

# FACT SHEET

## Diesel particulate matter - personal exposure monitoring and exceedance notification

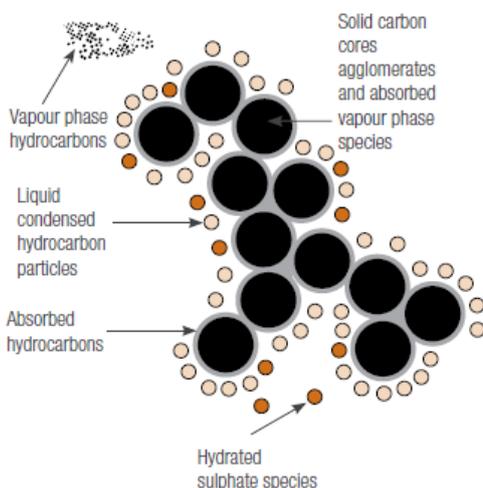
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### What is diesel particulate matter?

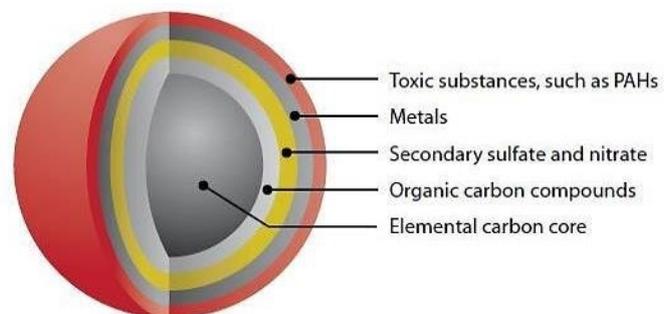
Diesel exhaust emissions contain a range of chemicals, gases and diesel particulate matter. Diesel particulate matter (DPM) is the solid part of the diesel exhaust. DPM comprises very small carbon particles that have absorbed layers of other materials. Such other materials include:

- polycyclic aromatic hydrocarbons from the incomplete burning of fuel
- metal fragments from engine wear
- sulfates and nitrates from exhaust gases; and
- organic carbon compounds from engine oils and lubricants.

#### Diesel exhaust – gases and particulates



#### Diesel particulate matter – solid exhaust particles



DPM is of a respirable size and when inhaled, can penetrate deep into the lungs. Diesel engine exhaust (both the gases and particulates combined) is classified as a class 1 carcinogen, a known cancer-causing agent.

### Health effects of diesel particulate matter

DPM can cause both short and long term health effects, including:

**Acute (short-term) health effects:**

**Chronic (long-term) health effects:**

- eye irritation
- respiratory irritation
- headache, dizziness, nausea
- lung cancer
- bladder cancer
- cardiovascular effects

## Workplace exposure standard

An exposure standard for DPM of 0.1mg/m<sup>3</sup> measured as elemental carbon, came into force on 1 February 2021. With the commencement of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022 on 1 September 2022, mine operators are obliged to notify the Regulator when a person is exposed to a DPM concentration in excess of 0.1mg/m<sup>3</sup>.

## Monitoring worker exposure

Clause 50 of the Work Health and Safety Regulation 2017 requires a person conducting a business or undertaking (PCBU) to conduct air monitoring to determine the concentration of air contaminants to which an exposure standard applies. Section 42 of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022 prescribes the requirement for personal exposure monitoring of workers to diesel particulate matter.

Where a mine operator identifies a risk of worker exposure to diesel particulate, they should undertake personal worker exposure monitoring. An ongoing exposure monitoring program may also be required to measure the level of personal exposure where an ongoing risk is identified. Mine operators should determine the monitoring frequency and methodologies of an exposure monitoring program according to risk, with consideration given to the following:

- monitoring people who are more likely to be exposed to diesel particulate
- monitoring over a range of standard operational processes in addition to exposure which occurs during abnormal mining operations
- including static monitoring to determine airborne concentrations of diesel particulate matter, and for determination of the effectiveness of implemented control measures.

## Exposure monitoring methodology

Mine operators should adopt risk-based personal exposure monitoring strategies. Samples should be collected in accordance with relevant Australian Standards and recognised methodologies under the direction of a suitably competent and independent occupational hygienist. NATA accredited laboratories should undertake subsequent analysis using NIOSH Method 5040 to determine elemental carbon.

Mine operators should investigate situations where results indicate personal exposure is more than 0.1mg/m<sup>3</sup> elemental carbon. Resampling should follow the implementation of any corrective actions resulting from the investigation. The mine operator should also undertake a review of its principal

hazard management plan for air quality or dust or other airborne contaminants. Workers should be advised of the exceedance event and recommendations to prevent a reoccurrence provided.

## Notifying exposure exceedance

Exceeding the DPM exposure standard is reportable to the Regulator as a high potential incident under section 124 (5)(q) of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022.

Mine operators should notify the Regulator of an exceedance incident using the safety and health reporting function of the Regulator Portal. Information relating to the exceedance incident will be collected, such as the similar exposure group (SEG) of the worker, the tasks undertaken/equipment used, and respiratory protection worn during the monitoring, in addition to the measured exposure concentration.

Further information about the initial notification of incidents can be found in the *Notification of incident and injury guide* on the Regulator's [website](#).

## Obligation for mine operators

The *Work Health and Safety Act 2011* imposes a duty on PCBUs 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 workers' 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 exposure risks must be minimised so far as is reasonably practicable.

The Work Health and Safety (Mines and Petroleum Sites) Regulation 2022 requires a mine operator to manage risks and implement a range of control measures including the implementation of a principal hazard management plan for air quality or dust or other airborne contaminants.

Whatever strategy is adopted, it should be underpinned by an effective maintenance program, so that diesel exhaust 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.

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