Coal Services

Industry Forum

# Airborne Contaminants and Health Surveillance

# Agenda – Session 1

Coal Services

1. Standing Dust Committee overview
2. Resources Regulator update
3. 2024 Order 42 airborne dust results and trends
4. Diesel particulate matter and impact of proposed WEL
5. 2024 example exceedances and learnings
6. Control considerations and learnings

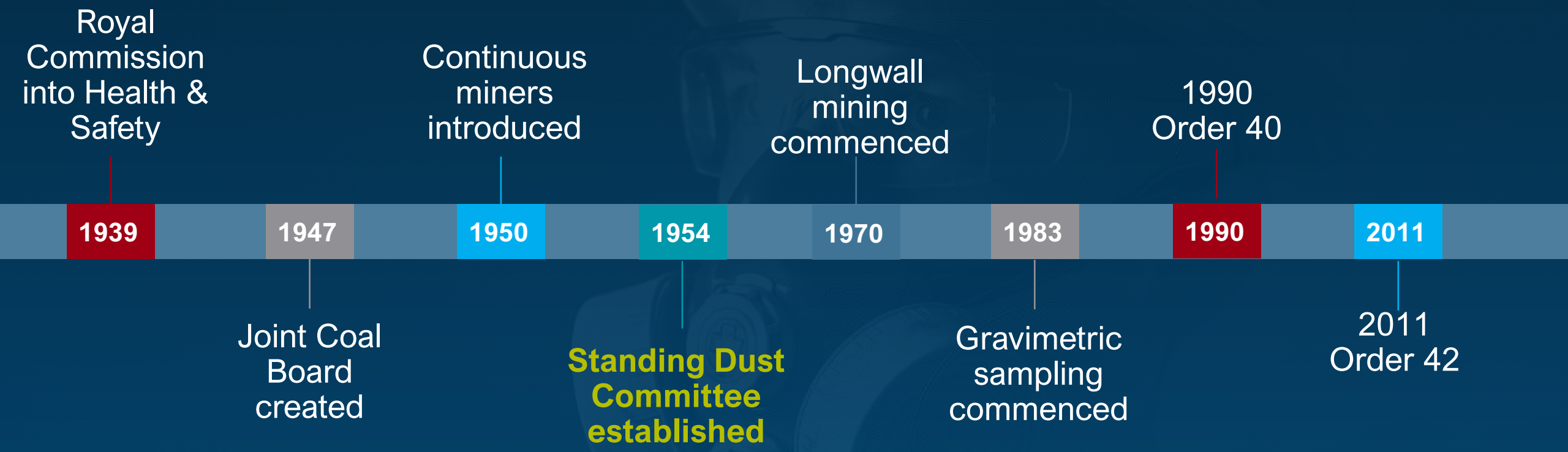
Coal Services

# Standing Committee on Airborne Contaminants and Occupational Hygiene

## (Standing Dust Committee)

# Standing Dust Committee origins and overview

Coal Services



# Standing Committee on Airborne Contaminants and Occupational Hygiene

Coal Services

## Current industry representatives

| | |
|---|---|
| Chair: | Lucas Boyne |
| Deputy Chair: | Scott McNally |
| Secretary: | Ricki Hainzer |
| NSW Resources Regulator: | Anthony Margetts, Karen Tripp, Emma Aynscough |
| NSW Minerals Council: | Frank Fulham, James Barben |
| Mining and Energy Union: | Steve Barrett, Tony Watson |
| Mine Managers Association Australia: | Greg Shields, Roger Biddle |
| Independents: | Rob Regan, Peter Knott |
| Coal Services (Hygiene): | Dr Kerrie Burton |
| Coal Services (Health): | Dr David Meredith |
| Coal Services (Technical): | Alaster Wylie |

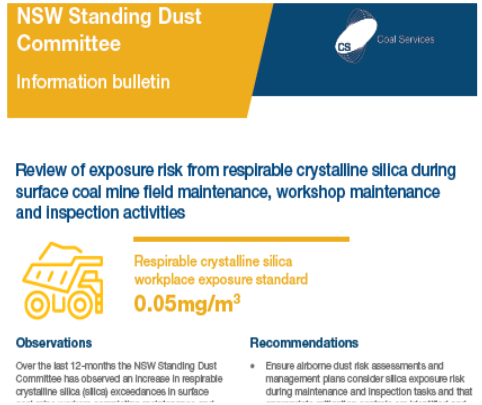
# Standing Committee on Airborne Contaminants and Occupational Hygiene

Coal Services

Exposure results and hazard trends

Health trends

Exposure control and research




Information and education

NSW Resources
Resources Regulator

# Airborne Contaminants Update

## Standing Dust Committee Forum

Karen Tripp
Senior Mine Safety Officer – Occupational Hygiene

June 2025

# Airborne Contaminants Update

**Section 1 – Changes to regulations and exposure limits**

Respirable Crystalline Silica Regulations

Exposure Limit Changes

**Section 2 – Regulatory guidance material**

Technical Reference Guide – Airborne Dust

Technical Reference Guide – Diesel Engine Pollutants

# 1

# Changes to WHS Regulations and Exposure Limits

# Model WHS Silica Regulations

- Crystalline Silica Substances (CSS) defined as any material containing at least 1% crystalline silica.
- New duty for the “processing” of CSS to be controlled. The term processing includes use of roadheaders, quarrying and mechanical screening.
- The process of ‘control’ aligns with the WHS (MPS) Regs requirement for an Air Quality PHMP, Risk Assessment and use of Hierarchy of Control.
- Duty to provide ‘*approved*’ training for workers performing high risk CSS work.
- Use of Respiratory Protective Equipment as a ‘control’ must comply with the respiratory protective device standards AS/NZS 1716 and AS/NZS 1715

**Most NSW coal operations will fall into the category of “processing a CSS” under the new Regs.**

**Mine Operators must review Airborne Contaminants PHMP and worker training to ensure compliance with Regs.**

**Tight-fitting RPE must be fit-tested and workers are required to be clean shaven when wearing tight-fitting respirators.**

**Stronger regulation of crystalline silica substances**
From 1 September 2024, the stronger regulation of all crystalline silica substances is in effect.

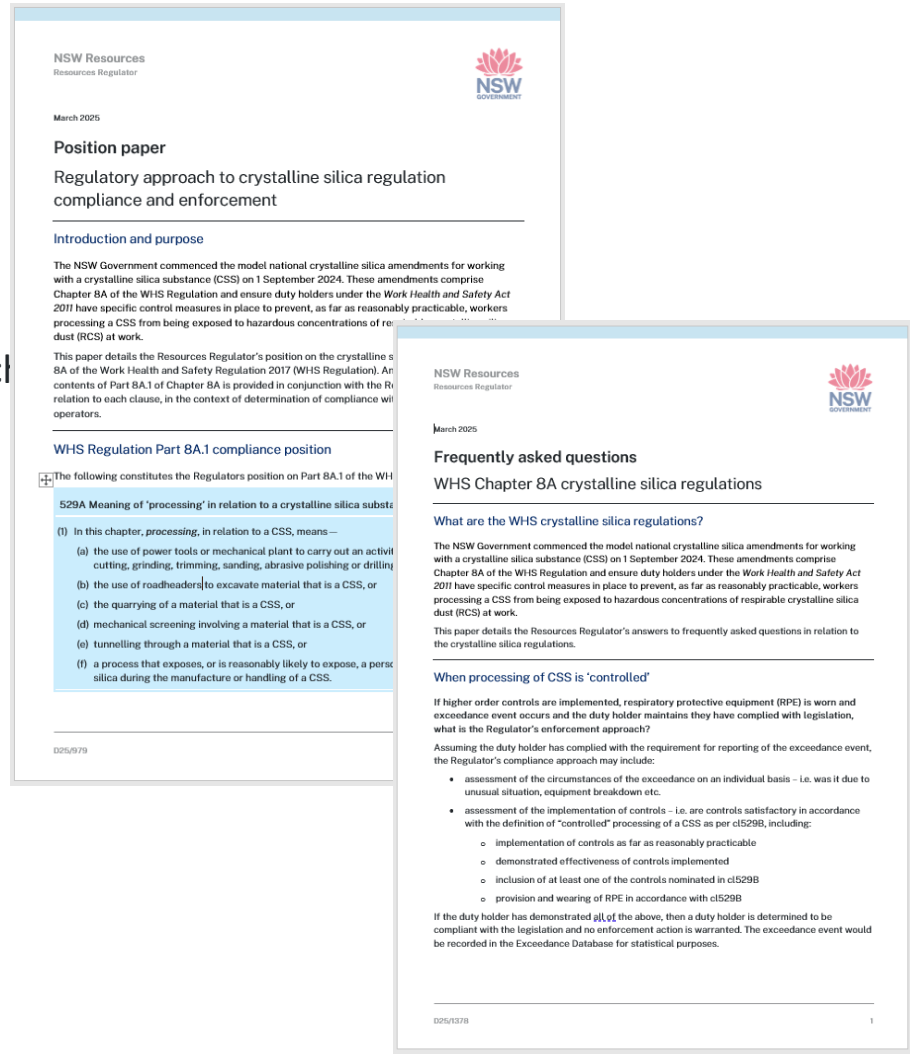
# Model WHS Silica Regulations

## Position Paper - Regulatory approach to crystalline silica regulation compliance and enforcement

- Details RR position for inspectors to convey to mine operators
- Itemised list of the Part 8A.1 Regulations and Regulator's position in relation to each clause in terms of determination of compliance.

## Frequently Asked Questions - WHS Chapter 8A crystalline silica regulations

- Compliance and enforcement approach for specific scenarios:
  - provision, wearing and types of RPE
  - assessing effectiveness of higher order controls
  - cabin enclosures minimum standards
  - escalation approach for continued exceedances of silica exposure levels


NSW Resources
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March 2025

Position paper

Regulatory approach to crystalline silica regulation compliance and enforcement

Introduction and purpose

The NSW Government commenced the model national crystalline silica amendments for working with a crystalline silica substance (CSS) on 1 September 2024. These amendments comprise Chapter 8A of the WHS Regulation and ensure duty holders under the *Work Health and Safety Act 2011* have specific control measures in place to prevent, as far as reasonably practicable, workers processing a CSS from being exposed to hazardous concentrations of respirable crystalline silica dust (RCS) at work.

This paper details the Resources Regulator's position on the crystalline s
8A of the Work Health and Safety Regulation 2017 (WHS Regulation). An
contents of Part 8A.1 of Chapter 8A is provided in conjunction with the R
relation to each clause, in the context of determination of compliance wi
operators.

WHS Regulation Part 8A.1 compliance position

The following constitutes the Regulators position on Part 8A.1 of the WH

529A Meaning of 'processing' in relation to a crystalline silica substa

(1) In this chapter, *processing*, in relation to a CSS, means—

(a) the use of power tools or mechanical plant to carry out an activit
cutting, grinding, trimming, sanding, abrasive polishing or drillin

(b) the use of roadheaders to excavate material that is a CSS, or

(c) the quarrying of a material that is a CSS, or

(d) mechanical screening involving a material that is a CSS, or

(e) tunnelling through a material that is a CSS, or

(f) a process that exposes, or is reasonably likely to expose, a pers
silica during the manufacture or handling of a CSS.

D25/979

NSW Resources
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March 2025

Frequently asked questions

WHS Chapter 8A crystalline silica regulations

What are the WHS crystalline silica regulations?

The NSW Government commenced the model national crystalline silica amendments for working with a crystalline silica substance (CSS) on 1 September 2024. These amendments comprise Chapter 8A of the WHS Regulation and ensure duty holders under the *Work Health and Safety Act 2011* have specific control measures in place to prevent, as far as reasonably practicable, workers processing a CSS from being exposed to hazardous concentrations of respirable crystalline silica dust (RCS) at work.

This paper details the Resources Regulator's answers to frequently asked questions in relation to the crystalline silica regulations.

When processing of CSS is 'controlled'

If higher order controls are implemented, respiratory protective equipment (RPE) is worn and exceedance event occurs and the duty holder maintains they have complied with legislation, what is the Regulator's enforcement approach?

Assuming the duty holder has complied with the requirement for reporting of the exceedance event, the Regulator's compliance approach may include:

- assessment of the circumstances of the exceedance on an individual basis – i.e. was it due to unusual situation, equipment breakdown etc.
- assessment of the implementation of controls – i.e. are controls satisfactory in accordance with the definition of "controlled" processing of a CSS as per cl529B, including:
  - implementation of controls as far as reasonably practicable
  - demonstrated effectiveness of controls implemented
  - inclusion of at least one of the controls nominated in cl529B
  - provision and wearing of RPE in accordance with cl529B

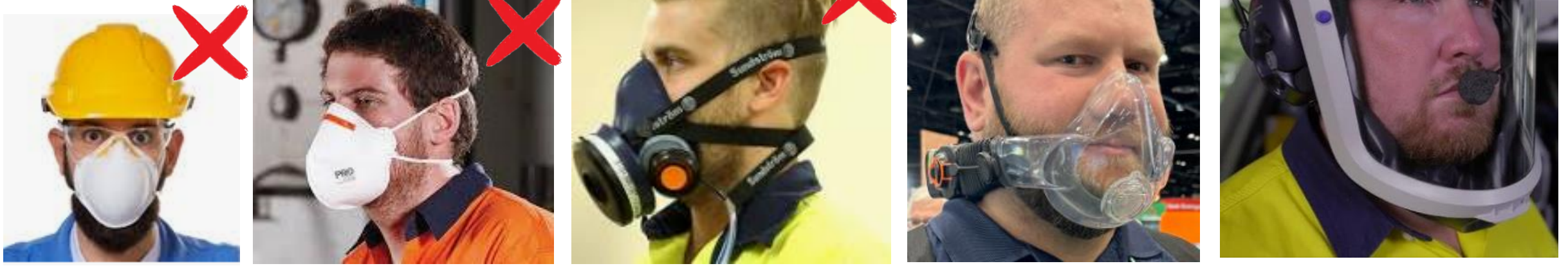
If the duty holder has demonstrated all of the above, then a duty holder is determined to be compliant with the legislation and no enforcement action is warranted. The exceedance event would be recorded in the Exceedance Database for statistical purposes.

D25/1378 1

# Model WHS Silica Regulations

## Reminder – RPE Requirements & fit-testing

- As per legislative requirements, all workers wearing tight-fitting RPE must:
  - be clean shaven (where the sealing area of the mask contacts the skin)
  - undertake and PASS a fit-test (recommended annually)

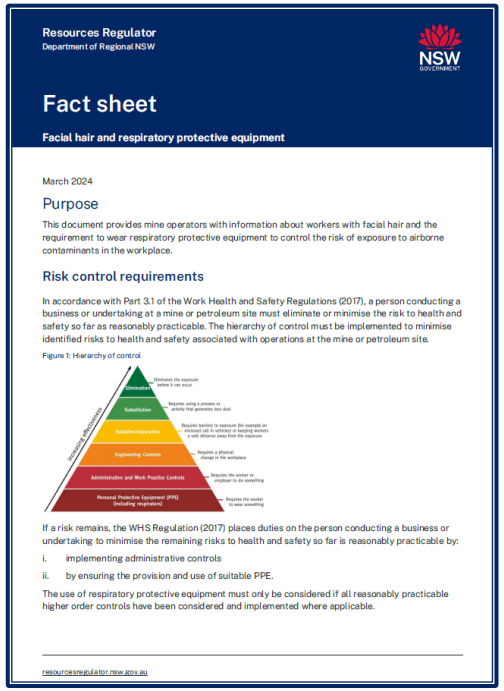
**Inspectors will be actively looking at RPE use during site inspections in respect to regulatory compliance.**

# Model WHS Silica Regulations

## Facial Hair and RPE Fact Sheet:

- PCBU Risk control requirements
- Facial fit of respirators via fit-testing
- Facial hair and adequate performance of RPE
- Workers not able/refusing to remove facial hair
- Relevant legislation and standards

**Available on the RR website**



Resources Regulator
Department of Regional NSW

Fact sheet

Facial hair and respiratory protective equipment

March 2024

Purpose

This document provides mine operators with information about workers with facial hair and the requirement to wear respiratory protective equipment to control the risk of exposure to airborne contaminants in the workplace.

Risk control requirements

In accordance with Part 3.1 of the Work Health and Safety Regulations (2017), a person conducting a business or undertaking at a mine or petroleum site must eliminate or minimise the risk to health and safety so far as reasonably practicable. The hierarchy of control must be implemented to minimise identified risks to health and safety associated with operations at the mine or petroleum site.

Figure 1: Hierarchy of control

If a risk remains, the WHS Regulation (2017) places duties on the person conducting a business or undertaking to minimise the remaining risks to health and safety so far is reasonably practicable by:

i. implementing administrative controls
ii. by ensuring the provision and use of suitable PPE.

The use of respiratory protective equipment must only be considered if all reasonably practicable higher order controls have been considered and implemented where applicable.

