Stone benchtop workers at risk of silicosis

Background

There are serious health risks caused by exposure to respirable crystalline silica (RCS) for workers in the stone benchtop manufacturing, finishing and installation industries.

Cumulative exposure to RCS may cause serious, debilitating and potentially fatal health effects, including silicosis. RCS is smaller than visible dust and cannot be seen by the naked eye. Tiny particles of RCS can get deep into the lungs and cause permanent, progressive lung damage. There is no effective treatment for silicosis.

Health monitoring of workers in the stone benchtop industry in Australia has found numerous cases of workers suffering silicosis.

There are three types of silicosis:

- Acute silicosis results from short-term exposure to very high levels of silica over a period of weeks or months to several years.
- Accelerated silicosis results from 5-10 years' exposure to high levels of silica. This is becoming more common in workers who work with engineered stone.
- Chronic silicosis results from long term (more than ten years) exposure to lower levels of silica.

The workplace exposure standard for RCS is exceeded when the amount of dust a worker breathes over a full shift contains more RCS than the amount shown here next to the five cent piece. However workers may still suffer adverse health effects from lower levels of exposure.

Image courtesy of Workplace Health and Safety Queensland

When there is visible dust, workers are almost certainly at risk. Even when there is no visible dust, workers may be at risk.

Whilst this safety and health alert focuses on stone benchtops, the hazards and controls are relevant to the fabrication of other stone products such as cladding or splash backs.

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Contributing factors

- Silicosis risks are much greater when working with engineered stone as it contains up to 95% crystalline silica while natural stone contains 5-50% crystalline silica.
- Fabricating and installing natural and artificial stone bench tops can release high levels of RCS through cutting, grinding and polishing processes, particularly when dry cutting methods are used.
- Workers can also be exposed to RCS from wet grinding and polishing processes, poor cleaning practices, including dry sweeping of dust, the use of compressed air, using non-H or M class HEPA filtered vacuum cleaners or by allowing dust to build up within the workplace.
- Workers may not be aware of the hazards and appropriate controls.
- Respirators may not be selected or used appropriately.

Action required

Reduce health risks from RCS as far as practicable using control measures such as the following:

Engineering controls

1. Do not permit uncontrolled dry cutting, grinding or polishing of natural or engineered stone bench tops.
2. Use wet cutting and grinding methods. Wet spray must be controlled to prevent it becoming airborne. Spray can be controlled by using guards, plastic flaps and brush guarding. Wet waste and contaminated surfaces must be managed.
3. Use local exhaust ventilation (LEV) on cutting or grinding equipment. The LEV should:
    - Be part of the equipment design
    - Be fitted to the individual equipment where dust is generated
    - Include an H or M class dust collector or vacuum
    - Use designed hoods or extraction machines.
4. Cleaning and maintenance of LEV fitted equipment must not expose workers to RCS.
5. Where practicable, install whole of workplace ventilation such as extraction systems in addition to wet methods and LEV.
6. Keep the workplace clean using low pressure water, wet wiping or H or M class vacuums. Dry sweeping methods or compressed air must not be used. The cleaning must include all areas where silica dust can settle, eg storerooms and yards.

Isolation

7. Isolate processes and workers where RCS is generated or handled.
8. Provide physical barriers between different work processes and work areas.

Substitution

9. Choose materials with a low percentage crystalline silica content.
10. Choose routers and water jet cutters instead of powered hand tools.

Administrative controls

11. Ensure risks associated with dusty clothing are managed such as by:

    - Using aprons and rubber safety boots to prevent slurry contacting clothing;
    - Removing or vacuuming dusty clothing before entering break rooms or office areas;
    - Laundering work clothing at work, or transporting damp in a plastic bag or bucket if laundering at home;
    - Using disposable overalls and disposing of them at the workplace at the end of each shift;
    - Showering at the workplace and changing into clean clothes before going home.

