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OH&S Update: Preventative Measures Against Silicosis

Crystalline silica is a natural substance found in stone, rocks, sand and clay, as well as products like bricks, tiles, concrete. The quantity of silica contained in stone and other materials varies considerably between different types of stone. The approximate crystalline silica content of different materials.

Caesar Stone	90%
Sandstone	70–90%
Concrete, mortar	25–70%
Tile	30–45%
Granite	20–45%, typically 30%
Slate	20–40%
Brick	Up to 30%
Limestone	2%
Marble	2%

Some of the dust from these materials can be very fine, called respirable crystalline silica (RCS). These fine particles can get trapped in the depths of your lungs, where its persistence causes hardening, scaring and fibrosis of the lung.

What are the Health Effects of Silica Exposure?

1. Silicosis – the lung tissue is permanently damaged from the fibrosis of the lung tissue. The oxygen transfer into your body is reduced significantly. This will cause you shortness of breath when walking and exercising. The effect continues to develop after exposure has stopped, and is irreversible. Sufferers usually become house or bed-bound and rely on using bottled oxygen to help breathe, and often they die prematurely due to heart failure. Silicosis usually follows exposure to respirable crystalline silica (RCS) over many years, but extremely high exposures can lead rapidly to ill health.
2. Lung Cancer – People with silicosis have been found to be at greater risk of lung cancer.
3. Chronic obstructive pulmonary disease (COPD): COPD is a group of lung diseases, including bronchitis and emphysema, resulting in severe breathlessness, prolonged coughing and chronic disability. It may be caused by breathing in any fine dusts, including RCS. It can be very disabling and is a leading cause of death. Cigarette smoking can make it worse.

How to prevent dust exposure

1. **Water** – Use water dust suppression sprayed onto the ground to prevent dust clouds and general airborne dust. In addition, water sprayed at the source when cutting also acts as an effective dust suppression.
2. **On-tool extraction** – removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool or integrated into equipment or machinery.
3. **Prevention of Dust Generation:**
    - Avoid dry sweeping and use a vacuum or wet cleaning;
    - Do not use compressed air for removing dust from clothing.

Respiratory Protection Equipment (RPE)

The level of protection depends on the concentration of the dust and the level of risk – as determined through a comprehensive risk assessment undertaken by competent persons. Where high dust levels occur, a half face mask or powered respirable protection may be required. With low dust exposures, the risk assessment would indicate a disposable P2 dust would provide suitable protection. The dust mask must be fitted properly and worn continuously. Face fit testing is needed for tight-fitting masks. Also, anyone using masks should also be clean shaven. Filters or disposable respirators should be changed regularly and stored in a clean, dust free area.

Silicosis and silica related health effects can be prevented. Take a moment to do a risk assessment and identify ways to prevent dust clouds generated from the tasks or suitable respiratory protection.

If you require further advice or assistance in this area, don't hesitate to contact CCF for referral to a practitioner in the field.

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References:

1. Worksafe Victoria, Dust Containing Crystalline Silica in Construction Work, https://www.worksafe.vic.gov.au/dust-containing-crystalline-silica-construction-work
2. IOSH, No Time to Lose – Respirable Crystalline Silica, the Facts, https://www.worksafe.vic.gov.au/resources/iosh-no-time-lose-respirable-crystalline-silica-facts
3. HSE, UK, Construction Dust, http://www.hse.gov.uk/pubns/cis36.pdf