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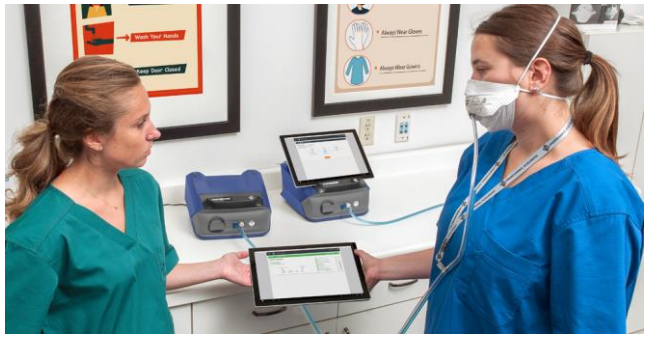
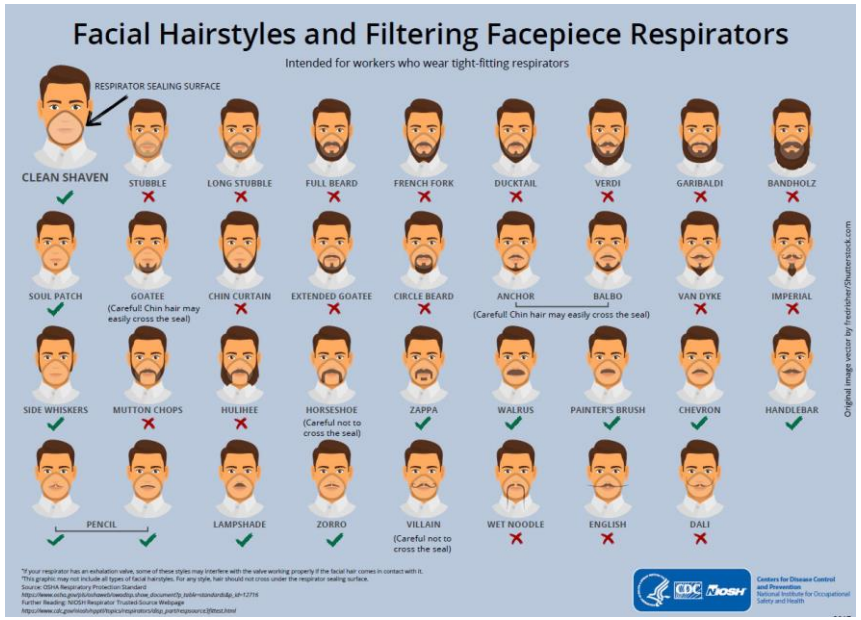




# Exposure Limit Changes

## Effective 1st December 2026

Revised version of Workplace Exposure Limits (WEL's) released April 2024.

- **Carbon Dioxide ($CO_2$) exposure limit** – will decrease:
  - 12,500ppm TWA reduced to 5,000ppm TWA
  - STEL remains same at 30,000ppm
  - **Exposure limits for $CO_2$ prescribed in the WHS (MPS) Regulations will remain in place.**
- **Nitric Oxide (NO) exposure limit** – will decrease:
  - 25ppm TWA reduced to 2ppm TWA
  - 92% reduction of current limit
  - Effects diesel particulate signature - likely to have a significant impact on the required minimum ventilation quantities to operate underground diesel plant

Workplace exposure limits for airborne contaminants

safe work australia

WES WEL

**Changes are coming!**

# Exposure Limit Changes

## Effective 1st December 2026

Revised version of Workplace Exposure Limits (WEL's) released April 2024.

- **Nitrogen Dioxide exposure limit** – proposed decrease:
  - 3ppm TWA reduced to 0.2ppm TWA
  - Remove existing STEL (5ppm)
  - WHS ministers will decide whether to implement the proposed change to the WES. No decision made yet.
- **DPM exposure limit** – introduced:
  - 0.01mg/$m^3$ as respirable elemental carbon
  - 10x lower than current limit in WHS (MPS) Regs
  - **Regulator likely to proposes alternative exposure limit depending on mine operation type.**

# Exposure Limit Changes

## Diesel Particulate Matter

- Introduction of DPM limit to SWA national exposure limits
- Limit is 10x lower that current limit in WHS (MPS) Regs
- Regulator has developed a Position Paper for consideration by Mine Safety Advisory Council (MSAC)
- Paper outlines the implementation issues of a DPM WEL of 0.01mg/$m^3$ at coal mines and underground metalliferous mines:
  - Potential for bias results in coal mines and underground metalliferous mines
  - Control actions to meet the lower standard may introduce other hazards in underground mine environments
- Regulator proposes the following exposure limits:
  - 0.05mg/m3 for all coal mines and underground metalliferous mines
  - 0.01mg/m3 for all other mines (open cut metalliferous and quarries)

# Exposure Limit Changes

## Respirable Crystalline Silica

SWA announced the potential further reduction of the WES for respirable crystalline silica

- Workplace Exposure Standard is currently 0.05 mg/m3
- Recommendations made for a further reduction to 0.025 mg/m3 (with a 3-year transition period)
- No date for proposed reduction at present
- Reduction will need to consider the ability of current measurement technologies in terms of limit of detection and measurement uncertainty.

# 2

# Regulatory Guidance Material

# Technical Reference Guide

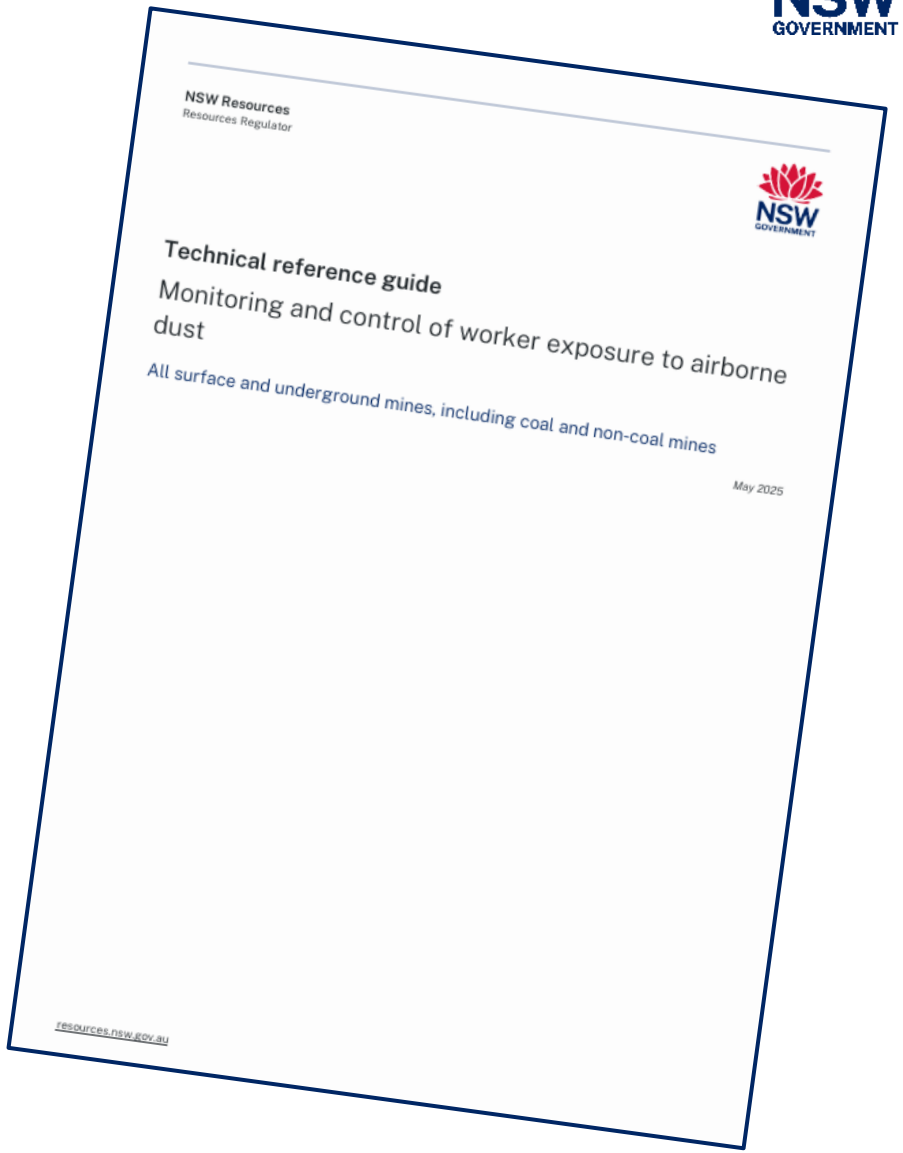
## Monitoring and Control of Worker Exposure to Airborne Contaminants

For Coal and Non-Coal, Underground and Large Surface mines.

Section 1: Provides technical guidance on ***exposure monitoring***, including:

- Competency requirements for exposure sampling
- Types of sampling
- Technical requirements for sampling
- Establishing Similar Exposure Groups (RR SEG group lists included)
- Strategies for developing monitoring programs (recognised methods)
- Interpretation of exposure monitoring results (statistical methods)
- Reporting and Investigation of exceedances

**Available on RR website**



# Technical Reference Guide

## Monitoring and Control of Worker Exposure to Airborne Contaminants

### *Competency Requirements:*

**Occupational Hygienist** - a person who:

- Holds professional grade membership of AIOH, or
- Is a COH /or equivalent, or
- Has Tertiary qualifications in Occupational Hygiene

→

- Development & review of exposure monitoring programs
- Conduct risk-based sampling

**Occupational Hygiene Technician** - a person who is trained in:

- W201 / OHTA201 Basic Principles of Occupational Hygiene
- M501 / OHTA501 Measurement of Hazardous Substances
- BSBWHS419 / BSBWHS409 Monitoring Respirable Dust in Coal Mines, Mineral Mines and Quarries (QLD)
- NATA accredited in sampling to relevant method
- Mine Air Quality Technician (WA)
- Mine Air Quality Officer (WA).

→

- Conduct risk-based sampling

**Note:** Any ***statutory sampling*** must be conducted by a person, independent from the mine, who holds a licence issued by the Regulator.

# Technical Reference Guide

## Monitoring and Control of Worker Exposure to Airborne Contaminants

### *Types of Sampling:*

**Personal Exposure Sampling** – to assess health risks

- **Baseline monitoring** – to assess current exposure of workers. Typically conducted over a 12–24-month period to cover variation in activities, operations, seasons etc. Minimum sample numbers determined by monitoring strategy selected.

- **Periodic monitoring** - to ensure the effectiveness of dust controls implemented. Provides and estimate of the exposure profile of the SEG. Minimum sample numbers and frequency of sampling determined by monitoring strategy selected.

**Static Sampling** – to identify hazards or potential exposure sources and evaluate controls


– **Area monitoring** – static sampling to determine airborne concentrations in particular locations; or to test if control measures are working. Real-time devices can also be used to monitor changes in dust concentration over time.

# Technical Reference Guide

## Monitoring and Control of Worker Exposure to Airborne Contaminants

### *Exposure Monitoring Strategies:*

⇨ enables valid estimates of exposures and assists in the development of robust control strategies

Acceptable monitoring strategies recommended in the TRG include, but are not limited to:

- **EN689:2018 Workplace exposure** - Measurement of exposure by inhalation to chemical agents - Strategy for testing compliance with occupational exposure limit values.
- **BOHS NVvA** - Testing Compliance with Occupational Exposure Limits for Airborne Substances (2022)
- **NIOSH** Occupational Exposure Sampling Strategy Manual (1977)
- **AIHA** strategy for assessing and managing occupational exposure (2006)
- **HSE Measurement Method** – Exposure Measurement: Air Sampling, COSHH Essentials General Guidance G409 (2022).


**Mines should seek guidance from a competent person (occupational hygienist) on the most suitable monitoring strategy to use at their site.**

# Technical Reference Guide

## Monitoring and Control of Worker Exposure to Airborne Contaminants


### *Interpretation of Exposure Monitoring Results:*

⇨ guidance on single sample exceedances and estimating SEG exposure profiles

**Single Sample Exceedances:**

- Any personal exposure result for inhalable dust, respirable dust, crystalline silica or DPM > WES is an exceedance
- Exceedance samples are STILL an exceedance even if RPE was worn.
- All exceedances for inhalable dust, respirable dust, crystalline silica or DPM must be reported to the Regulator.

**Estimating SEG Exposures:**

- Use of inferential statistics in accordance with selected sampling strategy to summarise exposure data and estimate exposure profiles.
- Various statistical tools can be used, such as IHSTAT, BWStat, Expostats etc.
- TRG provides examples of common measures used in various sampling strategies to indicate SEG exposure conformance with the WES.

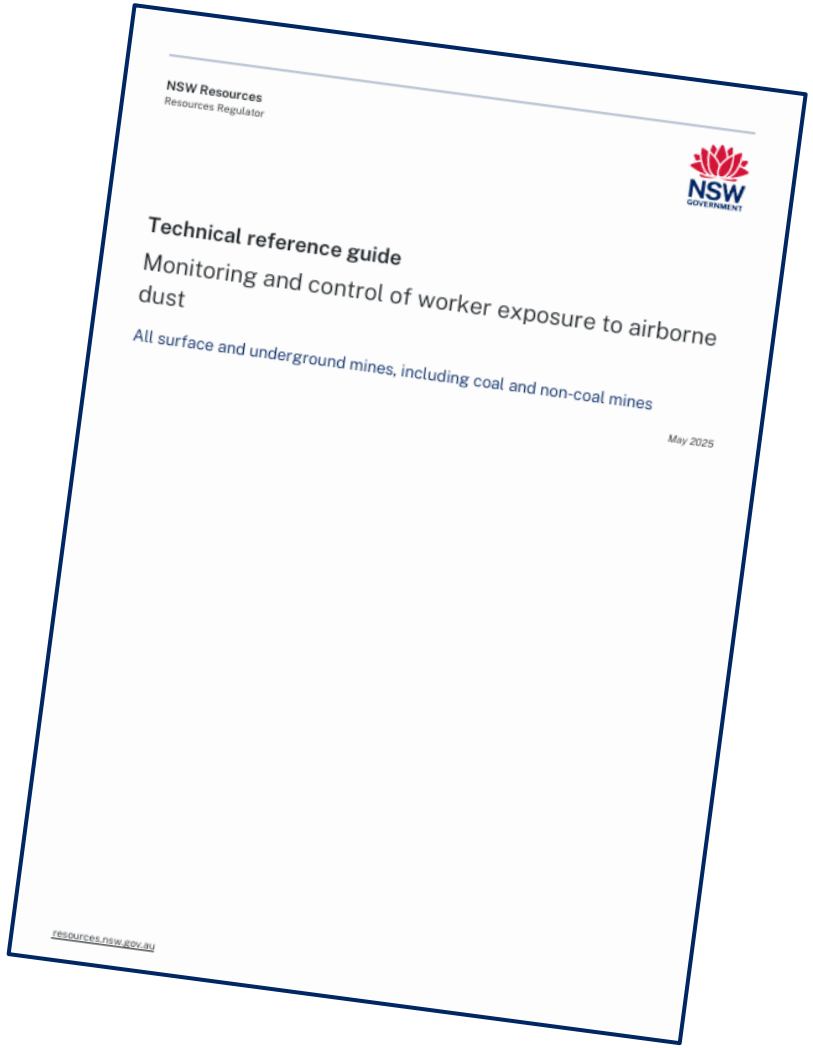
# Technical Reference Guide

## Monitoring and Control of Worker Exposure to Airborne Contaminants

Section 2: Provides technical guidance on ***exposure control***, including:

- Use of various control strategies – underground and surface operations
- Control scenario examples for specific processes, for example:
  - Crushing /Screening / Processing
  - Conveyors
  - Surface Roads
  - Electrical enclosures
  - Drill & Blast
  - Laboratory activities
  - Overburden / Waste Dumps / Stockpiles
  - Tyre fitting
  - Industrial /domestic cleaners
  - Groundskeepers
- Information on audit and review processes for controls

**Available on RR website**



# Technical Reference Guide

## Management of Diesel Engine Pollutants in Underground Environments

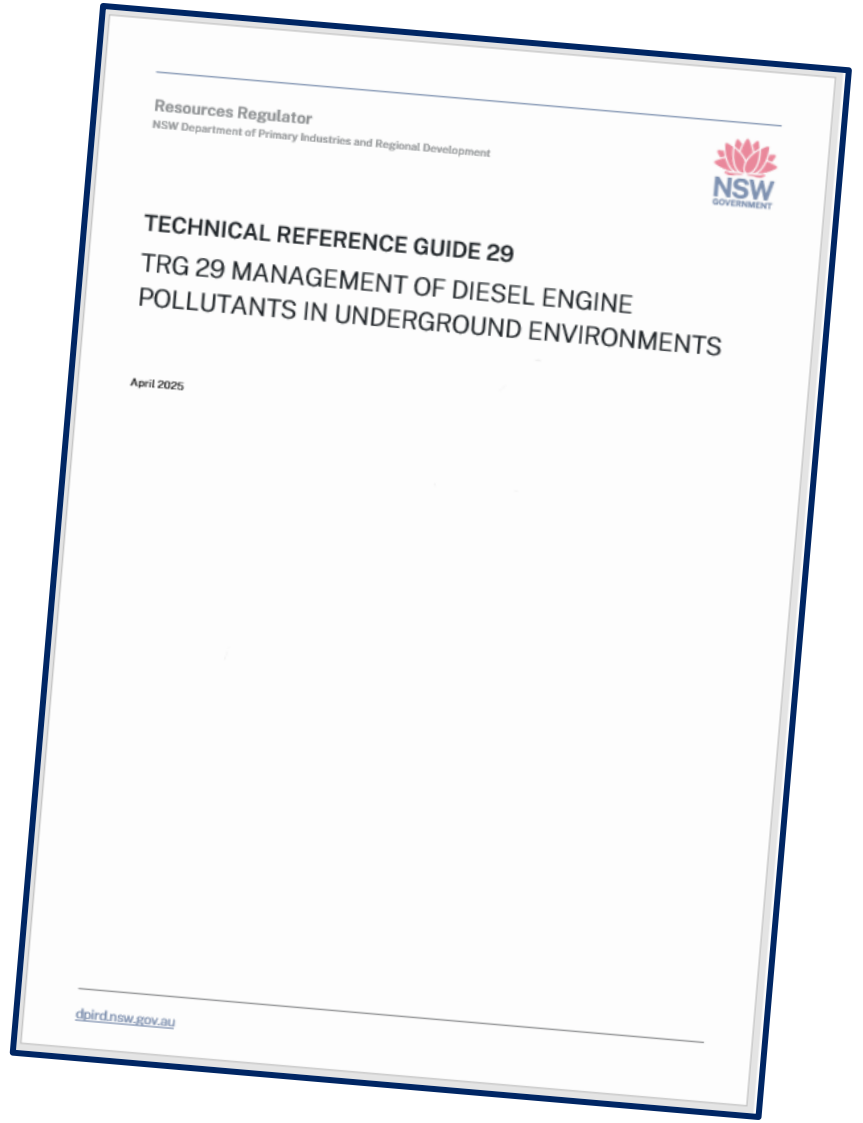
For Coal and Non-Coal Underground mines

Revised version of the old MDG29

The document provides technical guidance on good industry practice for mitigating and minimising the risks associated with the pollutants emitted by diesel engines in underground mines.

