

Fact sheet

Understanding exposure monitoring

June 2024

Mining involves potential exposure to many health hazards including airborne contaminants such as inhalable dust, respirable dust, respirable coal dust, respirable crystalline silica, diesel particulate matter (DPM) and other airborne chemicals and hazards. If health hazards are not well controlled, workers may be at risk of developing related ill health.

A person conducting a business or undertaking (PCBU) should understand what hazards exist at their workplace and which ones require exposure monitoring. An appropriate monitoring system must be implemented for each of these hazards.

The purpose of personal exposure monitoring is to ensure that workers are not exposed to hazards at levels that could be harmful to health. Exposure monitoring also provides feedback on the effectiveness of controls. If exposure monitoring identifies that workplace exposure limits (WELs) have been exceeded then action needs to be taken to reduce the hazard level. When an exposure limit has been exceeded, and investigation should identify why this has occurred and steps taken to improve the effectiveness of existing controls or implement additional controls to reduce exposures below the exposure standard.

Management has an obligation to ensure hazards are well controlled. Where a hazard cannot be eliminated, controls must be implemented to reduce the hazard level. For example, engineering solutions could be implemented to contain the hazard at the source, or administrative measures used to change the way people work and thereby reduce exposures. The lowest form of control is the use of personal protective equipment to protect workers from the exposure.

Exposure standards

Health hazards have varying effects on human health and are dependent on the dose or level of exposure. The longer a worker is exposed to a hazard or agent, the greater probability of an unfavourable outcome.

Exposures standards are scientifically established and exist for a variety of chemicals including airborne contaminants.

The exposure standards are set by Safe Work Australia and this information is in the [Hazardous Chemical Information System \(HCIS\)](#). There are 3 components to the exposure standard and each have a different effect on the body.

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These include:

- A time weighted average (TWA) exposure standard which defines the average airborne concentration over an eight-hour day, five days per week
- A short term exposure limit (STEL) which is the maximum time weighted average airborne exposure concentration permitted over a 15 minute period.
- A peak limitation (Peak) which is the maximum dose or concentration that cannot be exceeded at any time.

For more information about the exposure standard please refer to the [Workplace exposure standards for airborne contaminants.](#)

Evaluating exposure

It is important to ask the following questions prior to commencing any exposure monitoring.

- Who is being monitoring?
- What is being monitored?
- Why is monitoring being done?
- How is monitoring to be done?
- When is monitoring to be done?

A qualified occupational hygienist should be engaged in any exposure monitoring program

Shift length also needs to be considered when evaluating exposure. Longer shifts increase exposure times. A lower exposure is required to ensure that the safe dose is not exceeded. In addition, there is less time for recovery before returning to work for another dose.

A hygienist will ensure that the occupational exposure monitoring program is valid and takes into account all workplace activities. Various exposure samples may be required. Personal exposure sampling is required for workers in different work areas or occupational groups, as well as static sampling in fixed locations. Only personal sampling, however, can determine a workplace exposure.

Licensed monitoring

Section 153 of the WHS (MPS) Regulation 2022 requires certain monitoring of airborne dust to be undertaken by a licenced person. This applies to coal mines, or mines where respirable crystalline silica has been identified as a hazard. The Resources Regulator grants the licence, which includes the sampling and analysis of airborne dust.

Further information is provide in the following:

- [Licensed activities](#)
- [Fact sheet: Sampling airborne dust at non-coal mines](#)
- [Fact sheet: Identifying respirable crystalline silica as a hazard in non-coal mines](#)

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