



**NSW
Resources
Regulator**

TARGETED INTERVENTION PROGRAM

ASSESSMENT OF LEAD RISK AT METALLIFEROUS MINES

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Contents

Executive summary.....	3
Introduction	4
Background	4
Scope.....	5
Assessment findings	6
Documented work practices that contain lead risk.....	7
Washing facilities	7
Consumption of food and beverages.....	8
Airborne contaminants and hygiene monitoring	8
Next steps	9
Further information.....	9

Executive summary

Due to the potentially adverse health effects of lead on workers, the risk of elevated lead levels should be routinely assessed at mines which mine, process or handle this mineral. In response to significant concerns regarding the implementation and effectiveness of controls associated with lead management, a targeted intervention program was initiated that focussed on eight mining operations across NSW from November 2020 through to February 2021.

This report summarises the assessment results, the issues identified, and recommendations associated with lead risk management from all mines assessed as part of this inspection program.

The assessments focussed on the identification and management of work practices which contain a lead risk, examining both documentation and implementation of controls. Whilst overall results identified an appropriate level of risk-based management of lead work practices, there were several areas identified for improvement at the majority of mines assessed.

The common issues identified included inadequate documentation, improper management of biological monitoring (including poor implementation of a monitoring regime) and health monitoring records which were not current or not readily available. In some cases, workers or work groups had not been identified for monitoring when they reasonably could have been exposed to lead. Other concerns which were highlighted during this program included workers being permitted to consume food/drinks where lead or lead compounds were present, and washing facilities for personnel/clothing not being available, used, maintained, or positioned appropriately.

In addition to the issues listed above, there were several instances of lead and lead compound dust being ineffectively collected from dust extraction systems, poor standards of housekeeping in vehicle cabins, and inadequate signage standards around hygiene requirements for using/handling lead and lead compounds.

From the issues described, inspectors issued a total of eight notices under the Work, Health and Safety Act, including six Section 191 Improvement Notices and two Section 23 Notices of Concern. More detail on the issues identified are provided in the findings section of this report.

Introduction

In February 2016, the NSW Resources Regulator published its [Incident prevention strategy](#).

A key component of the strategy is the introduction and implementation of a risk-based intervention framework. The framework identifies and confirms risk profiles, verifies risk control measures and allocates resources based on risk priority.

The implementation of the strategy included the development of two operational approaches to regulatory activity. These are:

- targeted assessment programs (TAP): a planned, proactive program that assesses the overall effectiveness of an operator's attempt to control critical risk
- targeted interventions: a response to a specific incident, series of incidents or other intelligence, which assesses how effectively relevant risks are being controlled (see below for further detail).

Background

Targeted interventions provide a systematic response to a critical risk. They can be applied across all sectors of the mining industry. The need to undertake an intervention will be identified through:

- a series of events
- a single significant event, such as a catastrophic failure or fatality
- a change in the operation's risk profile
- data that suggests an emerging issue.

Targeted interventions are typically undertaken by a team of inspectors. The interventions provide an assessment of the:

- operational and management plans and supporting documentation
- implementation of plans and procedures
- effectiveness of control measures
- operator's compliance with relevant legislative provisions.

Scope

The scope of the assessments included two elements:

- A desktop assessment which reviewed:
 - compliance against legislation with respect to the management of risks to health and safety associated with lead risk work on site
 - controls the mine utilises to prevent and mitigate the risks to health and safety associated with lead risk work
 - the systems the mine utilises to monitor the effectiveness of those controls.
- A workplace assessment of the implementation of those controls.

Assessment findings

The assessment findings below relate to both documentation and in-field observations. The information provided should be used to inform and improve a mining operation's safety management system in relation to the risk of lead in the workplace.

The findings have been categorised and are listed as follows:

- Controls identified in documentation such as the health control plan, risk assessments and trigger action response plans (TARPs) were either not relevant, not current, or not readily available and accessible for workers.
- Washing facilities for removing lead or lead compounds (e.g. hand washing, showers, laundering of clothes, etc) were either not readily available, not used, not maintained, or not supplied at all or not appropriately located.
- Workers were permitted to consume food and drink in areas where lead and lead compounds were used, stored, or handled.
- A poor standard of general housekeeping and lead dust mitigation was observed including inside vehicle cabins.
- Some workers or work groups had not been identified for lead health monitoring and where it had been identified, it was poorly implemented and not aligned with legislative requirements.
- Static or personal monitoring for airborne lead dust was not undertaken when it was reasonably appropriate to do so.
- Equipment used to manage airborne contaminants was either not installed correctly or inadequate.
- Poor standard of signage in relation to hygiene requirements when using or handling lead and lead compounds.