- Management of risk and control of diesel pollutants.
- Vehicle testing requirements, methodology, equipment and standards.
- Personal exposure monitoring and methodology for DPM, noise, vibration and heat generated by diesel plant equipment.

**Final revised version on track for website publication**



Coal Services

# 2024 Order 42

## Airborne dust monitoring results and DPM data trends

# Presentation Outline

Coal Services

1. Order 42/Schedule 6 monitoring
2. 2024 Order 42 monitoring results summary
3. DPM monitoring results and impact of revised WEL
4. Key trends

# Order 42/Schedule 6 Airborne Dust Monitoring

Coal Services

Respirable dust,
respirable quartz &
inhalable dust

Min. frequency
Each shift, 6-12 months

5 workers
monitored per shift
LW, Cont Miner, Outbye
Surface, CHPP

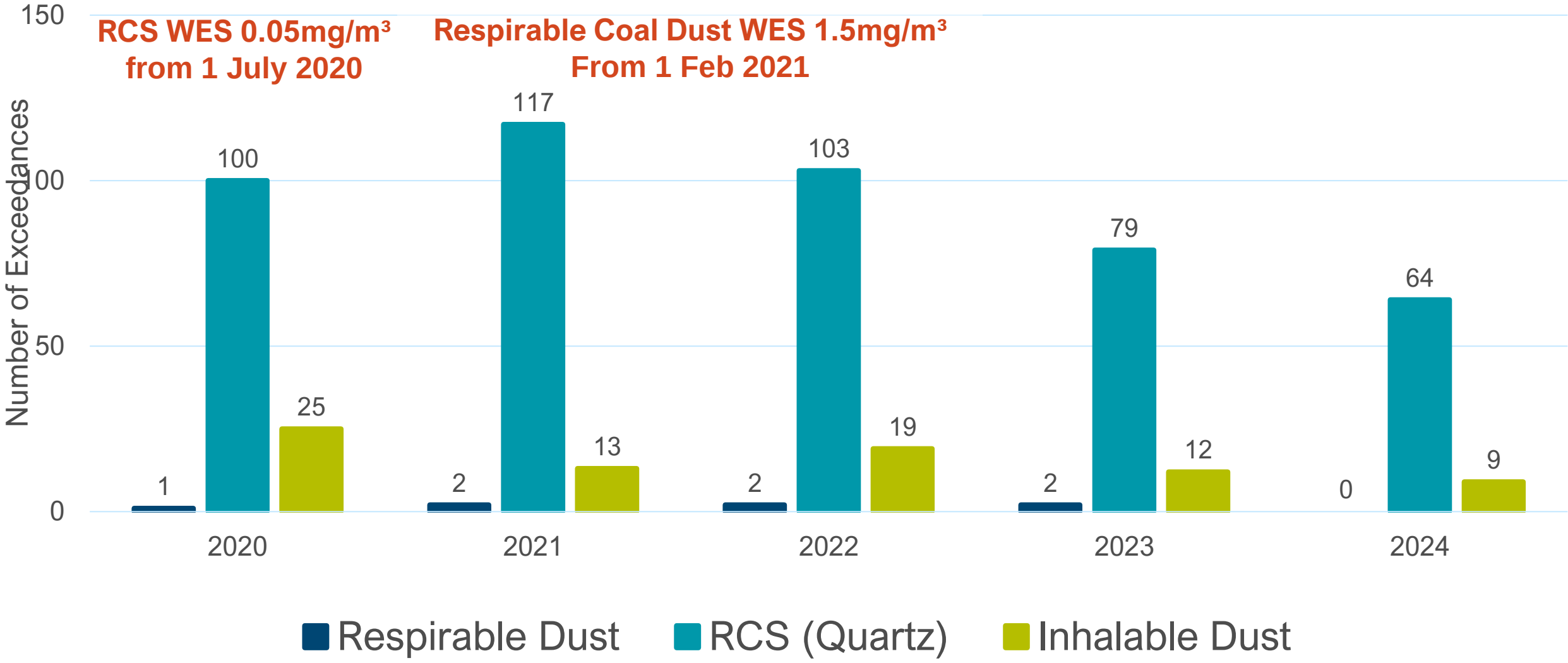
# 2024 monitoring data overview

Coal Services

| Statutory monitoring | Diesel Particulate Matter (DPM) (measured as sub-micron Elemental Carbon) |
|---|---|
| • Decreased exceedances — respirable dust (RD), respirable quartz (RCS) and inhalable dust (ID)<br>• Decreased exceedance rates — RD, RCS and ID<br>• Decreased average results — RD, RCS and ID<br>• Highest average exposure risk for RCS<br>– Longwall<br>– Continuous Miner<br>– Surface Drillers<br>– Blast Crew | • Decreased average results - underground<br>• All surface results ≤ 0.01 mg/m$^3$<br>• Majority of exceedances - longwall move<br>• Highest average exposure risk – longwall move |

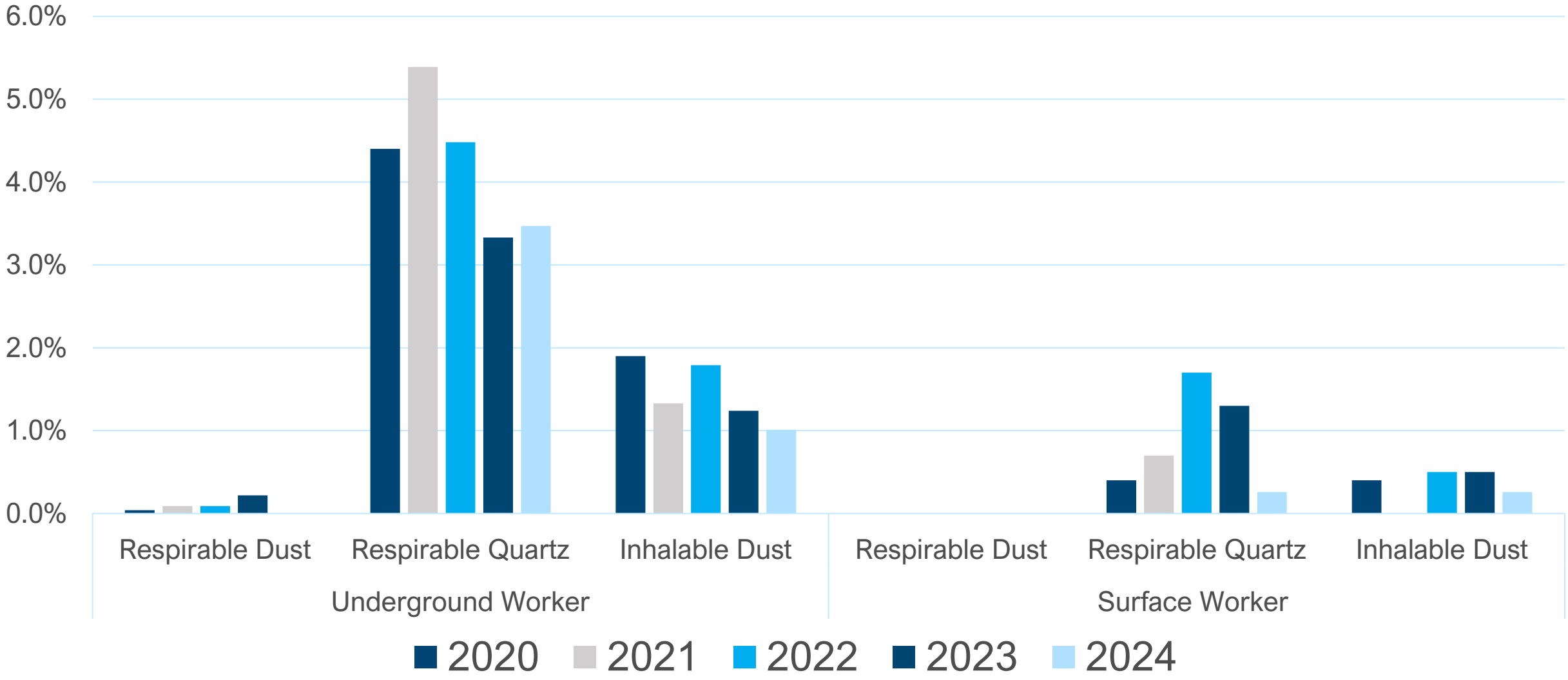
# Order 42 airborne dust monitoring exceedance trends

Coal Services

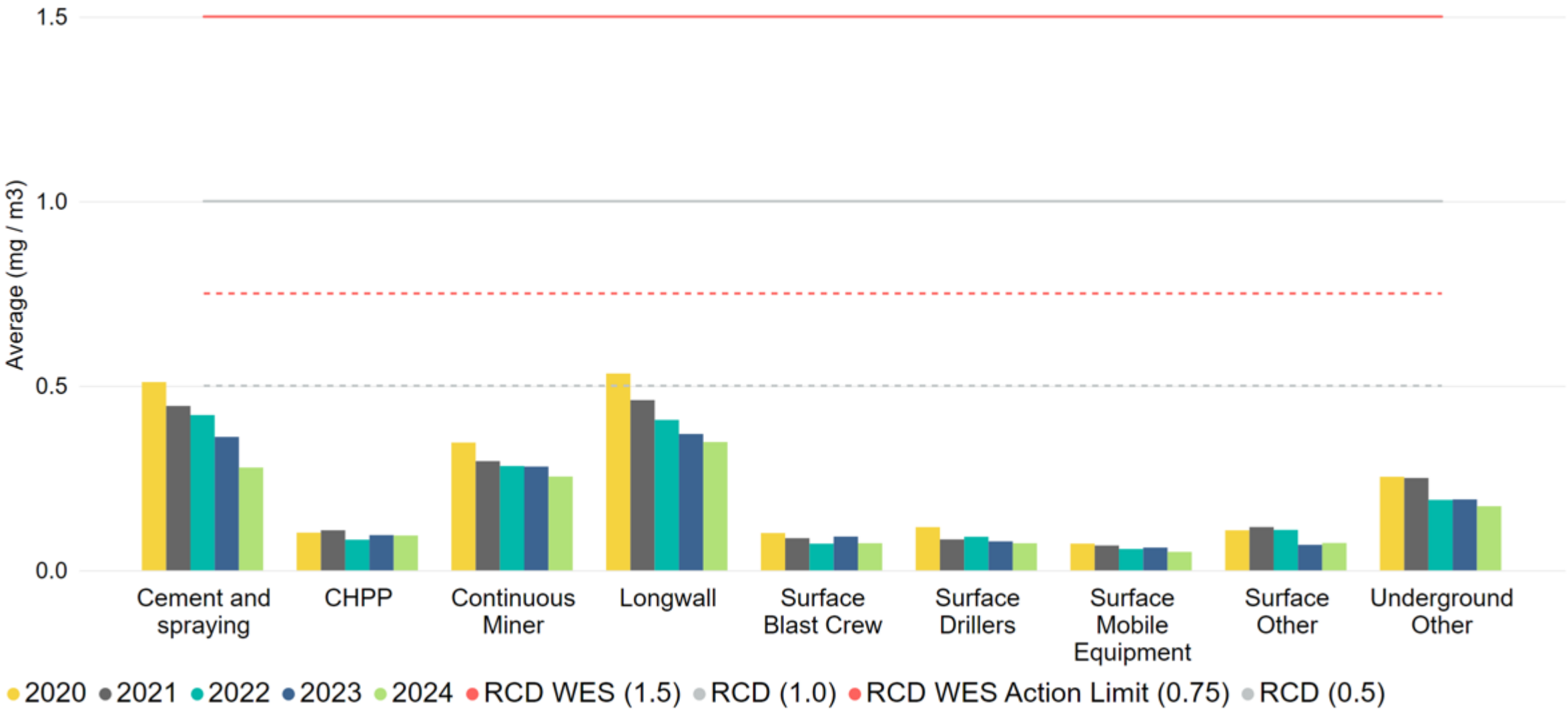



WES – workplace exposure standard

# 2024 Order 42 airborne dust monitoring exceedance rates



# Order 42, 5 year average respirable dust exposure




*Reduced WES may apply for some sites and SEG's, depending on shift roster patterns

# Order 42, 5 year average respirable quartz exposure

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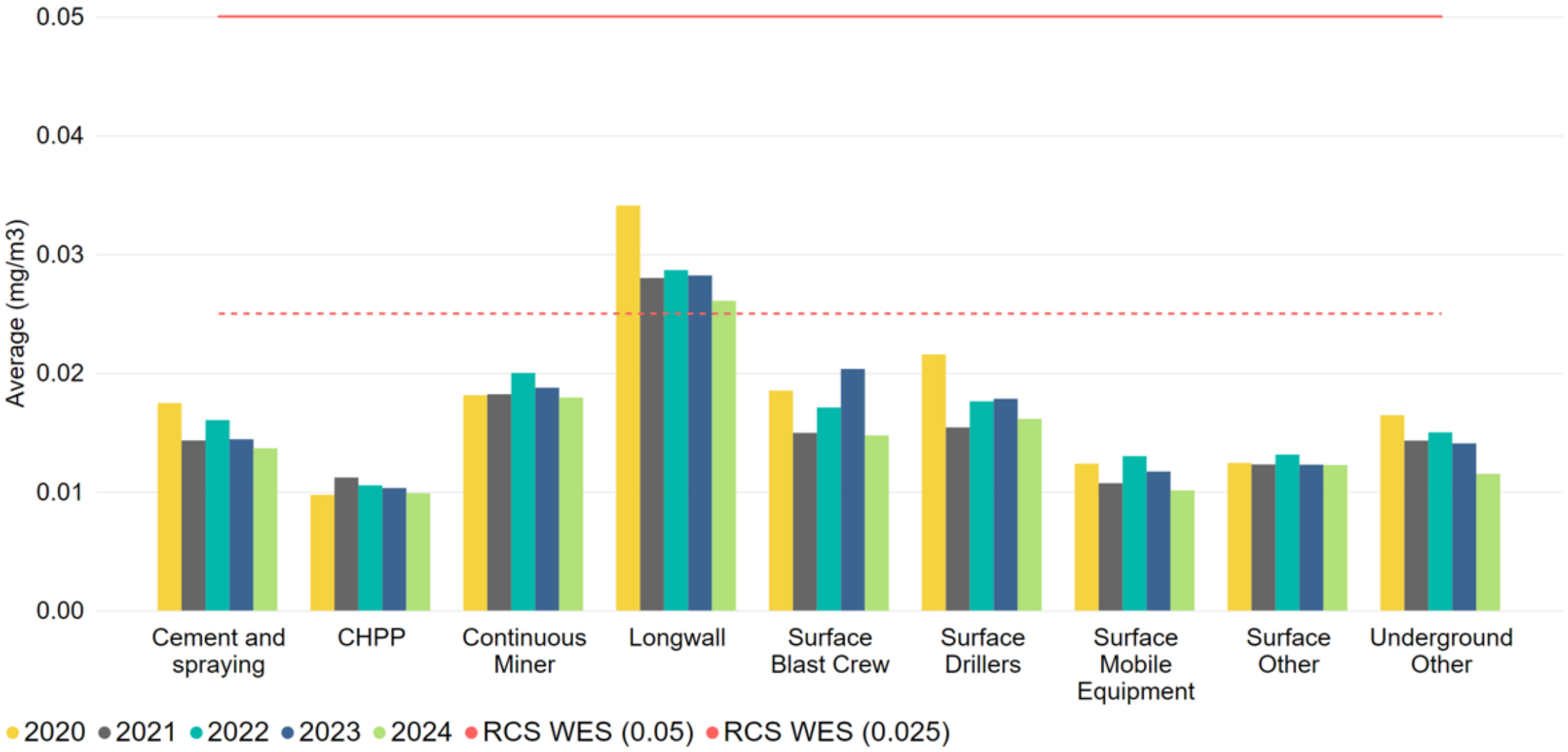
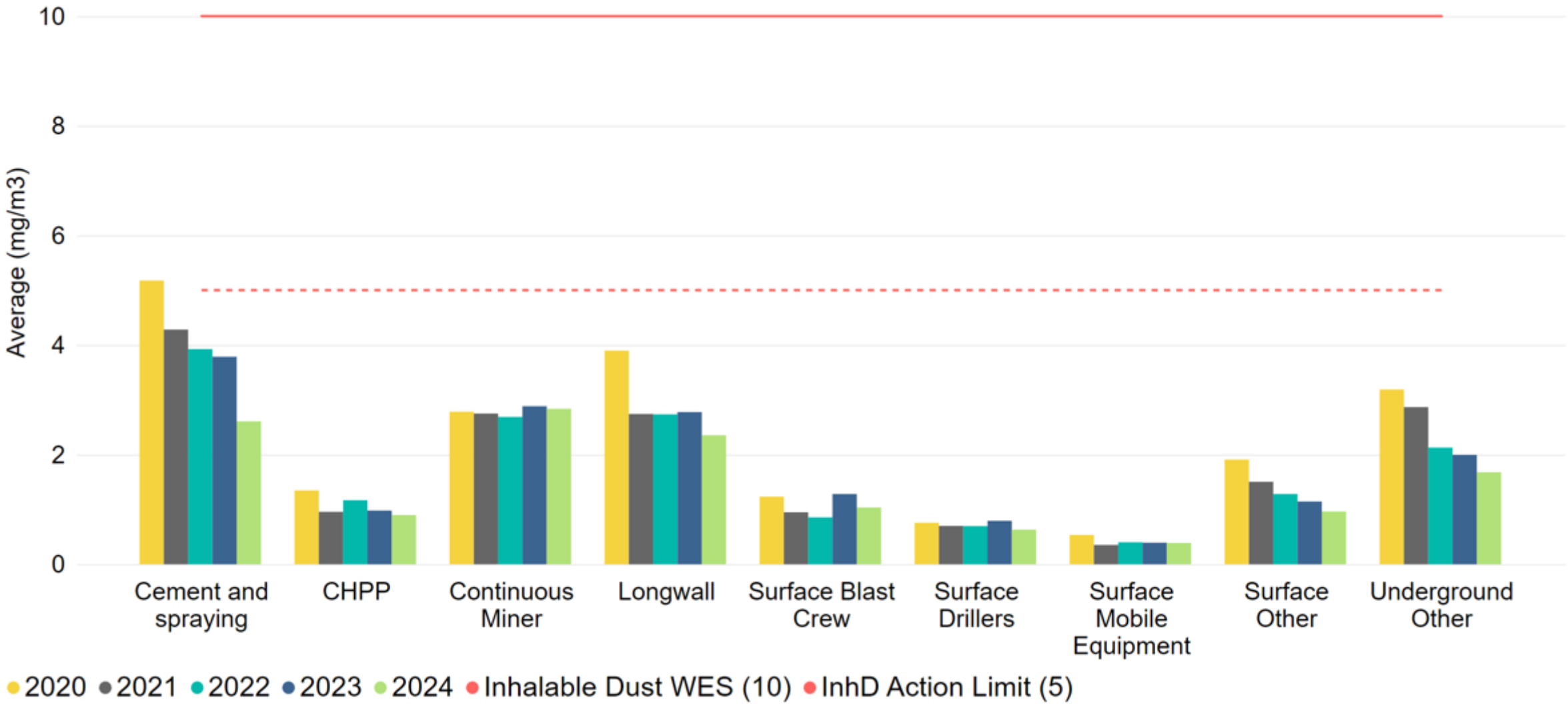



