified as high risk crystalline silica work, a crystalline silica hazard control statement (CSHCS) must be prepared for the work before the work commences and the work must be performed in accordance with that statement.

What is crystalline silica hazard control statement (CSHCS)?

A CSHCS is a document that is prepared by the relevant risk owner to cover any high risk crystalline silica work performed in their area. The CSHCS must:

1. state the hazards and risks associated with that work; and
2. clearly detail the measures selected to control those risks in accordance with the hierarchy of controls (outlined below);
3. describes how the risk control measures will be implemented; and
4. if an analysis of samples is required, contains the results of that analysis;
5. be set out and expressed in a way that is readily accessible and comprehensible to the persons who use it.

Note: if the high risk crystalline silica work is being completed on a construction site, preparation of a Safe Work Method Statement (SWMS) meets this requirement.

Where high risk crystalline silica work is being undertaken, areas must provide:

- CSHCS to job applicants and prospective students who may be undertaking this work (including research and teaching activities); and
- instruction and training to anyone completing this work.

For more information, refer to the WorkSafe [High risk crystalline silica work - Identification and management](#) flowchart.

A CSHCS template is available in the WorkSafe [Preparing a crystalline silica hazard control statement for high risk crystalline silica work](#) guide.

What is Engineered Stone?

Engineered stone is also known as reconstituted, artificial or manufactured stone and quartz conglomerate. It is manufactured composite stone material that contains resins and has a crystalline silica content of 80 per cent or greater. It can sometimes contain up to 95 per cent crystalline silica.

In addition to the control measures noted below for working with crystalline silica, there are particular requirements for persons working with engineered stone. These include a licencing scheme, specified control measures and health monitoring requirements as set out in the [WorkSafe Compliance Code - Managing exposure to crystalline silica – engineered stone](#).

Health Effects:

Crystalline silica processes can generate very fine dust particles that can be small enough to lodge deep in the lungs and cause illness or disease. These respirable crystalline silica particles (RCS) are smaller than 10 microns in size and are invisible to the naked eye. Being so small, they are easily inhaled and settle deep inside the lungs, bypassing the body's natural defences like hair and mucus that line our upper airways.

Exposure to crystalline silica dust can cause health conditions such as:

- eye irritation
- skin disorders
- autoimmune diseases like rheumatoid arthritis, scleroderma and lupus
- recurrent chest infections including bronchitis

- lung diseases such as emphysema and pulmonary hypertension
- kidney disease

Prolonged exposure or short term exposure to very high concentrations of silica dust can lead to silicosis. Silicosis develops when the fine dust trapped in a person's lungs can't escape and the immune system reacts to try and clear the dust but fails, causing scar tissue to grow which eventually replaces the healthy lung tissue.

Exposure Standards to Silica:

SafeWork Australia sets the exposure standard for RCS at 0.05 mg/m³ over an average 8-hour workday.

However, to minimise the risks of developing silicosis and lung cancer, a more precautionary approach is required. As such, WorkSafe Victoria recommends that exposure limits be less than 0.02 mg/m³ over an average 8-hour workday.

Measuring exposure:

To determine exposure levels, personal monitoring of people working with silica must be undertaken by a qualified Occupational Hygienist. Contact your OHS Consultant/Advisor to organise silica monitoring in your area.

Risk Assessment:

All work involving crystalline silica at Monash University must be risk assessed in accordance with the [OHS Risk Management Procedure](#). The risk assessment must consider all tasks involving crystalline silica from start to finish e.g. handling raw materials, processing of materials, cleaning-up, disposing of waste and performing maintenance on equipment used during the silica processes.

Additionally, the risk assessment must consider the following:

- the form of crystalline silica used
- the proportion of crystalline silica contained in the material
- previous atmospheric monitoring results
- the likely frequency and duration of exposure to crystalline silica dust
- any information about incidents, illnesses or diseases associated with exposure to crystalline silica dust at the workplace
- the type of respiratory protection used
- the type of ventilation available

An OHS centrally managed risk assessment [#39658 Minimum requirements when working with crystalline silica \(v1.0\)](#) has been developed to assist areas with developing their process specific risk assessments.

Controlling Exposure:

Where any risk associated with exposure to silica dust has been identified, the employer must eliminate that risk so far as is reasonably practicable (e.g. by using materials that do not contain crystalline silica). If the use of silica cannot be eliminated, the employer must reduce the risk as far as reasonably practicable using the hierarchy of controls:

Substitution – e.g. use less hazardous form of crystalline silica or materials with a lower crystalline silica content;

Isolation – e.g. restricting the work within an enclosure with adequate ventilation;

Engineering – e.g. using handheld tools with on-tool water suppression or on-tool dust extraction; localised dust extraction systems. The water supplied to these tools should be fresh and not recycled water which may contain silica dust.

Administrative - e.g. reducing the duration and/or frequency of exposure through job rotation, implementing and maintaining good housekeeping practices including regular cleaning of work areas with H (preferred) or M class vacuums, wet wiping and mopping.

For work undertaken with Engineered Stone, a H class vacuum must be used.

Personal Protective Equipment – e.g. eye and ear protection as well as respiratory protective equipment. WorkSafe Victoria recommends a full or half face respirator or a powered air purifying respirator (PAPR); dedicated work clothing.

All respirators must be fit-tested to the individual user to ensure a proper seal.

Use of PPE should always be done in conjunction with other higher order controls because PPE only protects the person wearing it and not those working in the vicinity. Effectiveness of PPE can be compromised if it is not worn correctly or not properly maintained.

Contact OHS if you require to be fit-tested or are seeking advice on appropriate respiratory protective equipment.

Further Information:

Workers should raise any health and safety concerns with the relevant supervisor, Safety Officer or Health and Safety Representative (HSR) where elected. For further assistance, contact the Monash Occupational Health & Safety (OHS) team:

- Telephone: 990 20222
- Email: ohshelpline@monash.edu

Additional Resources:

- <https://www.worksafe.vic.gov.au/crystalline-silica>
- WorkSafe Victoria Compliance Code Engineered Stone
<https://www.worksafe.vic.gov.au/resources/compliance-code-managing-exposure-crystalline-silica-engineered-stone>
- WorkSafe [Preparing a crystalline silica hazard control statement for high risk crystalline silica work](#) guide

Legislation and Related Documents

Legislation Mandating Compliance

- Occupational Health and Safety Amendment (Crystalline Silica) Regulations 2021
- Occupational Health and Safety Regulations 2017 (Vic)

Monash OHS documents

[OHS Risk Management Procedure](#)

Document History

Version	Date of Issue	Changes made to document
1	29/07/2022	First edition