

## **Consolidated report**

Air quality, dust or other airborne contaminants –  
stage 1 surface coal mines

**February 2024 to January 2025**



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**More information**

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## Executive summary

A crucial part of the Resources Regulator’s incident prevention strategy for mines and petroleum sites involves:

- targeted assessments and planned inspection programs – focusing on assessing an operation’s control of critical risks by evaluating the effectiveness of control measures in the mine’s safety management system
- priority programs – proactively assessing a topic that is an emerging risk throughout the industry, which is determined primarily from incident data as well as evolving industry trends.

A planned inspection program at surface coal mines for the principal hazard management plan – air quality or dust or other airborne contaminants was conducted between February 2024 and January 2025.

The Regulator’s bowtie identified 4 threats for the stage 1 assessment program, which were low oxygen environments, dust raised into suspension, hazardous chemicals in the atmosphere and carcinogens in the atmosphere. The bowtie identified 3 critical control criteria for assessment of the material unwanted event (MUE) of unplanned exposure to hazardous atmospheres.

As part of the planned assessment activities, Regulator inspectors attended 25 surface coal mines and coal handling and preparation plant (CHPP) with a focus on assessing the identified critical control criteria and control supports.

This planned inspection program was part of an ongoing effort by the Regulator to reduce the potential risks associated with human exposure to hazardous atmospheres at surface coal mines.

This report provides information on assessment findings and recommendations for surface coal mine operators.

Of the 25 surface coal mines assessed, 25 compliance notices were issued to 15 of coal mines.

21 compliance notices were issued that related specifically to assessing human exposure to hazardous atmospheres at surface coal mines.

Explanatory notes on the assessment system are in Appendix A.

## Assessment criteria for all assessments

The Regulator’s bowtie identified 4 threats and a potentially fatal outcome consequence and 3 critical controls with control supports to assess how surface coal mine operators managed the MUE of human exposure to unplanned exposure to hazardous atmospheres.

A tabulation of the threat/consequence and critical controls assessed for the MUE is in Table 1.

Table 1: Threat/consequence and critical controls for the MUE of human exposure to unplanned exposure to hazardous atmospheres

Threat/consequence		Critical control
<b>Threat</b>	<ol style="list-style-type: none"> <li>1. Low oxygen environment</li> <li>2. Dust raised into suspension</li> <li>3. Hazardous chemicals in the atmosphere</li> <li>4. Carcinogens in the atmosphere</li> </ol>	Ventilate workplace (PC 1.3)
<b>Consequence</b>	One or more fatalities	Hygiene monitoring (MC 1.2)
		Health monitoring (MC 1.3)

A tabulation of the critical controls and control supports assessed for the MUE is in Table 2.

Table 2: Critical controls and control supports assessed for the MUE of human exposure to unplanned exposure to hazardous atmospheres

Critical control	Control support	
<b>Ventilate workplace (PC 1.3)</b>	01	The ventilation controls have been implemented to the specified design.
	02	Talk with a person who completes ventilation control inspections and maintenance to verify their knowledge of the control performance requirements.
	03	Validate a recently completed inspection of a ventilation control in the field with that person.
	04	The implemented ventilation control operates as designed
	05	Ventilating air is drawn from a pure source.
	06	Airborne contaminants are being diluted or drawn away from the breathing zones of people in the area.
	07	People can explain the airborne contaminant hazards in their workplace, the health impacts of exposure to those hazards, the ventilation controls and actions required of them when controls are ineffective.
	08	Workers confirm ventilation controls are effective during production and maintenance processes.
	09	Workers confirm ineffective ventilation controls are rectified in a timely manner.
<b>Hygiene monitoring (MC 1.2)</b>	01	Workers participating in hygiene monitoring recall the sample period being representative of exposure during the shift.
	02	Workers participating in hygiene monitoring recall the activity they conducted during the shift being recorded by the person conducting the sampling.
	03	Workers participating in hygiene monitoring recall receiving a copy of the hygiene monitoring results.
	04	Workers recall being informed about the overall results of the hygiene monitoring program.
	05	Workers recall revised controls being implemented as a result of poor sample results.

<b>Health monitoring (MC 1.3)</b>	01	Confirm with a selection of workers they are required to attend health monitoring. Refer to the requirements outlined in the health control plan for their similar exposure group.
	02	Confirm with a selection of workers they were informed of the results of any health monitoring in which they participated. Examples may include the results of a chest X-ray, lung function test or a blood test.

