Guiding Principles for Safeguarding Against Exposure to Respirable Crystalline Silica

Background

Crystalline silica is a common mineral contained in earth, sand, stone, concrete, and mortar. Respirable Crystalline Silica (RCS) are very small particles that can be created when cutting, sawing, grinding, drilling, and crushing concrete, bricks, blocks, pavers, roof tiles and mortar.

The silica dust hazard arises due to the inhalation and build-up of tiny silica particles in the lungs. Health risks from silica exposure include Chronic Obstructive Pulmonary Disease, Silicosis, Lung Cancer and Renal Disease. As a result, it has become a prominent workplace safety issue which needs to be controlled.

There has been a recent increase in silicosis cases among workers in the Australian artificial stone benchtop industry – a result of exposure to RCS. In response to these hazards, regulators have halved the allowable workplace exposure of RCS in the workplace.

Risks associated with RCS must be managed through the most effective means; firstly, by eliminating or minimising exposure levels, then by the adoption of safe working procedures and use of protective equipment.

Silica Exposure

Think Brick Australia (TBA), the Concrete Masonry Association of Australia (CMAA) and the Australian Roofing Tile Association (ARTA) recommend that users of products containing silica, including the construction industry, implement work practices and safety measures that ensures exposure to RCS is maintained at levels below the National Exposure Standard of 0.05mg/m3 TWA.

Some practical measures that could be implemented as a way of safely managing exposure to silica dust are outlined below.

- Use tools and equipment capable of capturing and extracting silica dust.
- Use adequate ventilation to provide silica dust with an outlet.
- Use water suppression cutting systems to limit airborne silica dust.
- For controlled dry cutting, it is recommended using machinery with an integrated dust extraction system.
- Use high velocity low volume hoods for dust collection.

Scheduling and Site Control

- Pre-cutting or drilling works in factories where possible.
- No uncontrolled or unplanned dry cutting.
- Wash down work site constantly with water and/or use Class M or H vacuum cleaners.
- Regular wet sweeping to prevent dust from spreading.
- Conduct air monitoring every 12 months to ensure exposure levels do not exceed the National Workplace Exposure Standard (WES) for RCS.

- Apply appropriate health monitoring of workers that are exposed to silica dust.
- Annual conduct of fit testing where respirators are used.

Duties of Manufacturers

- Disclosure of the silica content of products.
- Educate and inform the workforce of the risks and hazards of silica dust.
- Produce and supply information such as safety data sheets if there is potential risk to those who use the product (e.g., instances of cutting, drilling etc).
- Educate and train practitioners on health and safety precautions to eliminate or reduce exposure to RCS when manufacturing, handling, or installing masonry products.

Duties of PCBU and Installers

- Consult with installers of the hazards and controls to reduce RCS exposure on construction sites.
- Complete site SWMS and implement RCS exposure controls on each site.
- Conduct annual RCS health monitoring for anyone at risk of RCS exposure.
- Review controls with the aim of eliminating or further reducing RCS exposure.
- Supply PPE and have masks fit tested on regular basis.

Hierarchy of Controls for RCS exposure

The Hierarchy of Controls identifies the most effective methods to reduce the risk of RCS exposure. Typically, total elimination of the hazard is preferred but where this is not possible, engineering controls, administrative controls, and personal protective equipment must then be considered (in decreasing order of preference).

Eliminate Risks

- Manual cut products (e.g., Hytile tile cutter and nippers).
- Factory pre-cut and finish product.

Engineering Controls

- Use wet cutting systems.
- Use mechanical cutting systems with dust extraction.
- Dress manual cut edges.

Reduce exposure using administration Controls

- Reduce depths of cuts.
- Short duration cutting.
- Cutting products in ventilated locations.
- Regular wash or sweep cutting locations.

Use PPE

- Use P2 masks when cleaning areas where cutting has occurred.

More Information

This guidance should be used in conjunction with Safe Work Australia's Guidelines for working with Silica and Silica containing products and State Safe Work Health and Safety guidelines.