WORKSAFE NEW ZEALAND | MAHI HAUMARU AOTEAROA

HEALTH & SAFETY AT WORK ACT · HSWA

FACT SHEET

SILICA DUST IN THE WORKPLACE

At least 600-900 people die each year from work-related disease in New Zealand.

Exposure to a form of silica dust – respirable crystalline silica (RCS) – is dangerous and can cause serious lung disease. It is known to contribute to lung cancer.[1]

It is important to eliminate RCS from a workplace, or minimise exposure to ensure worker health and safety.

Silica is a natural substance found in concrete, bricks, rocks, stone, sand and clay.

Silica dust is created when materials containing silica are cut, ground, drilled or otherwise disturbed. If the silica particles in this dust are of a crystalline structure and are small enough (known as respirable crystalline silica or RCS), they can be breathed deep into the lungs and cause damage.

The dust that can be breathed in is not always visible to the naked eye.

WHERE CAN WORKERS BE EXPOSED?

Industries and activities which may expose workers to RCS include:

- construction – concrete, stone, bricks, mortar, fibre cement products
- quarrying
- mining
- concrete manufacture
- brick and tile manufacture
- foundries
- abrasive blasting
- roading
- monumental masonry work
- activities such as concrete drilling, cutting, grinding, fettling, mixing, handling, dry shovelling and tunnelling.

HOW DOES EXPOSURE TO SILICA DUST HARM HEALTH?

The following lung diseases can develop from breathing in RCS:

- **Silicosis**: Breathing in RCS can cause scarring of the lung tissue, a condition referred to as silicosis. This scarring can result in shortness of breath. The effects of silicosis are permanent and may continue to develop even after exposure has stopped.
- **Lung cancer**: If a worker has a lengthy exposure to high levels of RCS, lung cancer may develop.
- **Chronic obstructive pulmonary disease (COPD)**: COPD is a term that refers to a chronic lung condition that may result from breathing in RCS. It can lead to breathing difficulties.
- **Kidney disease**: There is evidence that silica exposure can cause kidney disease.

[1] World Health Organisation: International Agency for Research on Cancer. (2012). Arsenic, Metals, Fibres, and Dusts: A Review of Human Carcinogens. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, 100C*, 355-405. Retrieved from: http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C-1.pdf.

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WHAT ARE PCBUs' RESPONSIBILITIES?

As a person conducting a business or undertaking (PCBU), you must ensure the health and safety of workers, and that others are not put at risk from your work.

You must eliminate risks that arise from your work so far as is reasonably practicable. If you can't eliminate the risk, you must minimise it so far as is reasonably practicable.

When deciding the ways (control measures) to eliminate or minimise risks, you must identify when work tasks may create RCS. Give preference to effective control measures that protect multiple workers at the same time.

Talk to workers to get their views on which control measures to use.

TO ELIMINATE RCS

> Use alternative products (eg metallic shot, slag products or grit for abrasive blasting, instead of sand).

TO MINIMISE EXPOSURE TO RCS

Wet working suppression methods

> Use water and wet working methods to keep RCS out of the air.
> Ensure equipment and affected work areas are frequently cleaned with a water hose or vacuum cleaning system with a high-efficiency particulate air (HEPA) filter to protect nearby workers from dust exposure.
> Don't dry sweep or use compressed air to blow off dust.

Dust control methods

> Look for dust control features and dust collection systems when purchasing equipment and machinery. For example, tools used for cutting, grinding or polishing concrete and masonry should provide water to the blade and/or be fitted with on-tool dust extraction.
> Ensure other dust generating equipment has a dust collection system with a filtered air supply to isolate the operator from the dust.
> Remove dust from work areas using vacuum cleaning systems with filters (HEPA filters).

Administrative controls

> Set up exclusion zones with signs to mark the boundaries of work areas where RCS is created. These signs should warn your workers about the hazard and specify any personal protective equipment required.
> Schedule potential high exposure work for breaks or after normal working hours.

Personal protective equipment (PPE)

PPE is the least effective type of control measure and should not be the first or only control measure considered.

The PCBUs who direct the carrying out of work must provide PPE to workers unless another PCBU provides it or the worker genuinely and voluntarily chooses to provide their own PPE (and you are satisfied the PPE is suitable).

Respiratory (breathing) protection

> Use suitable respirators for protection against the dust. The type of respirator should be carefully chosen. Seek expert advice when choosing PPE.
> Provide information, training and instruction so workers correctly use, wear, store and maintain the PPE.
> Carry out fit testing for each worker who will wear a respirator that requires a seal against the face.

For further information, see WorkSafe's fact sheet *Repiratory Protective Equipment – Advice for Persons Conducting a Business or Undertaking*.

Protective clothing and cleanliness

> Ensure your workers have overalls and gloves to wear at work.

> Ensure your workers understand the importance of washing their hands before eating, drinking and smoking, and of washing up before they go home at the end of the day.

> Ensure facilities for washing are provided.

EXPOSURE MONITORING

> As a PCBU you must, so far as is reasonably practicable, monitor workplace conditions if exposure to a particular health risk warrants it.

> Exposure monitoring will confirm whether workers are exposed to the substance at potentially harmful levels, and if existing control measures are working effectively.

> However, exposure monitoring does not replace the need for control measures to reduce exposure.

> Seek your workers' views when making decisions about exposure monitoring.

HEALTH MONITORING

> As a PCBU you must, so far as is reasonably practicable, monitor worker health if exposure to a particular health risk warrants it.

> Provide ongoing health monitoring for all your workers who may be exposed to silica dust. Monitoring should include lung function testing, and a respiratory questionnaire. Occupational health nurses can provide this service.

> Seek your workers' views when making decisions about health monitoring.

TRAINING

> As a PCBU, you must so far as is reasonably practicable ensure workers are supervised or trained to work healthily and safely.

> Provide your workers with information, training and instruction on the control measures (including the use and care of PPE) and the potential health risks of RCS.

> Seek your workers' views when making decisions about how to provide information and training.

FURTHER INFORMATION

For further information (eg about local exhaust ventilation) see the WorkSafe website: www.worksafe.govt.nz

This fact sheet has been developed using guidance from:

> Health and Safety Executive (UK) www.hse.gov.uk

> National Institute for Occupational Safety and Health (USA) www.cdc.gov/niosh

> WorkCover NSW (AUS) www.workcover.nsw.gov.au

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