

FACT SHEET | SEPTEMBER 2017

Diesel exhaust emissions – underground coal mines

Diesel exhaust emissions contain a range of chemical, gases and diesel particulate matter (DPM). The irritant effects of diesel exhaust emissions have been identified and the carcinogenic effect has been suspected for some time. In 1998, diesel exhaust emissions were classified as probably carcinogenic to humans. In June 2012, the International Agency for Research on Cancer reclassified diesel exhaust emissions as a carcinogen to humans.

Worker exposure limits

The Australian Institute of Occupational Hygienists recommends a worker exposure limit of 0.1 mg/m³, measured as elemental carbon (EC). At this exposure level the irritant effect of exposure is markedly reduced and the risk of cancer may also be reduced. A defined universal dose response relationship has not yet been determined.

Your obligations

Under the *Work Health and Safety Act 2011*, a person conducting a business or undertaking has the primary duty to ensure, so far as is reasonably practicable, workers and other people are not exposed to health and safety risks arising from the business or undertaking.

This duty includes eliminating exposure to diesel exhaust, so far as is reasonably practicable, for example by using alternative power sources. If it is not reasonably practicable to do so, then risks must be minimised so far as is reasonably practicable.

The Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 requires a mine operator to manage risks and implement a range of control measures including:

- implementing a principal hazard management plan for air quality or dust or other airborne contaminants ([clause 24](#))
- implementing a ventilation control plan to ensure effective ventilation ([clause 62](#))
- implementing air quality, monitoring and ventilation arrangements (clauses [38-42](#), [54-64](#) and [71](#))
- managing exhaust emissions and fuel standards ([clause 53](#))
- implementing a health control plan that sets out the means by which the operator will manage the risks to health associated with mining operations ([clause 26\(3\)](#))
- addressing the use of diesel engine systems and the creation of pollutants through implementing a mechanical engineering control plan ([clause 26\(4\)](#))

Also, operators of underground coal mines must:

- sample and analyse exhaust emissions to monitor and control pollutants from diesel engines ([clause 75](#))
- undertake certain actions if air quality or safety standards are not met, such as withdrawing workers from a place of risk and preventing re-entry ([clause 76](#))
- use only registered diesel engine systems in the underground mine ([clause 177](#))
- ensure that the general body of air in the areas in which persons work or travel has a concentration of diesel emissions (including diesel particulate matter) that is as low as is reasonably practicable ([clause 55](#)).

Elimination and control

Mines need to identify risk areas in relation to diesel emissions and select the most effective controls to eliminate or minimise those risks. More than one control measure may be required to reduce worker exposure to appropriate levels.

Control measures will fall into three categories, which are minimising:

1. diesel exhaust emissions at the source
2. transmission of airborne emissions throughout the work environment
3. exposure to individuals at risk

Whatever strategy is adopted, it should be underpinned by an effective maintenance program, so that emission reductions are sustainable.

Plant and fuel selection, along with plant scheduled maintenance activities, are an important consideration in minimising emissions being emitted into the work environment. Atmospheric monitoring and health surveillance strategies are also commonly used.

Targeted assessment program

The Resources Regulator's strategy is to ensure that workplaces with elevated exposure risks such as underground mines and workshop areas are employing a range of these measures to control the exposure risks of workers. Managing diesel emissions at underground coal mines will be the subject of targeted assessments. The assessments will focus on how the mine prevents 'worker exposure to harmful diesel exhaust emission'.

Key categories assessed will be:

1. Identification, assessment and risk controls for diesel exhaust emission hazards.
2. Preventative controls (controlling emissions at the source).
3. Mitigating controls (controlling exposure to airborne emissions).
4. Monitoring (worker exposure).
5. Verifying the effectiveness of controls.

What should you do?

Industry is encouraged to review their strategy and capacity to manage diesel emissions as per the requirements under the legislation and according to best practice.

Sites should ensure their approach to the management of this hazard is in line with the available guidance material and reflects accepted, effective control practice.

Seek assistance

For more information and guidance on managing hazards and risks associated with workers exposure to diesel emissions view the following resources:

- [MDG 29 Guideline for the management of diesel engine pollutants in underground environments \(NSW Mines Safety\)](#)
- [Safety Bulletin SB13-03 Diesel emissions in mines \(NSW Mine Safety\)](#)
- [Management of diesel emissions in WA mines \(WA Department of Mines and Petroleum\)](#)
- [QGN21 Management of diesel exhaust in metalliferous mines \(Queensland Department of Natural Resources and Mines\)](#)
- [Guide to managing the risks of diesel exhaust in the workplace \(Safe Work Australia\)](#)
- [Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants \(Safe Work Australia\)](#)
- [Good Practice Guidance on Occupational Health Risk Assessment \(International Council on Mining and Metals\)](#)
- [Diesel particulate matter and occupational health issues position paper \(Australian Institute of Occupational Hygienists\)](#)

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