## Assessment findings for surface coal mines

Overall, the assessment findings for surface coal mines were:

- 25 surface coal mines and CHPP were assessed
- 400 individual findings for the assessed criteria
- 48 assessment findings with enforcement action recorded
- 25 compliance notices were issued to 15 surface coal mines assessed.

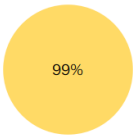
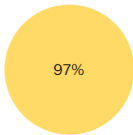
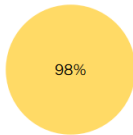
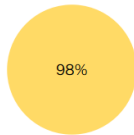
## Assessment overall ratings for surface coal mines

In summary the overall assessment findings for surface coal mines were:

- 98.0% assessment overall finding for the three critical controls assessed.

Figure 1 provides a summary assessment of the overall findings by critical control for surface coal mines.

Figure 1: Overall assessment findings by critical control for surface coal mines

Threat	Consequence		Grand Total
1. Low oxygen environment 2. Dust raised into suspension 3. Hazardous chemicals in the atmosphere 4. Carcinogens in the atmosphere	One or more fatalities		
PC1.3	MC1.2	MC1.3	
Ventilate workplace	Hygiene monitoring	Health monitoring	
			

- Green (=100%)
- Yellow (>= 80% and <100%)
- Orange (>= 65% and <80%)
- Red (<65%)
- Not applicable

In summary the overall assessment ratings were 91% documented and implemented, 0.5% implemented but not documented, 0.8% documented but not implemented, 0.8% not documented and not implemented and 7.3% were not applicable.

Figure 2 provides an overall assessment findings ratings for surface coal mines.