This report will elaborate on some of the abovementioned common themes and provide specific recommendations for industry.

Documented work practices that contain lead risk

ISSUE	RECOMMENDATION
<p>Documentation relating to work practices that contain a risk of lead exposure was found to be lacking. The mine had either not identified the risk of lead or had not followed its own procedures in managing the risk.</p> <p>Examples of this included: carrying out work in a lead environment where the lead risk had not been identified, not conducting appropriate ongoing health monitoring at lead risk sites, or not identifying certain workers or work groups at risk. Contractors were often forgotten with regards to working around lead environments and were the main work group that was absent during monitoring/testing regimes.</p>	<p>Work practices involving the risk of lead must be identified, assessed and documented. This includes conducting pre-employment and ongoing health monitoring as required by legislation. All risks associated with this work must be identified including specific activities, work groups, and controls that are to be implemented. Importantly, the provision of information and routine training to all workers involved in lead environments must be conducted thoroughly. A comprehensive risk assessment attended by a cross section of relevant stakeholders is also a key foundation for ensuring a site has a robust system of work.</p>

Washing facilities

ISSUE	RECOMMENDATION
<p>Washing facilities including showering and clothes laundering were either not used by the workers, had not been adequately maintained or had not been located correctly. Workers had elected not to use the facilities and in one case showering facilities had been located in an area where workers had to walk back through a lead risk work area to complete office duties. Other examples of unmaintained facilities included a changeroom which was not operational and a wash basin which did not have functional plumbing.</p>	<p>Showering and laundering facilities should be provided to workers as part of the overall risk management of lead to ensure off-site contamination is minimised. These facilities should be maintained in good working order, cleaned regularly, and should be located appropriately so that workers do not have to cross lead risk work areas to access offices or depart site.</p>

Consumption of food and beverages

ISSUE	RECOMMENDATION
Workers were found to consume food and beverages in areas where there is the risk of lead exposure such as control rooms and mobile plant cabins. Both areas mentioned above were often observed to be noticeably dirty and dusty and indicated that they were not cleaned on a regular basis. There was also a visible lack of signage and warnings alerting workers they were in a lead risk work environment.	Adequate and correctly located signage/warnings should be placed at areas potentially containing the risk of lead and workers should be encouraged to follow good hygiene protocols before consuming food and beverages in dedicated meal rooms. This includes removing visible dust/dirt from clothing if practicable and thorough hand and face washing prior to entering amenities. As with showering and laundering facilities, meal rooms should be located appropriately for all workers and cleaned regularly. Information and training for workers of good personal hygiene protocols and the availability of amenities for consumption of food and beverages should again be carried out.

Airborne contaminants and hygiene monitoring

ISSUE	RECOMMENDATION
In some cases, hygiene monitoring for lead dust/airborne contaminants had not been identified or implemented where it would have been reasonably appropriate to do so. Processes where lead dust could reasonably have been generated, for example, where extracted dust reported to open bins or where there were high traffic areas from mobile plant, there was no static or personal monitoring conducted.	Where lead risk work has been identified, controls must be put in place to minimise the generation and transmission of airborne dust containing lead. Where it is not possible to eliminate any airborne dust, hygiene monitoring should form part of a robust system to gauge how effective controls are in the first instance. Whilst this is a lagging indicator, it allows for a quantitative informed review of controls which may require modification if results are unacceptable. For example, this could be altering work practices, introducing more effective PPE, or upgrading dust extraction systems.

Next steps

As required, the Resources Regulator will complete assessments of any health-related incidents concerning the management of lead or any other contaminants when they arise. Follow-up investigations of specific incidents may occur which warrant an onsite verification of the mine's controls and/or a review of the associated documentation for managing the risk of lead.

Pro-active assessment activities are also routinely planned for the sites that were inspected as part of this program and any actions specified from previous assessments will be followed up by inspectors. One such program which is currently underway within the metalliferous sector is the compliance priority project targeting the management of hazardous chemicals. This project will reemphasize the importance of having robust and effective controls for managing substances such as lead, so as to ensure the health and safety of workers.

Further targeted interventions may be initiated, subject to the findings of planned inspection programs, and the frequency and circumstances of lead related incidents into the future.

Further information

For more information on targeted intervention programs, the findings outlined in this report, or other mine safety information, please contact the NSW Resources Regulator.

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