

May 2019

Accelerated silicosis

This safety alert highlights the serious health and safety risks of exposure to high levels of respirable crystalline silica (RCS) in the stone benchtop manufacturing industry.

What happened?

Silicosis is an irreversible and progressive disease that causes fibrosis of the lungs from the inhalation of RCS.

As of February 2019, 99 confirmed cases of silicosis associated with engineered stone benchtop work have been identified in Queensland, Australia.

Many of these cases have been consistent with accelerated silicosis, a form of the disease which develops over a short period (5 to 10 years) from inhalation of very high concentrations of RCS.

In New Zealand, there is a lack of data on the prevalence of silicosis and exposure levels of RCS. Also, recent trends cannot be observed due to the time lag of developing disease. Therefore, this Safety Alert aims to raise awareness of this potential issue before there are confirmed cases here.

What we know

Engineered stone benchtops have become increasingly popular for kitchens and bathrooms. They are made by mixing finely crushed rock with a polymeric resin, then moulded into slabs and heat-cured. The silica content of engineered stone is approximately 90% silica, which is much higher than natural stones.

Workers may be exposed to RCS while cutting, grinding, sanding and polishing stone benchtops during manufacturing and installation. Accelerated silicosis is one of three forms of silicosis that has been recently reported in workers working with engineered stone.

Accelerated silicosis results from the inhalation of very high concentrations of silica dust. It develops in a pattern similar to that of simple silicosis, except the time from initial exposure to the onset of disease is shorter and the progression to complicated silicosis is more rapid. Specifically, nodules increase in size and merge into large lesions, leading to progressive massive fibrosis and ultimately cardio respiratory failure.

WorkSafe's advice

Before starting work using engineered stone, businesses **must** complete a risk assessment and review their controls. It is important to consider eliminating uncontrolled dry cutting, grinding or polishing of engineered stone.

If this is not possible then exposures must be minimised. Options include:

- substituting engineered stone for materials with a lower silica content
- isolating work areas or tasks that generate dust using physical barriers or computer numerical control (CNC) machines
- using engineering controls, such as local exhaust ventilation (LEV), water suppression (wet cutting), or on-tool dust extraction attachments. Wet sprays should be controlled by guards to prevent dust becoming airborne and wet waste must be managed. LEV system dust collectors or vacuums should be H-class HEPA filtered. Any LEV must be effective, fit for purpose, installed, set up and used correctly and maintained so that it remains effective.

- Further minimisation controls include administrative controls, such as good housekeeping practice (wet wiping, using a H-class HEPA-filtered vacuum, and low-pressure water cleaning – dry wiping or sweeping is not appropriate).

If a risk still remains, use the appropriate personal protective equipment:

- use a suitable respirator with a minimum of P1 filter cartridge with the appropriate assigned protection factor
- ensure the respirator is fit-tested for the worker, cleaned and maintained properly
- wear suitable work clothing such as coveralls, that are disposable or can be laundered at the workplace to avoid taking them home.

Exposure monitoring

The current New Zealand Workplace Exposure Standard (WES) for RCS (quartz) is 0.1 mg/m³. WorkSafe is proposing a new WES 8-hour time-weighted average of 0.05 mg/m³.

You can engage an occupational hygienist from the New Zealand Occupational Hygiene Society (NZOHS), or from the Health and Safety Association of New Zealand (HASANZ) [Register](#) to measure RCS concentrations and to help evaluate risks to worker health.

Health monitoring

You can also engage an occupational health practitioner from the Occupational Health Nurses Association (OHNA) or Australian & New Zealand Society of Occupational Medicine (ANZSOM) to perform health monitoring, including:

- collection of demographic, medical and occupational history
- records of personal exposure
- standardised respiratory questionnaire
- standardised respiratory function tests
- and in some cases, chest x-ray full postero-anterior (PA) view (baseline and high-risk workers only).

Guidance

WorkSafe has further guidance on this topic. Search for 'silica' at: [worksafe.govt.nz](https://www.worksafe.govt.nz)

Related facts sheets

[Silica dust in the workplace](#)

[Controlling construction dust with on-tool extraction](#)

[Exposure Monitoring under the Health and Safety at Work \(General Risk and Workplace Management\) Regulations 2016](#)

[Health monitoring required under the Health and Safety at Work \(General Risk and Workplace Management\) Regulations 2016](#)

Quick guide

[Local exhaust ventilation](#)

Standards

The following standards are relevant:

- AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment
- AS/NZS 1716:2012 Respiratory protective devices
- AS 2985:2009 Workplace atmospheres – Method for sampling and gravimetric determination of respirable dust

Further information

International guidelines of relevance:

Crystalline silica and silicosis:
www.safeworkaustralia.gov.au

Control of exposure to silica dust:
www.hse.gov.uk