

Safety Alert

Preventing Respirable Crystalline Silica Exposure

Issue Date: 1 April 2019

Context:

Crystalline silica is found in sand, stone, concrete and mortar. It is also used to make a variety of products including reconstituted stone used to fabricate benchtops, bricks, and tiles. When workers cut, crush, drill, polish, saw or grind products that contain crystalline silica, dust particles are generated that are small enough to lodge deep in the lungs and cause illness or disease.

Hazard:

What is crystalline silica?

Crystalline silica is silicon dioxide, a naturally occurring and widely abundant mineral that forms the major component of most rocks. Different types of rock and rock products can contain different amounts of crystalline silica, for example:

Granite	25 to 40%
Shale	22%
Natural sandstone	67%
Reconstituted (engineered, manufactured) stone	> 90%
Aggregates, mortar and concrete	various

Reconstituted stone products such as those used as kitchen benchtops can contain up to 95% crystalline silica. To find out how much crystalline silica is in a product, check the safety data sheet (SDS) or other information from the supplier.

What is crystalline silica dust?

Crystalline silica dust is generated in workplace mechanical processes such as crushing, cutting, drilling, grinding, sawing or polishing of natural stone or man-made products that contain silica. Some dust particles can be so small that they are not visible; these are commonly referred to as respirable particles.

Crystalline silica dust particles are small enough to penetrate deep into the lungs and can cause irreversible lung damage.

What diseases can crystalline silica dust cause?

If a worker is exposed to and breathes in silica dust they could develop diseases, including:

- chronic bronchitis
- emphysema
- acute, accelerated, or chronic silicosis
- lung cancer, or
- kidney damage

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Actions Taken:

Managing risks and worker exposures to crystalline silica can be achieved by selecting and implementing measures using the hierarchy of controls:

- **Substitution:** such as sourcing composite stone benchtops with a lower percentage of crystalline silica
- **Isolation:** using principles of safe work design to designate areas for tasks that generate dust and appropriate worker positioning during these tasks, using enclosures and automation to conduct dust generating tasks
- **Engineering controls:** that minimise the risk of exposure to generated dust, for example, local exhaust ventilation, water suppression (wet cutting) or using tools with dust collection attachments
- **Administrative controls:** including training, good housekeeping policies, shift rotations and modifying cutting sequences
- **Personal protective equipment** including appropriate respiratory equipment (generally a minimum of a P2 efficiency half face respirator) and work clothing that does not collect dust

More than one control will normally be required to adequately protect workers.



Concrete drilling using Hepa filtered vacuum extraction.



Concrete grinding using Hepa filtered vacuum extraction.



Concrete cutting and cleanup using on-tool water suppression, dust extraction, and vacuuming.

Actions Required for Property Services staff and contractors:

- Know what materials you are working with, especially when undertaking coring and/or penetrations, or when cutting or sanding benchtops, bricks, and pavers
- Minimise the amount of dust you are creating with these products
- Ensure workers are trained on the risks and controls in relation to respirable crystalline silica
- Ensure workers select use the appropriate PPE

Comments:

Further guidance from both WorkSafe Victoria and Safe Work Australia:

- <https://www.worksafe.vic.gov.au/resources/working-reconstituted-stone>
- [Dust containing crystalline silica in construction work](#)
- <https://www.safeworkaustralia.gov.au/silica>