Figure 2: Overall assessment findings ratings for surface coal mines

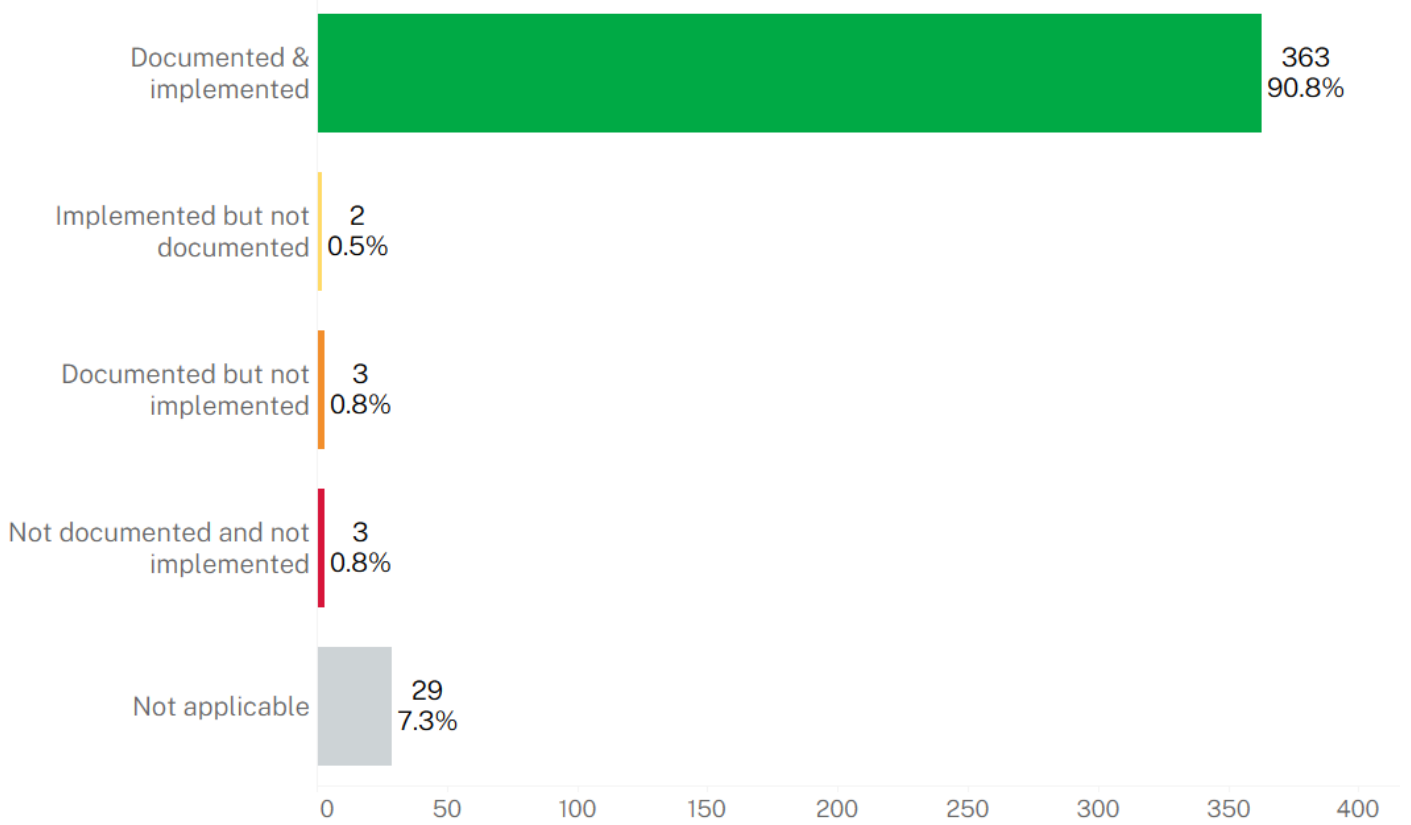


Figure 3 provides an overall assessment of the overall finding ratings by critical control for surface coal mines.

Figure 3: Overall assessment findings ratings by critical control for surface coal mines

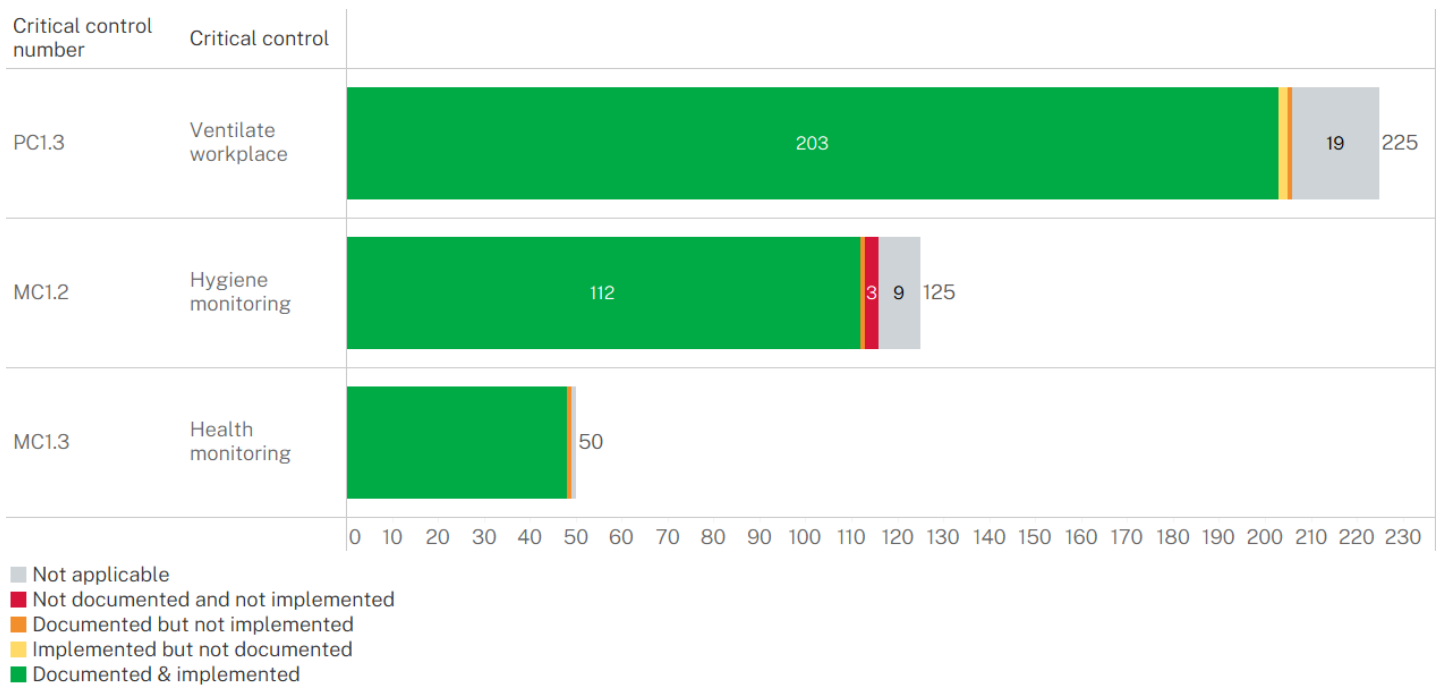


Figure 4 provides an overall assessment of the overall finding ratings by critical control and control support for surface coal mines.

