

# Health Indices for the NSW mining & extractives industry

FACTSHEET

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## Diesel particulate management

### Introduction

It is important that potential diesel particulate hazards are identified and that everyone understands the nature and sources of risk so that informed decisions can be made to eliminate or control them.

### Lead indicators

The identification and use of both lead and (to a lesser extent) lag health indicators, are useful means to achieve this. Leading indicators are good management practice and so should form the basis of any monitoring and evaluation activities.

### How to use this factsheet

Good practice leading indicator activities for the management of diesel particulates are presented overleaf. The approach promotes the use of OHS management system inputs rather than health exposure outcomes to help ensure that appropriate and pro-active steps towards health management are taken. However, some activities may also provide health exposure data that can be used as a leading performance indicator (e.g. exposure monitoring / personal dosimetry).

The activities are grouped according to 'stages' of system maturity and can be used as a guide to developing and implementing a continuous improvement program.

To demonstrate a progression through the stages, an organisation must be able to demonstrate that it is carrying out all the activities listed within the previous stage.

### Why control diesel particulate?

Diesel particulate has been shown to pose a risk to the health and safety of those who are exposed to it. Classified as a potential cancer causing agent (lung and bladder cancer most strongly), diesel particulate has an exposure guideline in most Australian jurisdictions.

### Risks from diesel particulate

Other chronic effects are respiratory inflammation and irritation to the throat and eyes. While the extent of diesel particulates' negative effects and the dose response are debated, it is clear that it needs to be controlled, so as to ensure the health and safety of workers.

Ensuring that the diesel particulate emitted (via the exhaust of plant and vehicles) is of levels below the exposure guideline is an ongoing responsibility of employers. Workers too must comply with the developed procedures and policies to maintain their own and others, health and safety.

This is of concern to both open cut and underground miners and for both coal and non-coal operations.

### How to manage diesel particulate

- Using electrically powered vehicles
- By selecting equipment which minimises exhaust output
- The use of ventilation systems appropriate to the demands of the emissions is a higher order control that should be considered
- Optimising the use of diesel powered equipment through proper maintenance of engines
- The correct selection of fuels can have a significant impact upon the amount of diesel particulate generated
- Proper and regular maintenance of the haul roads in and around the mine can also impact heavily on the minimisation of these harmful exposures, through reduced emissions.

Diesel particulate management

# Leading indicator activities – diesel particulate

<p><b>EMERGING</b></p> <p><i>A focus on implementing a compliant approach by information sharing, hazard identification and risk assessment.</i></p>	<ul style="list-style-type: none"> <li>• Can demonstrate that most (e.g. 60%) exposed workers have undergone DP hazard awareness training at induction.</li> <li>• Has conducted (and recorded) an identification of sources of DP hazards on site in consultation with those workers most at risk.</li> <li>• Has risk assessed most (e.g. 60%) of the identified sources of DP using an appropriate risk assessment tool and by referencing the appropriate exposure guideline.</li> <li>• Has conducted targeted preliminary atmospheric monitoring (or has had someone do so) to establish more accurately the extent of the DP hazards.</li> <li>• Has specifically trained most (e.g. 60%) and provided all personnel (and recorded) likely to be exposed to DP hazards on site, in the correct selection and fitting of respiratory protectors.</li> <li>• All personnel at risk have been provided with the appropriate respiratory protector for their use.</li> </ul>
<p><b>TRANSITIONAL</b></p> <p><i>A focus on monitoring activities and stakeholder engagement with implementation of combination controls.</i></p>	<ul style="list-style-type: none"> <li>• Can demonstrate the use of combination controls (PPE plus other) for nearly all (e.g. 85%) of DP hazards.</li> <li>• Has consulted with contractors and is able to demonstrate that nearly all (e.g. 85%) are managing DP hazards to a standard applied by the organisation itself.</li> <li>• Has a documented DP control plan (or elements thereof), that includes a policy developed in consultation with the workers.</li> <li>• Periodically conducts exposure monitoring for those working near or in sources of hazardous DP exposure, with the results explained to those exposed.</li> <li>• Periodically conducts targeted lung function testing of nearly all (e.g. 85%) workers assessed as most at risk. The results are recorded and given to those exposed.</li> <li>• Provides for 'clean air' areas in which to eat, shower and rest.</li> </ul>
<p><b>PROGRESSIVE</b></p> <p><i>A focus on Health Management System integration. This stage is characterised by implementation of higher order controls and regular reviews of the system's success. Ongoing learning and continuous improvement is the goal.</i></p>	<ul style="list-style-type: none"> <li>• Can demonstrate higher order controls (including elimination) for all DP hazards assessed as high risk.</li> <li>• Has a pre-employment medical program (including Spirometry and chest x-rays) to establish lung function baselines for its personnel.</li> <li>• Has comprehensively mapped all areas (and plant) of hazardous DP and incorporated this into their awareness training and risk management planning to assist with continuous improvement.</li> <li>• Conducts periodic re-instruction to all exposed workers on the correct fitting, selection and maintenance of respiratory protectors.</li> <li>• Provides appropriate supervision to ensure robust compliance to all sign-posted respiratory protector areas.</li> <li>• Maintains all necessary records, including exposure monitoring and awareness training (e.g. tool box talks), as per the recommendations in the Australian standard.</li> <li>• Periodically conducts scheduled external audits of the measures taken for managing DP hazards.</li> </ul>

## Further information

Health Management Plan: A guide to the development and implementation of a health management plan in the NSW mining and extractives industry can be accessed at: [www.resourcesandenergy.nsw.gov.au/miners-and-explorers/safety-and-health/publications/health-management](http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/safety-and-health/publications/health-management)

## Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing in May 2011. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.