*Reduced WES may apply for some sites and SEG's, depending on shift roster patterns

# Order 42, 5 year average inhalable dust exposure



# 2024 Order 42 respiratory protective equipment use for WES exceedances

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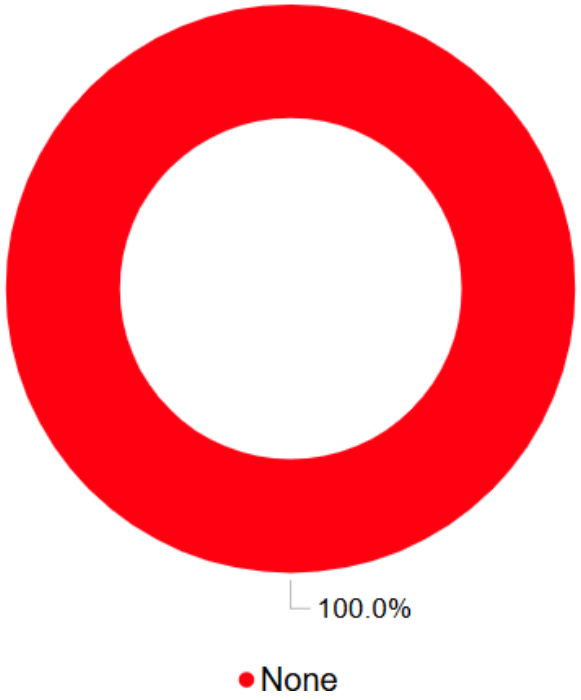
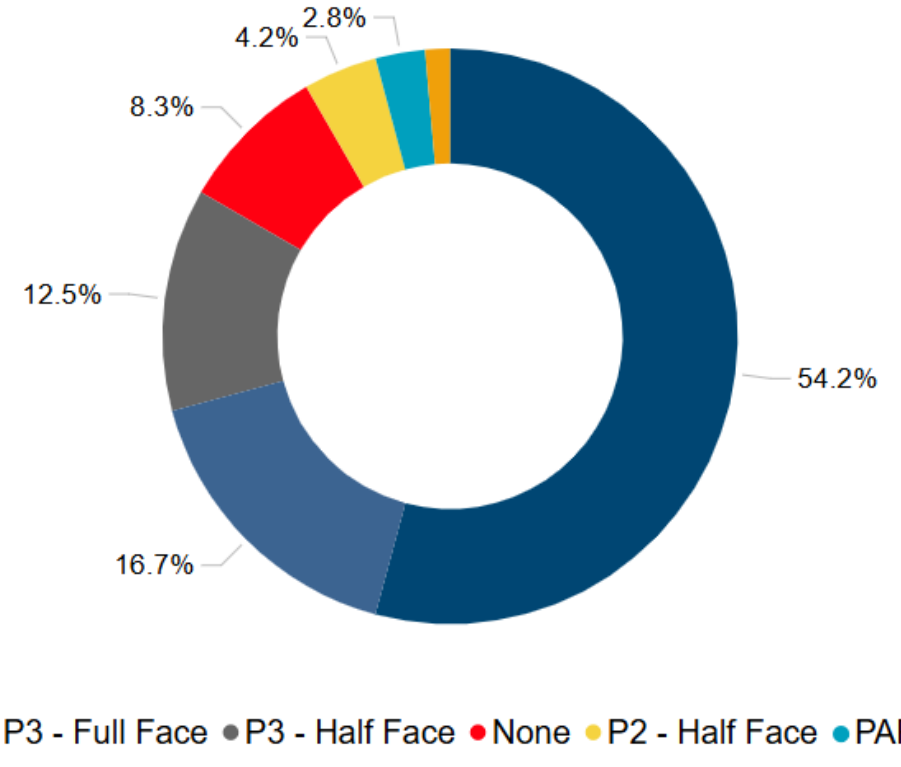
## Surface workers (n=1)




## Underground workers (n=63)



# 2024 Order 42 clean shaven status for WES exceedances

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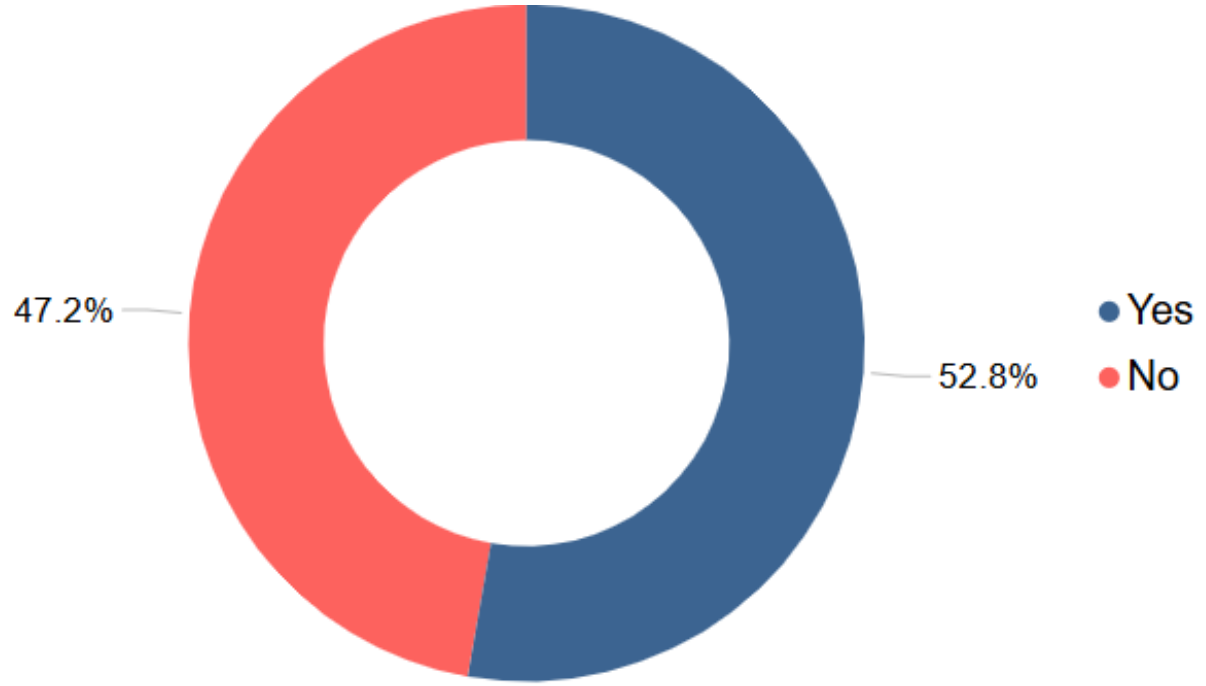
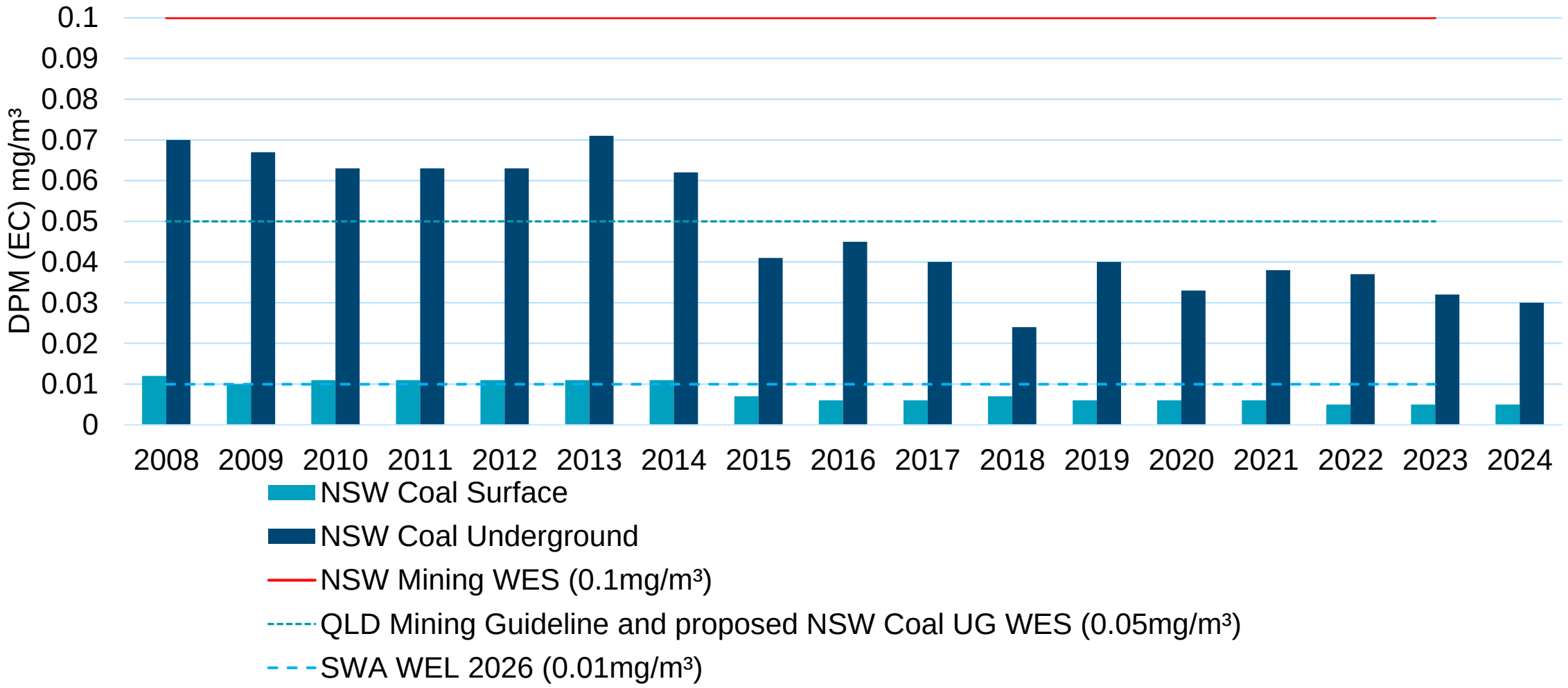
## Surface workers (n=1)


## Underground workers (n=63)



# Average NSW coal mine DPM (EC) exposure

## Coal Services 2008-2024



# Average NSW DPM (EC) exposure by site - LW move

## Coal Services Data - 2023 - 2024

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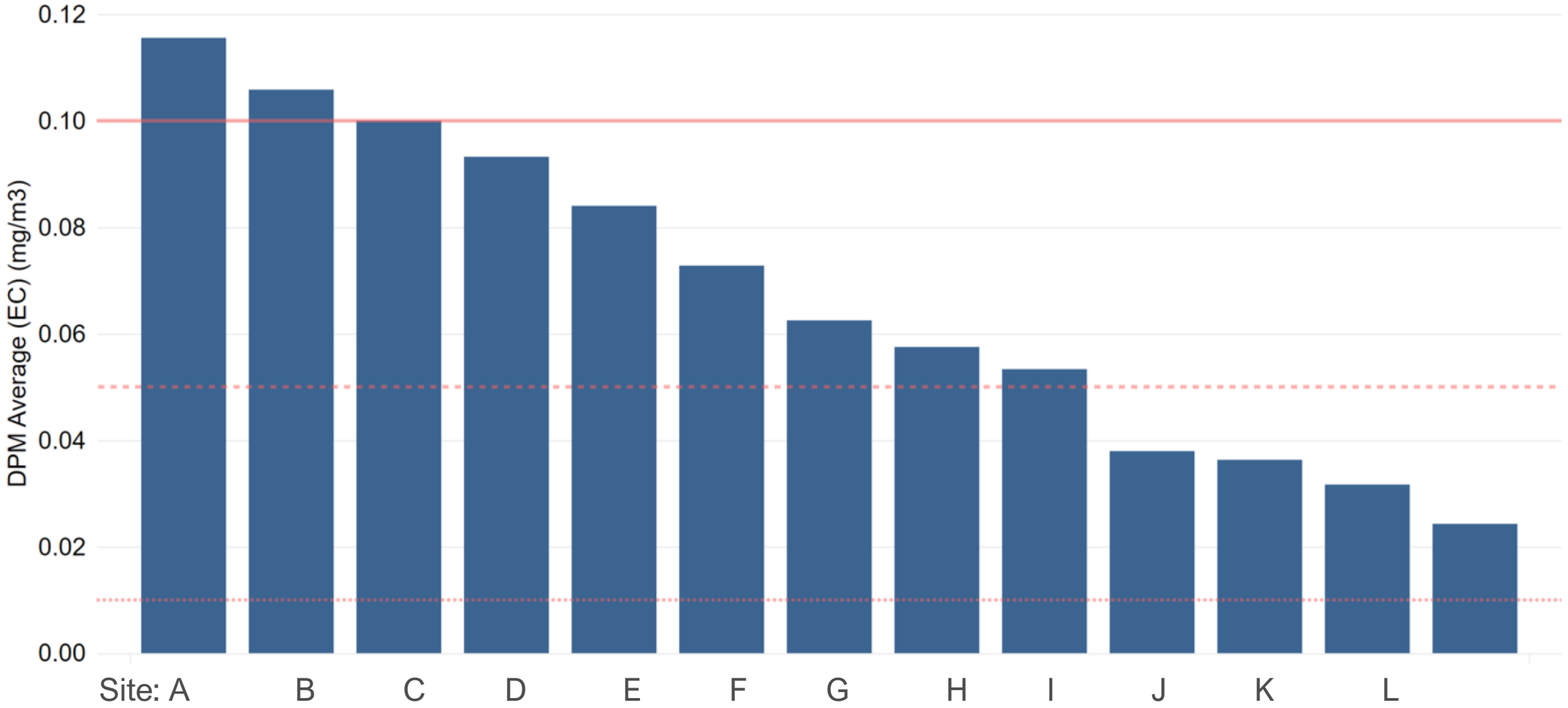


# DPM: 2024 Coal Services exceedance results comparison to proposed WES/WEL

Coal Services

| | Worker exceedances (n=640) | Underground worker exceedance rate (n=567) | Surface worker exceedance rate (n=73) |
|---|---|---|---|
| **Current WES 0.1mg/m³** | **27** | **4.8%** | **0.0%** |
| **Safework WEL 0.01mg/m³ From 1 December 2026** | **265** | **46.7%** | **0.0%** |
| **Qld coal guideline and proposed NSW UG WES 0.05mg/m³** | **65** | **11.5%** | **0.0%** |