Figure 4: Overall assessment findings ratings by critical control and control support for surface coal mines





## Notices issued to surface coal mines

In total, 25 assessments were conducted at surface coal mines.

In summary, there were 25 compliance notices issued to 15 of the 25 coal mines assessed comprising:

- 12 x section 191 improvement notices
- 13 x section 23 cause for concern notices.

Note: Eleven of the 12 section 191 compliance notices issued related specifically to human exposure to hazardous atmospheres at surface coal mines.

Ten of the 13 section 23 compliance notices issued related specifically to human exposure to hazardous atmospheres at surface coal mines.

Table 3 lists the compliance notices issued by type and number.

Table 3: Notices issued for surface and underground coal mines

Category	
WHS(MPS)A s23 notice of concerns	13
WHS s191 improvement notice	12
Grand Total	25

## Recommendations for surface coal mines

Based on the findings outlined in this report and in relation to the numbers and types of compliance notices issued during the assessment of human exposure to hazardous atmospheres at surface coal mines, it is recommended that the following topics should be reviewed by operators of surface coal mines:

Review the site air quality or dust or other airborne contaminants principal hazard management plan, in particular:

- welding and grinding generated dust reduction and containment controls
- plant in-cabin dust generation sources and dust collection and removal maintenance standards
- workshop dust generation sources and dust collection and removal maintenance standards
- supervisor information communication and training for monitoring and reporting requirements for exposures to hazardous atmospheres, awareness of non-compliance with dust management standards and personal protection and health monitoring systems at the site
- worker and contractor information communication and training in potential exposures to hazardous atmospheres, dust management standards and personal protection and health monitoring systems at the site
- Resources Regulator web-published information related to:
  - [Dust diseases web page](#)

- Standards for respirable dust
- Reporting requirements
- Planned assessment for exposure to dust and airborne contaminants.
- [Dust diseases tool kit web page](#)
- [Fact sheet to assist operators in identifying appropriate health monitoring providing](#)
- [Fact sheet: Airborne contaminants – coal mines](#)
- [Fact sheet: Understanding health monitoring](#)
- [Fact sheet: Principal hazard – air quality or dust or other contaminants – exposure to dust and airborne contaminants in excess of OEL](#)

## Further information

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

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Email	<a href="mailto:cau@regional.nsw.gov.au">cau@regional.nsw.gov.au</a>
Incident reporting	To report an incident or injury call 1300 814 609 or log in to the <a href="#">Regulator Portal</a>
Website	<a href="http://www.resources.nsw.gov.au">www.resources.nsw.gov.au</a>
Address	Resources Regulator 516 High Street Maitland NSW 2320

## Appendix A – Assessment criteria rating

Each assessed criteria is rated from one to 4 based on evidence supporting the expected control supports identified at the mine site.

Evidence supporting expected control supports

Expected control supports	Rating	Evidence supporting rating / comments				
	<table border="1"> <tr> <td>4</td> <td>3</td> </tr> <tr> <td>2</td> <td>1</td> </tr> </table>	4	3	2	1	
4	3					
2	1					

Assessment findings results are calculated based on the total points allocated to the assessed ratings as a percentage of the maximum possible points for each criteria group, and any findings rated as ‘Not applicable’ were excluded from the calculation.

Criteria assessed ratings and points

Assessed as	Rating	Points
Documented & implemented <b>Compliant</b>	4	4
Implemented but not documented <b>Improvement needed</b>	3	2
Documented but not implemented <b>Significant improvement needed</b>	2	1
Not documented and not implemented <b>Non compliant</b>	1	0
Not applicable (N/A)		

Findings results (points) with colours assigned as follows:

- Green (=100%)
- Yellow (>= 80% and <100%)
- Orange (>= 65% and <80%)
- Red (<65%)
- Not applicable