

Occupational Silicosis: A Short Guide for Employers

Silicosis is an occupational disease that affects the lungs of workers exposed to airborne crystalline silica. It occurs when particles of silica dust get trapped deep in the lungs initiating a process of inflammation and the formation of scar tissue (fibrosis). The disease may stop at some point or it may continue to damage large areas of the lungs - even after the worker is no longer exposed to silica.

In recent times, there has been an increase in the number of worker's compensation claims for silicosis – predominantly from workers in the engineered stone benchtop industry. Some of these cases are terminal, with a life expectancy of only three to five years.

In 2017, 10 engineered stone benchtop manufacturers in Queensland were audited for workplace health and safety¹. Poor work practices related to uncontrolled dry cutting and grinding, inadequate ventilation and a lack of personal protection equipment, such as respiratory masks were reported. However, engineered stone benchtop manufacturing is not the only place where workers are exposed to airborne crystalline silica dust – also known as respirable crystalline silica (RCS).

Who is at risk of developing Silicosis?²

Workers exposed to any respirable crystalline silica dust particles are most at risk. These include:

- Excavation, earth moving and drilling plant operations;
- Clay and stone processing machine operations;
- Paving and surfacing;
- Mining, quarrying and mineral ore treating processes;
- Tunnelling;
- Construction labouring activities;
- Brick, concrete or stone cutting; especially using dry methods;
- Abrasive blasting (blasting agent must not contain greater than 1 per cent of crystalline silica);
- Foundry casting;
- Angle grinding, jack hammering and chiselling of concrete or masonry;
- Hydraulic fracturing of gas and oil wells, and;
- Pottery making.

What can be done to prevent Silicosis in the workplace?

Steps can be taken to improve the outcome of workers who are exposed to airborne crystalline silica. These include controlling environmental factors and work practices to minimise exposure to crystalline silica and periodic health surveillance^{2,3}:

- Identifying silica through a safety data sheet, a label or other sources;
- Managing any risks;
- Monitoring workplace air for RCS;
- Selecting the best means for controlling the risk (including containment, ventilation, signage and respiratory protective equipment);
- Maintaining health surveillance for workers exposure to silica;
- Keeping accurate records related to working with RCS;
- Regular review of existing control measures for RCS and;
- Having a continuing induction, information, training and supervision program for those working with silica.

For most workers exposed to RCS, wet cutting and grinding, adequate ventilation and using personal respiratory equipment goes a long way to controlling these risks.

Health Surveillance for workers exposed to crystalline silica

Industry groups agree on annual health surveillance for workers exposed to crystalline silica⁴. The purpose of this testing is to obtain baseline measures and to investigate any decay in lung function over time. Baseline testing and annual health surveillance involves the investigation of:

- Work History;
- Medical History;
- Physical Examination and;
- Lung Function Testing.

Regular X-Ray investigations increase a worker's risk of exposure to radiation. So, X-Rays are only recommended upon entry into the work environment and then every 5 to 10 years after that. Workers are also required to undergo health surveillance when they cease employment in a crystalline silica process.

Workplace Exposure Standards (WES)^{5,6,7}

Australia has workplace exposure standards (WES) that cover approximately 700 chemicals (of which silica is one). A workplace exposure standard lists the maximum upper limit prescribed by legislation for exposure to a chemical in the workplace.

The Australian Workplace Exposure Standards have undergone consultation and review since 2015 and are due to be finalised by August 2019. WES values are generally based on the 'critical effect' of exposure to a chemical. That is, the lowest airborne concentration of the chemical at which adverse effects occur.

There are three WES parameters for most chemicals depending on how quickly exposure can affect a worker:

1. Eight-hour time-weighted average (TWA) if the critical effect is chronic or sub-chronic;
2. Short term exposure limit (STEL) or;
3. Peak limitation if the critical effect is short term or acute.

The accepted TWA Workplace Exposure Standards for Crystalline Silica in Australia is 0.1mg/m³. However, some other countries like Canada, Ireland, Italy and Finland have set their TWA exposure to Crystalline Silica at or below 0.05mg/m³. This is because even at such low levels of exposure, workers still need to use correctly fitted personal respiratory equipment to prevent the onset of crystalline silicosis.

What is the take-home message for Employers?

It seems that no single approach to preventing crystalline silicosis for workers exposed to RCS is adequate on its own (apart from elimination and substitution – this is unattainable in some workplaces). However, a combination of safe work practices to minimise a worker's exposure to RCS and regular health surveillance to detect changes in lung function early, will make a significant difference to the number for workers affected by crystalline silicosis in the long run.

How can KINNECT help?

Implementing a Silicosis Health Monitoring Program is an important step in ensuring the health and safety of your workers.

KINNECT can help you establish a program that not only keeps your employees safe but that also meets your legislative requirements.

Contact us for an obligation-free discussion on how KINNECT can help setup your Silicosis Health Monitoring Program.

References:

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