# 2024 Monitoring Data – Key Trends

Coal Services

**Reductions in**

- respirable dust, RCS and inhalable dust exceedances and average results
- DPM average exposures

**No change in**

- Underground RCS exceedance rates

**Increases in**

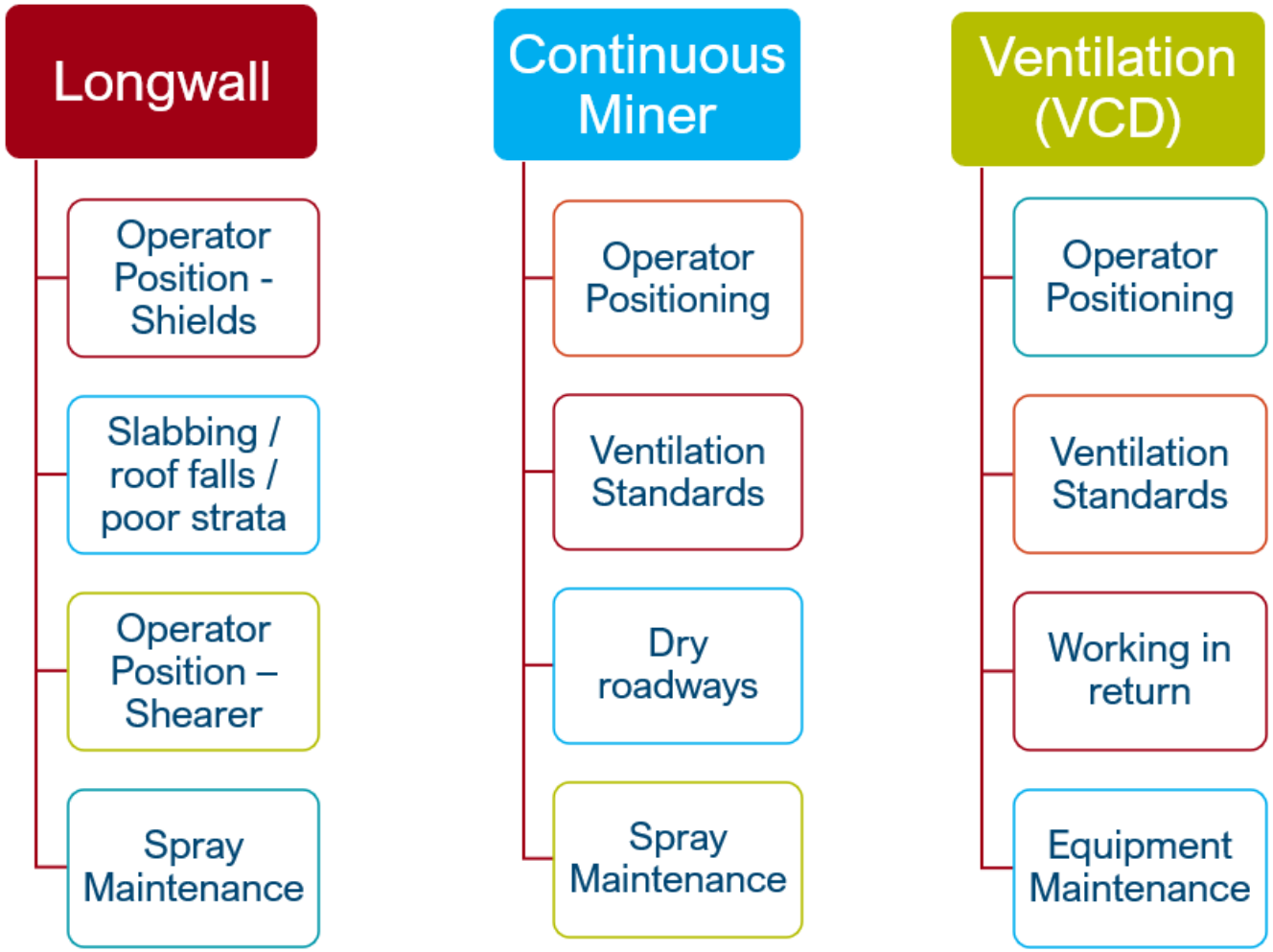
- anticipated number of DPM exceedances against revised WES, if additional controls not implemented
- Percentage of workers not wearing RPE when airborne dust results exceeded WES

Coal Services

# Example exceedances

# 2024 Underground Airborne Dust Exceedance Contributing Factors

Coal Services



# 2024 Order 42 underground dust monitoring

## Exceedance contributors and review findings — development

Coal Services

**Exceedance contributors**

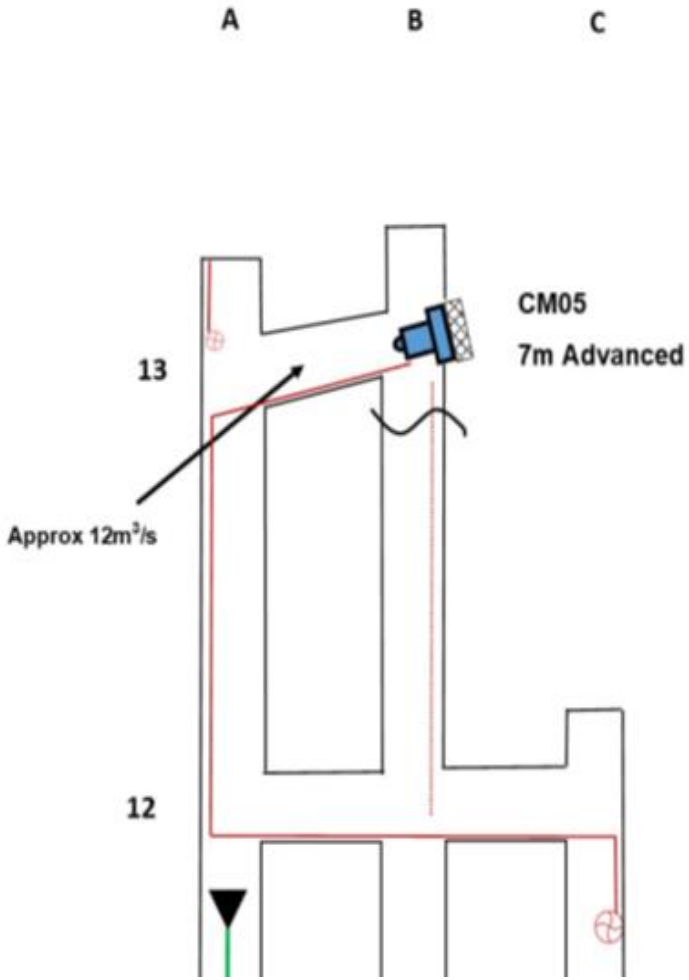
- Increase in poor ventilation standards during non – standard drivage
- Operators positioned in elevated dust levels
- Stone in the extraction profile

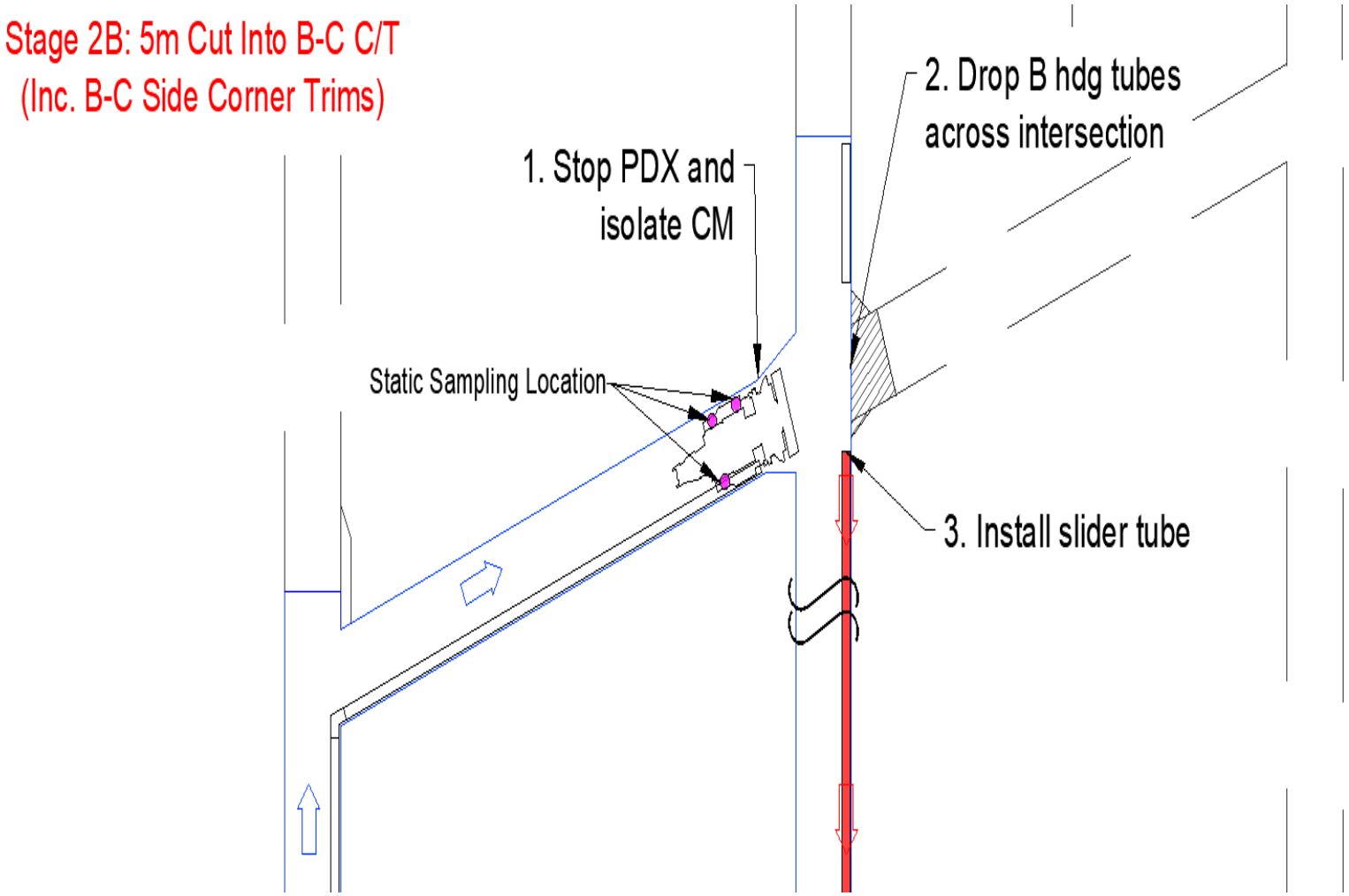
**Mine site review findings**

- Sequence ventilation plan not followed
- Greater cross-sectional area – reduced velocity
- Operator positioning review

# 2024 Order 42 underground dust monitoring

## Exceedance contributors and review findings — development

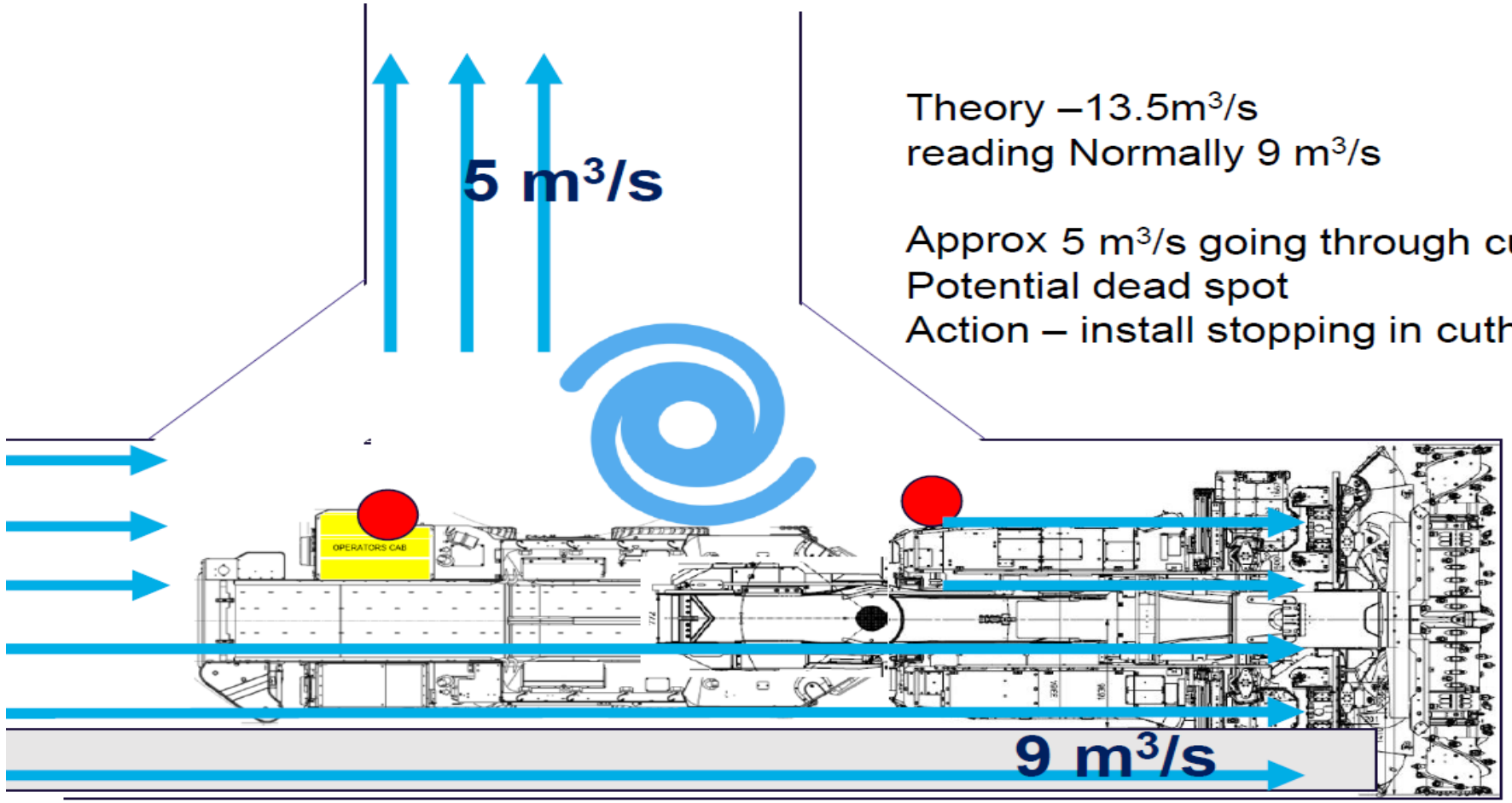


# 2024 Order 42 underground dust monitoring

## Exceedance contributors and review findings — development

Coal Services




Theory –13.5m³/s
reading Normally 9 m³/s

Approx 5 m³/s going through cuthrough
Potential dead spot
Action – install stopping in cuthrough

# Order 42 UG exceedances – example 1

## Longwall respirable quartz exceedances

Coal Services

### Test information

Longwall Shearer Operator – production - exceeded the respirable quartz WES with results of 0.06mg/m³

### Exceedance contributing factors

- Slabbing, cavities, and roof material falling onto the AFC and pile-ups
- Roof delamination across the longwall face
- Operator positioning concerning slabbing and double chocking movements
- Longwall Airborne Dust TARP is non-prescriptive
- LW dust suppression sprays were not operating at 100%.

# Order 42 UG exceedances – example 1

## Longwall respirable quartz exceedances

Coal Services

**Site actions**

Update Longwall Airborne Dust TARP and communicate to longwall teams. Update to include triggers for abnormal conditions/at-risk conditions:

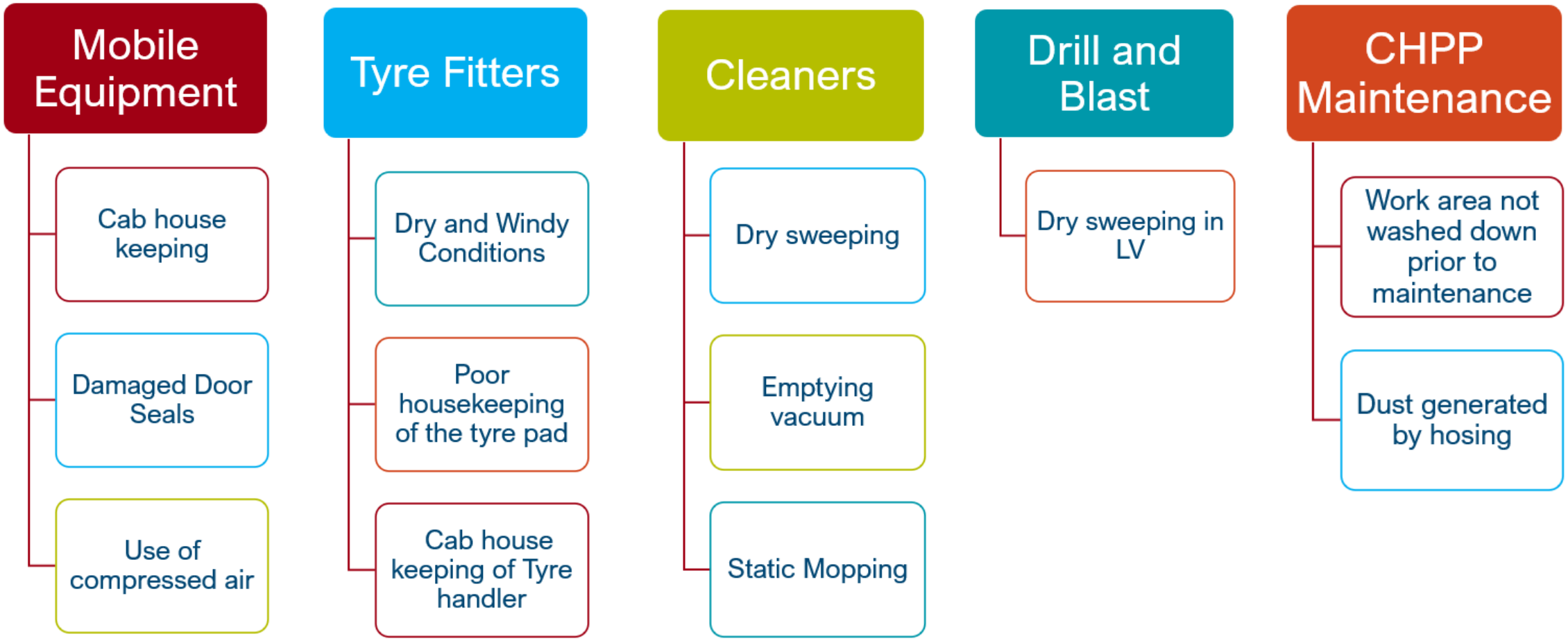
- Increased job rotation where double chocking
- Investigation into spray effectiveness to confirm the quantity of sprays that impact dust suppression

**Exceedance re-sample outcome**

- Resample completed all results below WES

# 2024 Surface Airborne Dust Exceedance Contributing Factors

Coal Services




Note: Only 1 O42 exceedance in 2024 (Drill and Blast)
RR supplied site reported contributing factors for 12 additional risk based exceedances

# Order 42 OC exceedances – example 1

## Excavator Operator respirable quartz exceedance

Coal Services

### Test information

An Excavator operator recorded a respirable quartz result of 0.06mg/m³.