Respiratory protective equipment (RPE)

12. Unless a workplace has undertaken air monitoring to demonstrate there is no residual risk from RCS, (which research shows is unlikely), an RPE program that complies with Australian/New Zealand Standard AS/NZS 1715 must be implemented.

13. The program must include:

    - provision of suitable, comfortable RPE
    - fit testing where applicable
    - a maintenance and repair regime
    - provision of information, training and guidance to workers.

14. RPE must be reasonably comfortable for the wearer. Consider providing workers with powered air purifying respirators, which are cooler to wear, given the physical demands of the task and potential for a hot and humid work environment.

15. Workers must wear the RPE whenever they are conducting dust generating processes. Beards and facial stubble prevent the wearer from obtaining a good seal between their face and a respirator. Therefore workers who are required to wear RPE such as close fitting respirators or face masks *must* be clean shaven.

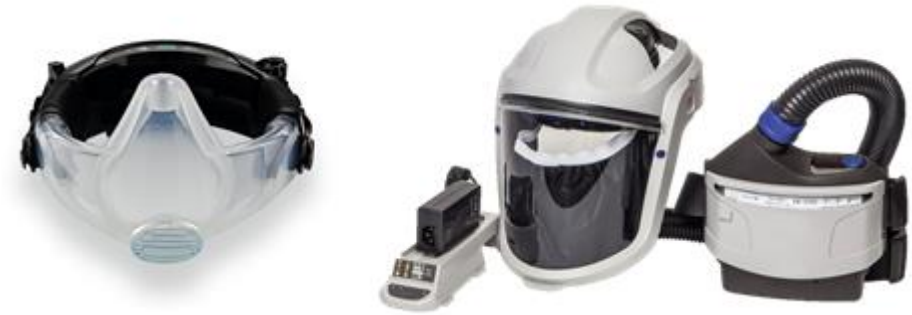

Figure 1 – Powered air purifying respirators – Images used with permission

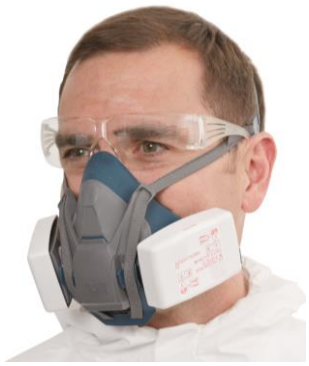

Figure 2 – Half face respirator with
particulate cartridge – Images used with permission

Information for workers

16. Workers must be given information, training and instruction with regard to:
    - the risks associated with the work and exposure to RCS
    - the control measures at the workplace
    - correct use and maintenance of control measures, including RPE
    - health surveillance requirements.

Consultation with workers

17. Employers must consult with their safety and health representatives (where applicable) and other workers about minimising the risks associated with RCS.

Health surveillance

18. Employers must provide workers with health surveillance if there is risk to a worker's health as a result of exposure to RCS.

19. Recent air monitoring conducted in Australia has shown that health surveillance is required in all stone bench top fabrication workplaces.

20. Health surveillance must be supervised by an Appointed Medical Practitioner.

Further information

- The Cancer Council – Preventing workplace cancer
- Commission for Occupational Safety and Health, WA – *Guidance Note – Safe stone product fabrication and installation – protecting workers from silica exposure* - 2018
- Department of Mines, Industry Regulation and Safety, WorkSafe - Silica
- Minister for Industrial Relations Queensland – Media statement advising of confirmed cases of silicosis – September 2018
- Safe Work Australia - Health monitoring for exposure to hazardous chemicals – Guide for medical practitioners
- Safe Work Australia – Health monitoring for silica
- Workplace Health and Safety Queensland – Alert – Immediate action required to prevent exposure to silica for engineered stone benchtop workers

For more information on controlling the risk of exposure to respirable crystalline silica call WorkSafe on 1300 307 877 or visit http://www.commerce.wa.gov.au/worksafe/.

Acknowledgement

This safety and health alert was adapted from a publication by the Queensland Government.

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