FACT SHEET | 2016

Diesel exhaust emissions

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 was 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.

A defined universal dose response relationship has not been determined but 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.

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
- → implementing a ventilation control plan to ensure effective ventilation (clause 62)
- → addressing the use of diesel engine systems and the creation of pollutants through implementing a mechanical engineering control plan (clause 26(4))
- → implementing air quality, monitoring and ventilation arrangements (clauses 38-42, 54-65 and 71)
- → managing exhaust emissions and fuel standards (clause 53).

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 DPM) 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:

1. Minimising diesel exhaust emissions at the source.
2. Minimising the transmission of airborne emissions throughout the work environment.
3. Minimising 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.

The design, implementation and operation of ventilation systems also play a critical role in minimising the risk posed by emissions.

The above methods to control workplace exposures to diesel particulate are now readily available, as are commonly employed atmospheric monitoring and health surveillance strategies.

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 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

The following advice and guidance is a starting point to help mines meet their obligations to manage hazards and risks associated with workers exposure to diesel emissions:

- 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).