### Exceedance contributing factors

- Damaged door seal
- Unreliable cab vacuum system
- Poor cabin housekeeping


Note: This exceedance occurred in 2025

# Order 42 OC exceedances – example 1

## Excavator Operator respirable quartz exceedance

Coal Services


# Order 42 surface exceedance – example 1

## Excavator operator respirable quartz exceedance

Coal Services

**Site actions**

- Installation of the Breathesafe system in the excavator fleet
- Investigate the option of engaging a third party to clean cabs of heavy vehicles periodically
- Communicate actions if cab seals are found to be damaged or if the cab has not been cleaned in heavy earthmoving equipment
- Repair or replace existing cab-mounted vacuum cleaners in excavators

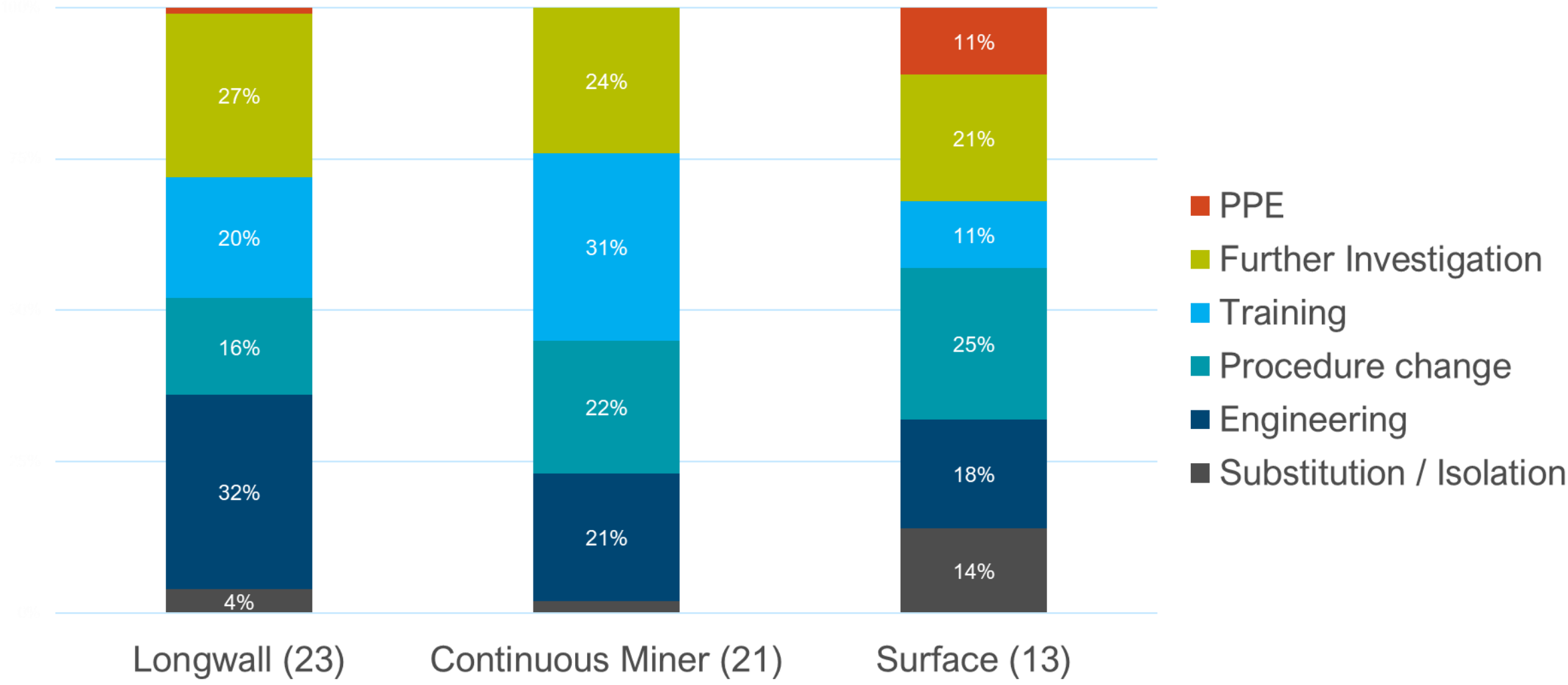
**Exceedance re-sample outcome**

- Additional controls observed
- Resample recorded Respirable Quartz results of 0.01 – 0.03mg/m³

Coal Services

# Control initiatives and learnings

# 2024 Dust Exceedance Mine Investigation Actions



# Underground Longwall Dust Control

Coal Services

| | |
|---|---|
| Automation | • Continued investment<br>• Reliability<br>• Controls required when automation not used |
| Operator positioning and task rotation | • Proximity detection<br>• Data driven – real time monitoring |
| Longwall airborne dust TARP | • RCS Risk<br>• Control degradation tolerance<br>• Real time dust monitoring |

# Underground Continuous Miner Worker Dust Control

Coal Services

| | |
|---|---|
| Operator Positioning & Task Rotation | • Data driven – real time monitoring |
| Ventilation Standards | • Review compliance with plan – intersections and breakaways |
| Outbye roadway maintenance | • Fixed real time dust monitors |

# Surface Worker Dust Control

Coal Services

| | |
|---|---|
| Cab Housekeeping | • Formalised pre-start cab cleaning check<br>• Vacuum cleaning |
| Cab Seals and Maintenance | • AS/NZS ISO 23875<br>• cabin air quality |
| Domestic Cleaner Practices | • Move to wet cleaning practices<br>• SEG exposure monitoring |
| Equipment Washdown | • Watercart use on tyre pads<br>• Formalised washdown requirements prior to maintenance activities |

# Dust Control References and Resources

Coal Services


Hygiene & Lab Services

- Standing Dust Committee
- Representation
- Publications and bulletins
- Dust Control References and Resources
  - Respirable Crystalline Silica
  - Diesel Particulate Matter (DPM)
  - Welding Fume
- Standing Dust Committee Forums


**How can we help?**

A vital part of our role as a Specialised Health and Safety Scheme involves assisting employers and workers to comply with relevant workplace laws and regulations.
Contact our team for more information.

View office locations

**ENQUIRE**

If you are looking for a specific part of the Coal Services organisation, or you're not sure who to contact, get in touch with our team.

## General

- Water Application and Sprays
- Conveyor belts and transfers
- Respiratory Protective Equipment

## Underground Mining

- Underground Longwall
- Underground Continuous Miner

## Surface Mining

- Mobile Equipment Cabs
- Drilling and Shot Firing
- Coal Handling and Processing
- Maintenance

www.coalservices.com.au


# CS Health

# What we'll cover in this session:

CS Health

1. CS Health
2. Review of Order 43
3. MSAC Review of NSW Health Surveillance Scheme
4. MSAC Implementation Working Group
5. Medical reviews
6. Industry Health Standards
7. Respiratory Health Standard - updates
8. Cardiovascular Health Standard
9. Question Time
10. Session close

# CS Health medical service provision

NSW coal mine workers (CY 2024)

CS Health

## CS Health

**16**
Doctors

**10,427**
Order 43 Medical Assessments

**8,205**
Medical Reviews

**3,963**
Other Medical Assessments

## External Doctor Network (EDN)

**61**
Doctors

**10,656**
Order 43 Medical Assessments

## Investigations

**397**
workers required further respiratory investigations

**162**
workers had significant medical conditions requiring a restriction on employment

**19**
workers had high CVD risk factors

## Call centre

**37,000+**
Calls received

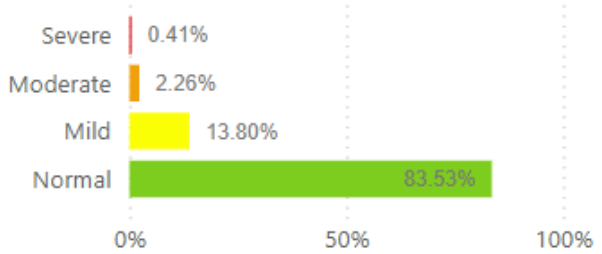
# Dashboard

CS Health

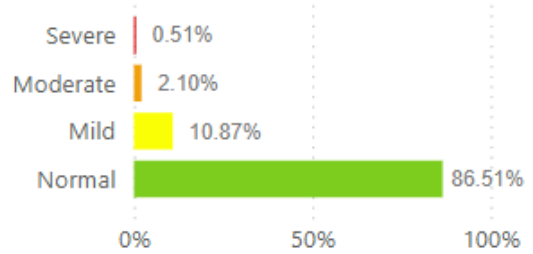
| Date | Customer | Service | Age Group | Gender |
|---|---|---|---|---|
| 1/01/2022 – 31/12/2024 | All | Multiple selections | All | All |

## CVD Risk Profile (Old Classification)

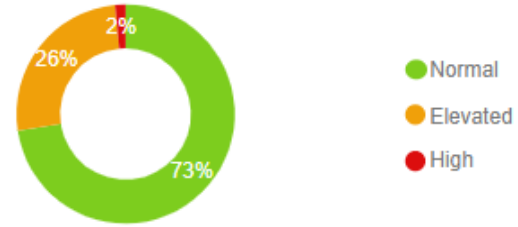

## Blood Pressure - Systolic



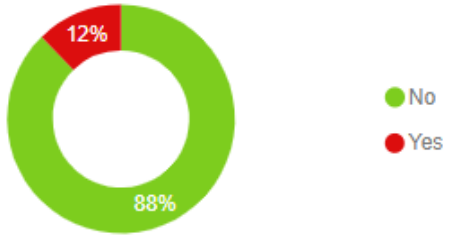

## Blood Pressure - Diastolic



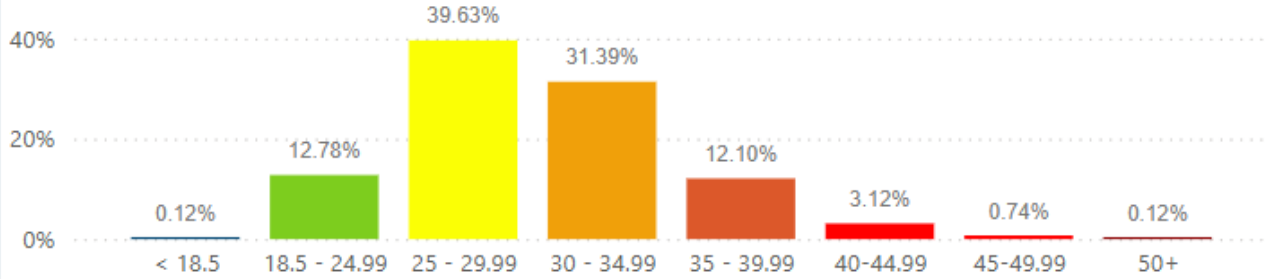

## Cholesterol



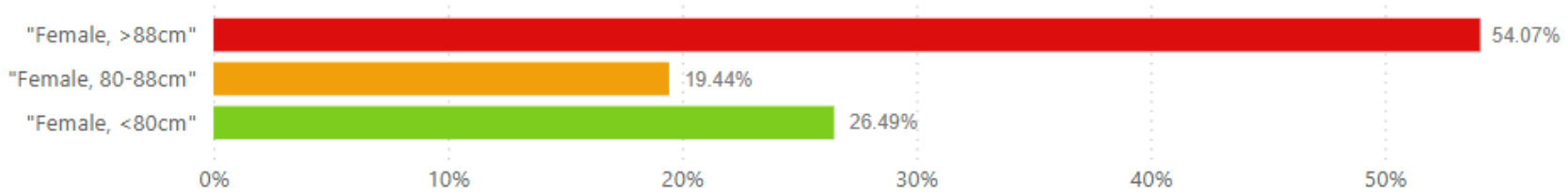

## Smokers

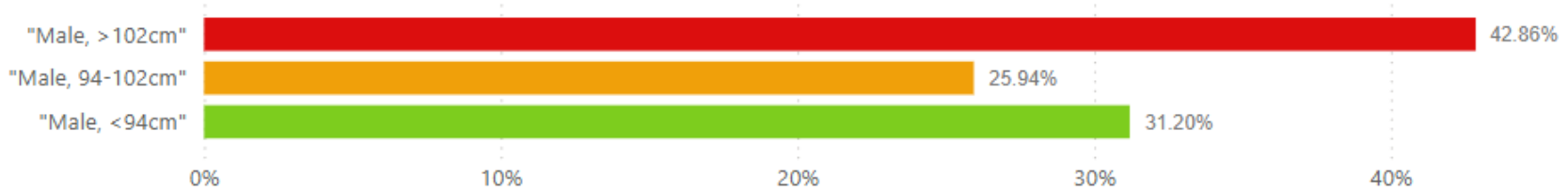


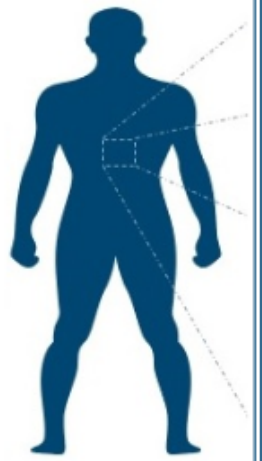

## BMI Distribution




## Risk by Waist Circumference



**27910**

**Workers**

| | |
|---|---|
| Average Weight (kg) | 95.23 |
| Average Height (cm) | 177.19 |
| Average BMI | 30.27 |

# University of Newcastle weight loss trial

**Participants:**

NSW coal mine workers with a BMI $\geq$ 30kg/m$^2$

**Key findings:**

- All groups showed some weight reduction
- HWI participants
  - lost more weight
  - reported greater confidence in maintaining weight loss
  - showed better secondary health outcomes
- Sustainability remained a challenge for all groups

# Coal Mine Worker Engagement Program

CS Health

Introduction of coal mine worker specific hotline to contact CS Health professionals (Registered Nurses) to discuss medical review requirements

## Posters



## Business card

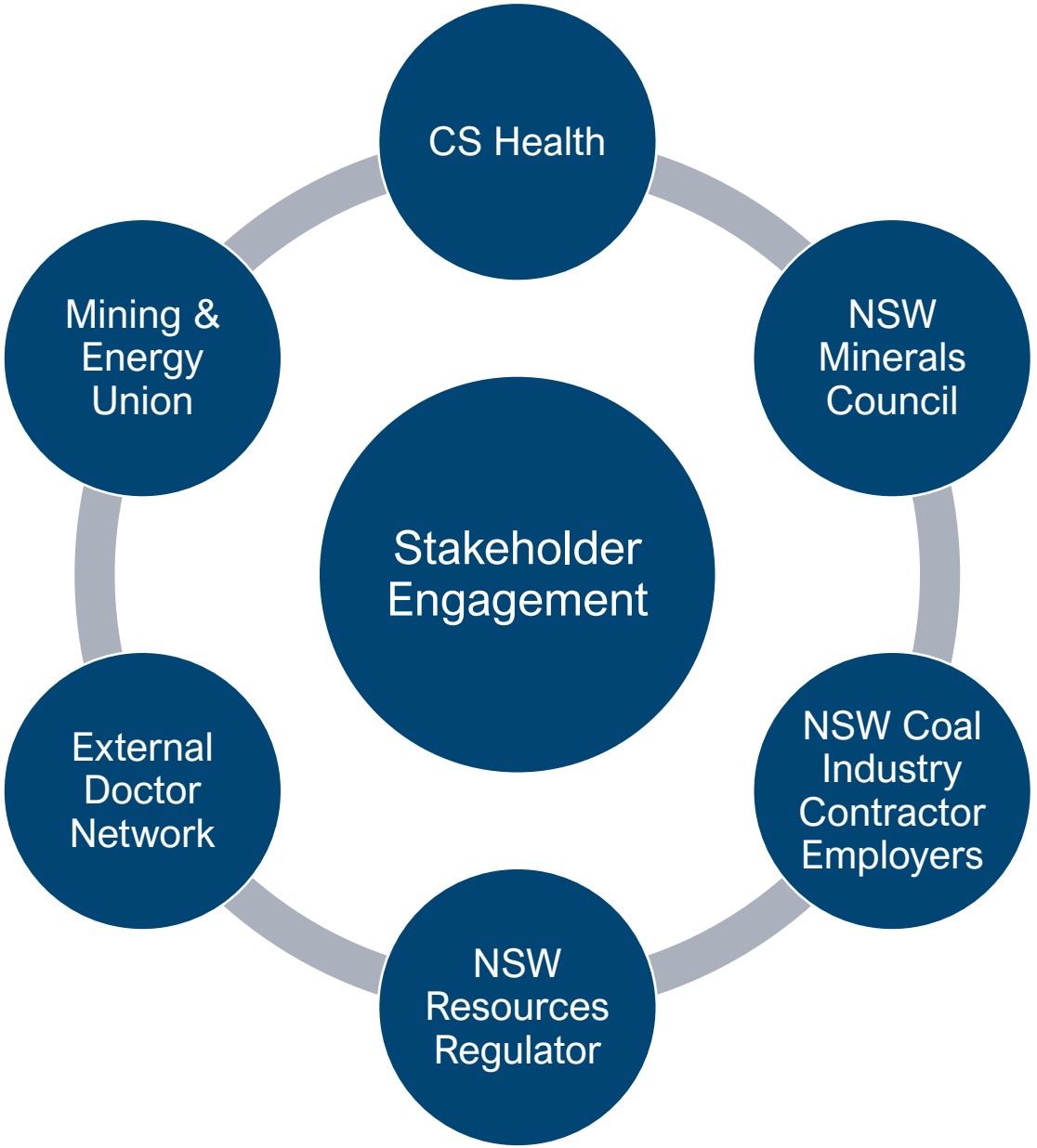

Front


Back

CS Health

# Review of Coal Services Health Monitoring Requirements for Coal Mine Workers Order No. 43

# Stakeholder consultation



# Consultation

| Phase | Timing | Actions |
|---|---|---|
| 1 | August-December 2023 | Stakeholder and industry consultation |
| 2 | March 2024 | Stakeholder and industry consultation; and independent impact analysis (Draft 1) |
| 3 | October 2024 | Closed consultation (NSWMC and MEU) (Draft 2) |
| 4 | January 2025 | Stakeholder engagement meetings (NSWMC and MEU) |
| 5 | March-April 2025 | Supporting documents stakeholder engagement (Draft 3) |
| 6 | May-December 2025 | Change readiness, education and implementation |
| | 1 January 2026 | Go live with Order |

# Stakeholder pain points

CS Health

- Duplicate medicals and subsequent financial impacts
- Administrative burden
- Lack of clarity and clear definitions
- Unnecessary Respirator Fit Testing
- Silent on medical reviews, including time and payment
- Silent on consent and disclosures
- Lack of portability (shirt change process/transfer of medical)
- Lack of clear framework for medical providers

# Review of Coal Services Health Monitoring Requirements for Coal Mine Workers Order No. 43

| | |
|---|---|
| **Health assessment framework** | one health assessment |
| **Health assessment frequency** | 3-yearly frequency |
| **Introduction of risk categories** | risk categories |
| **Approved medical practitioner governance** | introduction of the Clinical and Service Standard |
| **Health assessment disclosures** | clearly defined in Schedule 2 |
| **Health assessment reviews** | inclusion of health assessment reviews including time and payment provisions |

# Review of Coal Services Health Monitoring Requirements for Coal Mine Workers Order No. 43

| | |
|---|---|
| **Retirement health assessments** | formerly known as exit medicals |
| **Respirator Fit Testing** | removed compulsory requirement – optional inclusion |
| **Deferred health examination** | new inclusion to ensure validity of health assessments |
| **Coal mine worker lists** | updated definition and changed due date |
| **Approved health professionals** | additional health professional qualifications added to increase scope of who can complete health assessments |
| **New definitions** | new definitions added to the Order to support new inclusions |
| **Revised old definitions** | old definitions revised to support new inclusions and refined for clarity |

# Change benefits

CS Health

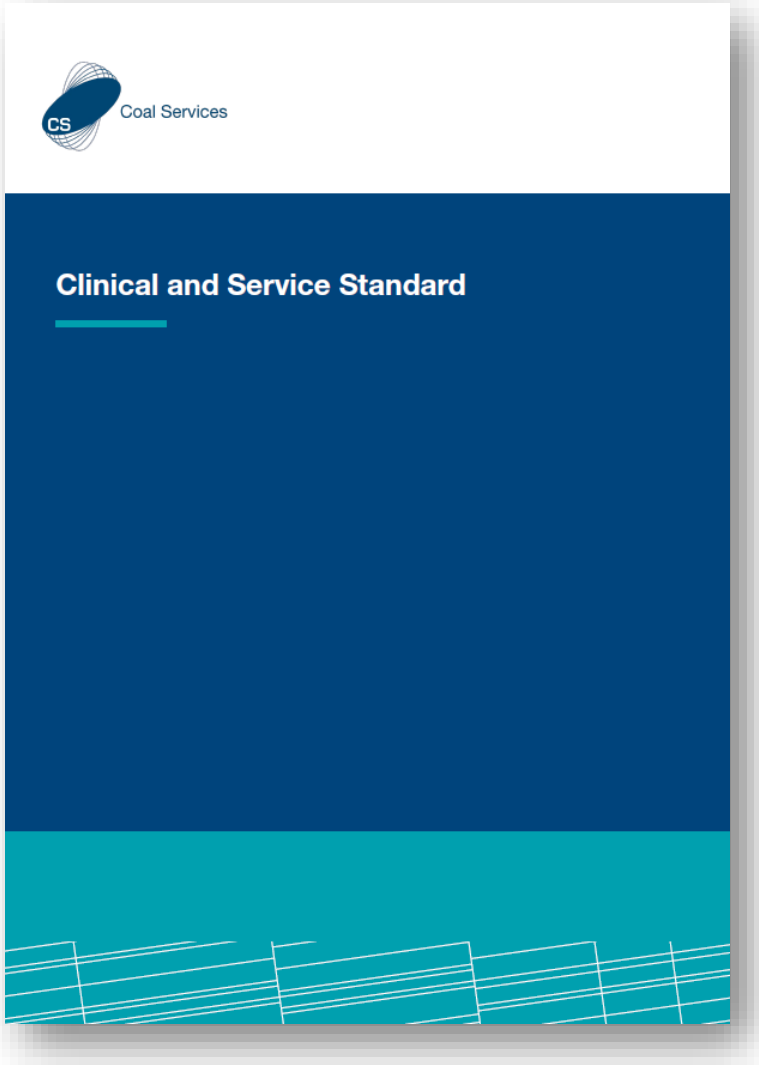
| | | |
|---|---|---|
| Improved definitions and clarity | Definition of a coal mine worker | Reduced number of unnecessary health assessments |
| Transferability of medicals (reduced admin burden) | Time and payment provisions for reviews | Clearly defined disclosure information |
| Reduction in unnecessary Respirator Fit Testing | Introduction of Clinical and Service Standard | Introduction of risk categories |


# Supporting documents

CS Health

# Coal Services Clinical and Service Standard

- Established to ensure the delivery of high-quality Order health assessments
- Sets the requirements for delivering Order health assessments
- References regulations, guidelines, and best practice standards
- Clearly defines the roles and responsibilities
- Details Coal Service's management of non-compliance



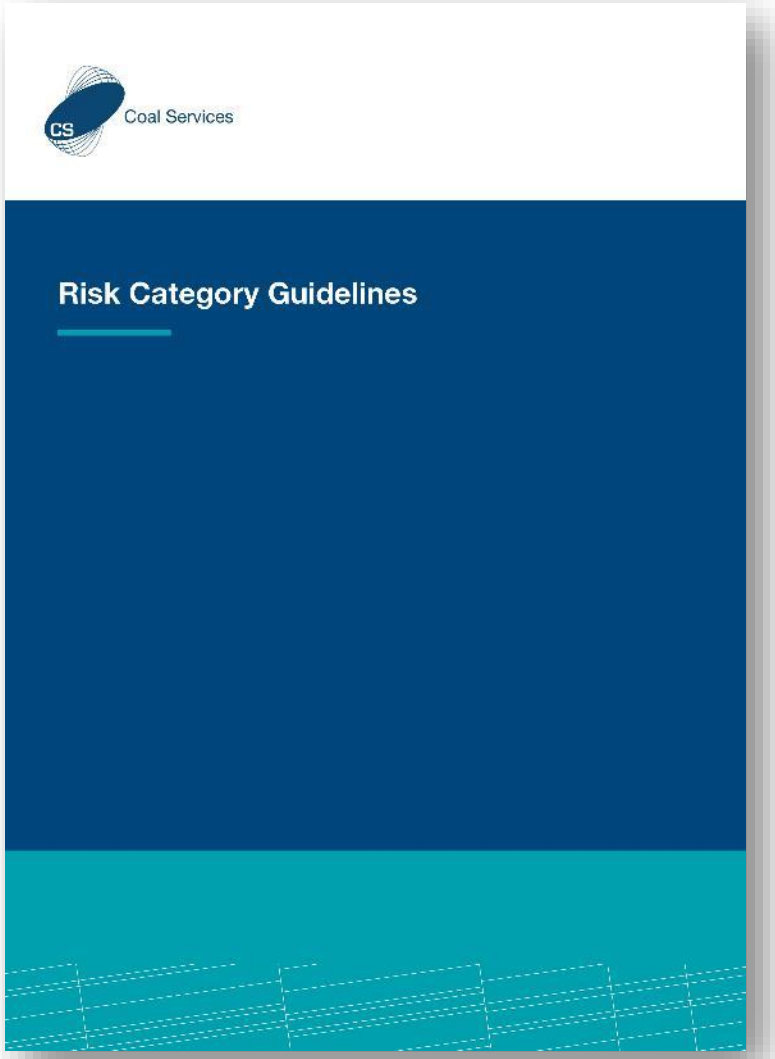
# Coal Services Risk Category Guidelines

**Risk categories**:

- Category A – safety critical
- Category B – safety sensitive
- Category C – non-safety sensitive

**The Coal Services Risk Category Guidelines:**

- outline a clear process
- consider the specific tasks the worker performs
- assess the risk to the worker and others
- focus on situations involving sudden or unavoidable medical issues



# Change considerations

# Change considerations

CS Health

Management of health assessment reviews

Time and payment for reviews related to occ. exposure

Implementation of risk categories

One medical, one certificate

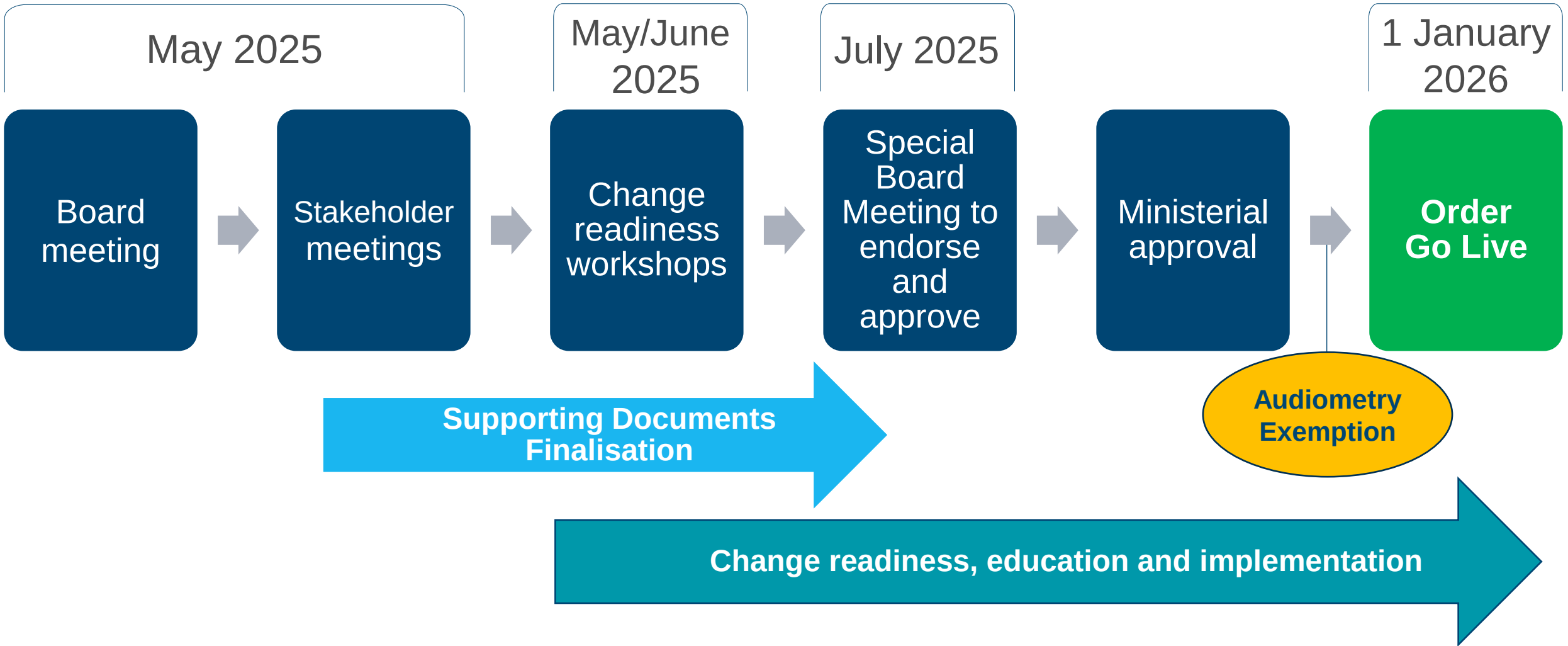
Induction portal business rules

Definition of coal mine worker


# Next steps

CS Health

# Next steps

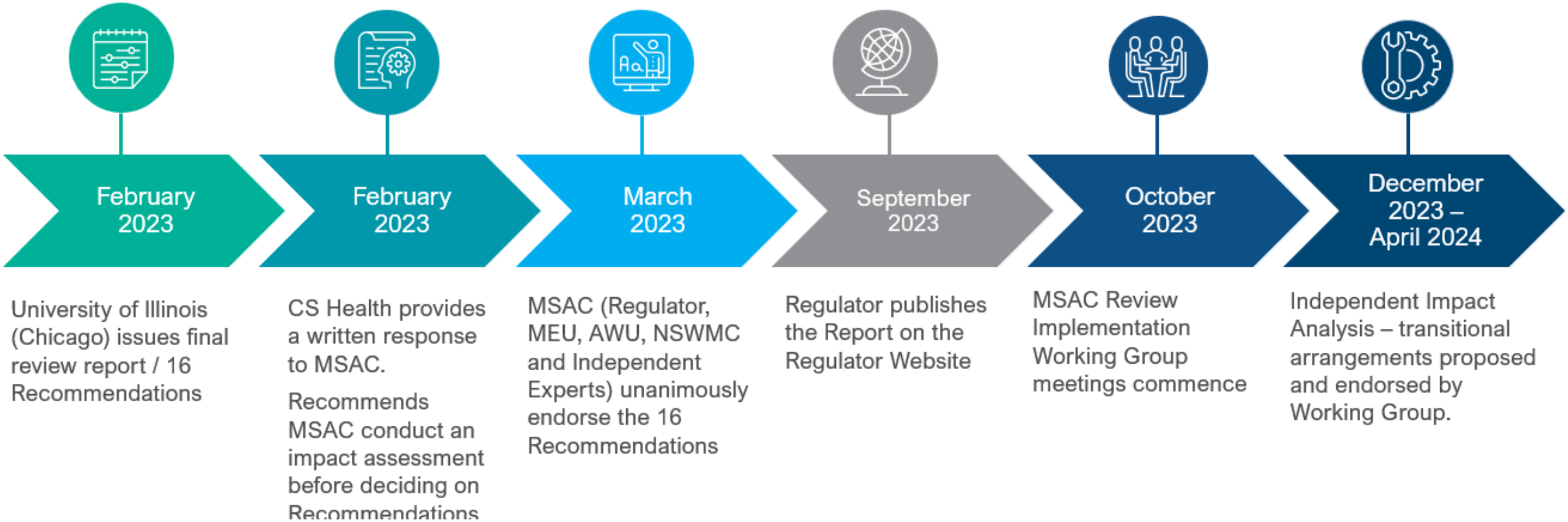

May 2025
May/June 2025
July 2025
1 January 2026
Board meeting
Stakeholder meetings
Change readiness workshops
Special Board Meeting to endorse and approve
Ministerial approval
Order Go Live
Audiometry Exemption
Supporting Documents Finalisation
Change readiness, education and implementation

# 2025 Health Surveillance Forums
## September 2025

| Date | Region |
|---|---|
| Tuesday, 2 September 2025 | Gunnedah |
| Wednesday, 3 September 2025 | Mudgee |
| Thursday, 4 September 2025 | Singleton |
| Tuesday, 9 September 2025 | Wollongong |
| Wednesday, 10 September | Singleton |
| Thursday, 11 September 2025 | Newcastle |
| Wednesday, 17 September 2025 | Webinar |

# Review of NSW Health Surveillance Scheme (MSAC Review)

# MSAC Review




## Recommendations

- CS Health has now **completed** and **implemented** the recommendations from the Review
- Post-implementation review proposed for end of 2025.


# MSAC Implementation Working Group

# MSAC Implementation Working Group

| Members | Actions | Results |
|---|---|---|
| • Wayne Green (Coal Services)<br>• David Meredith (Coal Services)<br>• Dean Polly (Coal Services)<br>• Lucas Boyne (Coal Services)<br>• Sarah Withell (Whitehaven)<br>• John Turner (Centennial)<br>• Clinton Smith (Mastermyne)<br>• Shane Thompson (MEU)<br>• Andy Davey (MEU) | • Complete impact analysis<br>• Identify opportunities to reduce impact on industry<br>• Engage Professor Cohen in NSW inhalable mine dust (IMD) study | • NSW IMD study completed and submitted to MSAC for endorsement<br>• Key findings in IMD study:<br>– reduced IMD exposure limits do not provide additional health benefits when Respirable Coal Dust (RCD) and Respirable Crystalline Silica (RCS) are controlled as per Respiratory Health Standard*.<br>– wind speeds affect dust inhalability<br>– dust sampling methods and samplers require future research. |

* This should not be construed as a recommendation that inhalable dust sampling should be discontinued and that inhalable dust exposures should not be regulated. Larger dust particles have been predictive of chronic lung disease in some research (not mining) – Prof. Cohen 2025.

# Industry pain points

# medical reviews

# Why do we have medical reviews?

CS Health

Look for conditions that can cause sudden incapacity or impair capacity over time

Seek information that they are adequately managed

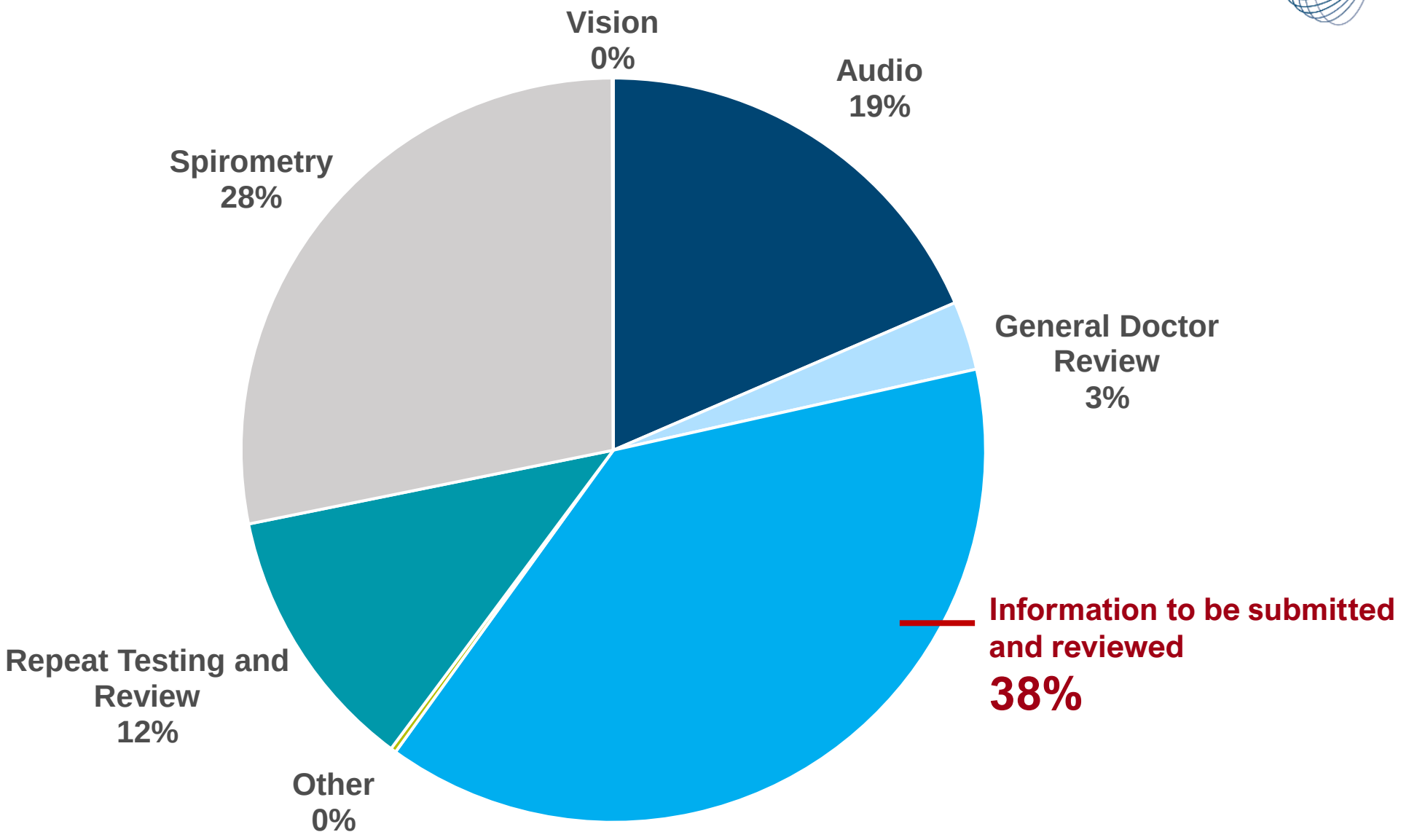
Recommend more frequent monitoring when necessary

CS Health

Common triggers for a medical review:

- spirometry (lung function)
- audiometry (hearing)
- cardiovascular disease
- diabetes
- obstructive sleep apnoea (OSA)

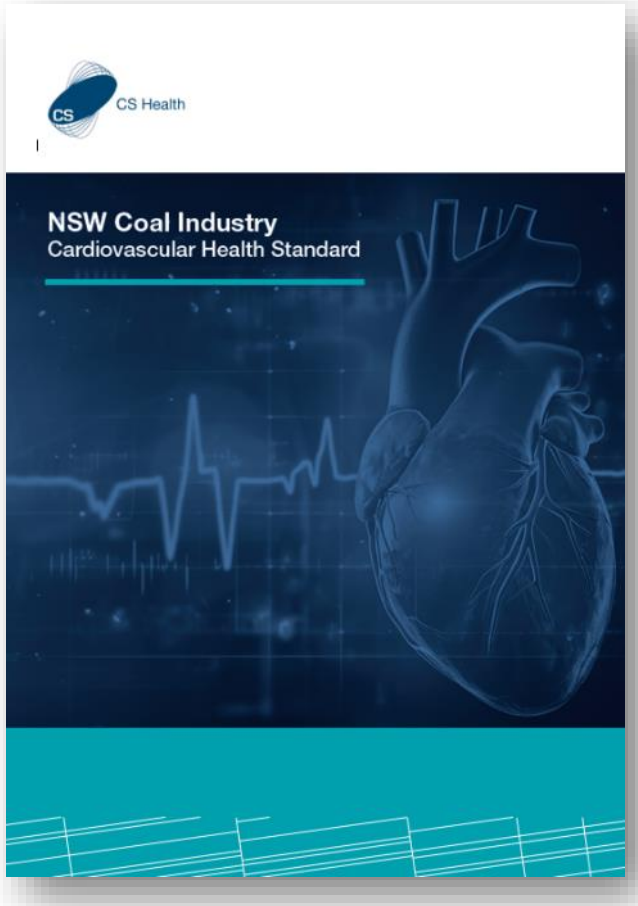
# Order 43 medical reviews - 2024




# NSW Coal Industry Health Standards

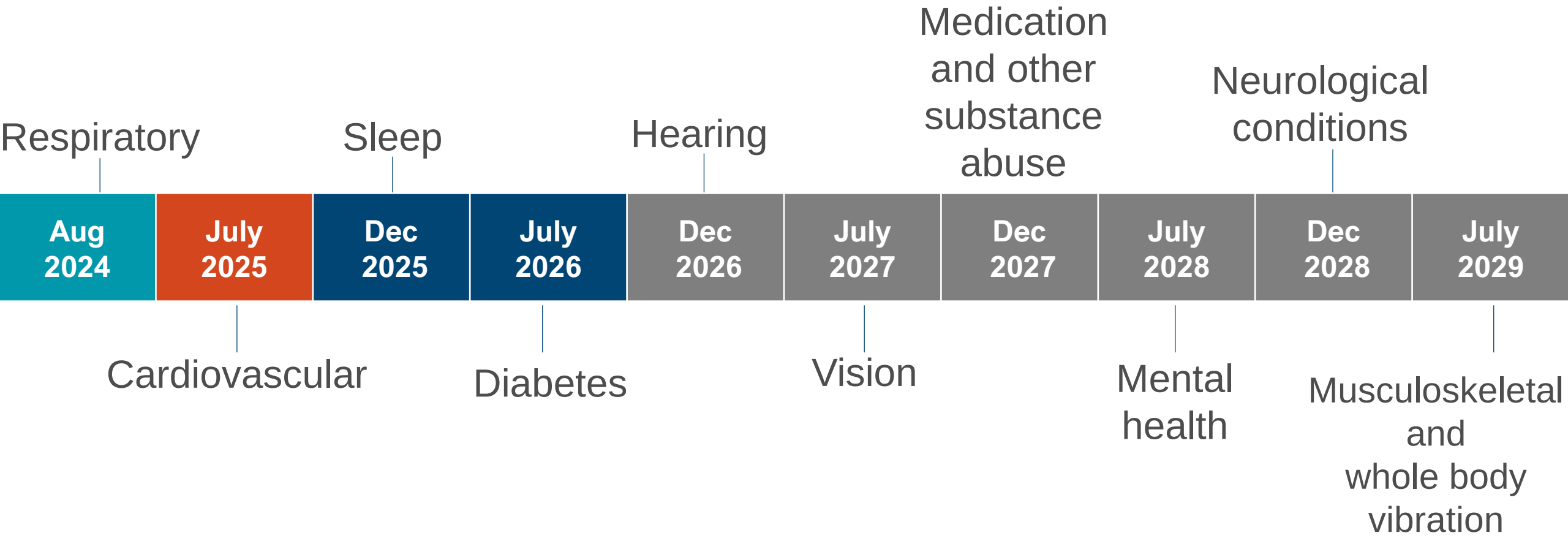
CS Health

# NSW Coal Industry Health Standards




- Respiratory (released)
- Cardiovascular (in development)
- Sleep Disorders
- Diabetes

# Next steps


Respiratory
Sleep
Hearing
Medication and other substance abuse
Neurological conditions
Aug 2024
July 2025
Dec 2025
July 2026
Dec 2026
July 2027
Dec 2027
July 2028
Dec 2028
July 2029
Cardiovascular
Diabetes
Vision
Mental health
Musculoskeletal and whole body vibration


CS Health

# Health Standard development

# Health Standard development process

CS Health

## Design

- Standard drafted based on clinical knowledge and best-practice guidelines.
- The Standard incorporates risk assessments, task analysis, and existing relevant industry standards.

## Review

- SHC development review with cardiologist's clinical input. Testing of standard against case studies.
- Consideration of broader industry consultation needs.
- Determine need for impact analysis.

## Consultation

- Industry consultation beyond SHC, including NSWMC, MEU, and Clinical Governance Committee.

- Change management considerations, communication plan and development of supporting assets, with feedback from industry.
- Clinical Governance Committee review and endorsement.

## Finalisation

- Standard reviewed by independent expert for feedback and endorsement.
- Finalisation of communication plan and supporting assets.
- Industry preparation for release.

## Notification

- Standard sent to Board and key industry stakeholders for notification.

## Release

- Standard released to industry with supporting communication, education, and assets.

# Benefits of Health Standard

CS Health

Standardised decision making from all doctors

Targeted approach
- Only high-risk workers need follow up

Reduced medicals reviews

Medical risks are identified for GP to manage
- *These don't always need to come back to CS Health*

# Coal Services website

CS Health

Coal Services

Home | About | Careers | News and Events | Contact details & locations | Search

Insurance | Health | Mines Rescue & Training | Technical Services | Hygiene & Lab Services | Statistics | Give Feedback | Contact Us

## Order 43

- For Employers
- For Providers
- For Workers
- Approved Medical Practitioners Directory
- Health surveillance in the NSW coal industry

## Proposed Changes to Order 43

- Proposed Changes and Feedback
- Draft Order Frequently Asked Questions

## Workplace Health Services

- Medicals
- Chest x-rays
- Drug and alcohol screening
- Hearing and PPE Fit Tests
- Immunisation
- Mobile Health Vans

## Allied Health Services

- Rehabilitation
- Functional capacity evaluations
- Task analysis and workplace assessments
- Treatment services
- Toolbox talks
- Healthy lifestyle programs

## Industry Forums

- Industry Forum sessions and dates

## Industry Health Standards

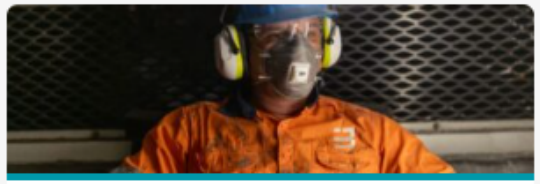
- Respiratory Health Standard
- Cardiovascular Health Standard

## Industry Health Topics

- Alcohol and drugs
- Respiratory (lung) health
- Industrial deafness
- Cardiovascular disease
- Diabetes
- Mental health
- Sleep and fatigue management
- Diet, exercise and maintaining a healthy weight

## Standing Health Committee

- About
- Representation



**Look after your lungs: CS Health's latest campaign to raise awareness of respiratory health and measures to protect workers' lungs.**

## Featured Links

- Learn more about respiratory (lung) health
- Learn more about Order 43
- How to access your medical information
- Medical bookings information, service guide and policy
- Contact CS Health

**Industry Health Standards**

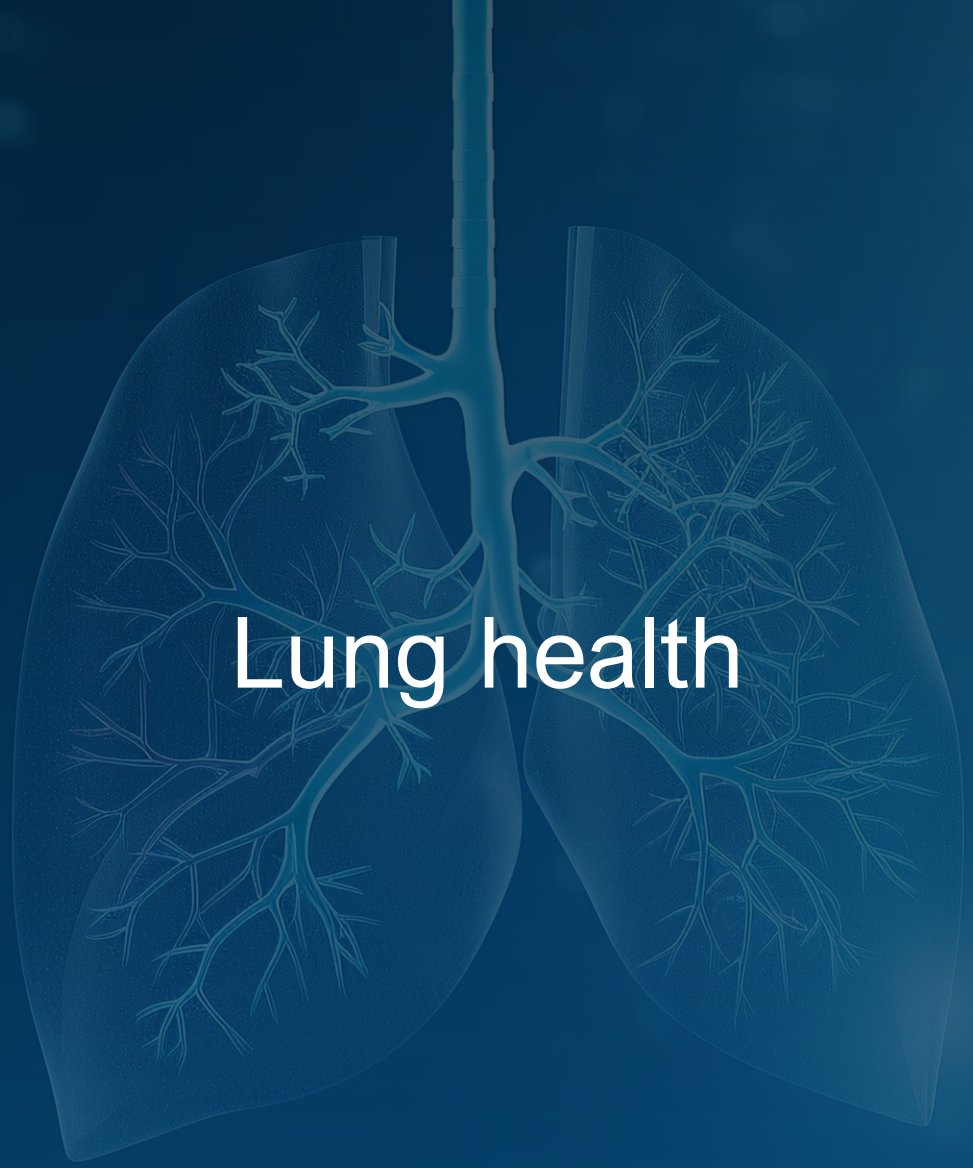
Respiratory Health Standard
Cardiovascular Health Standard

# Medical update

June 2025

Dr David Meredith

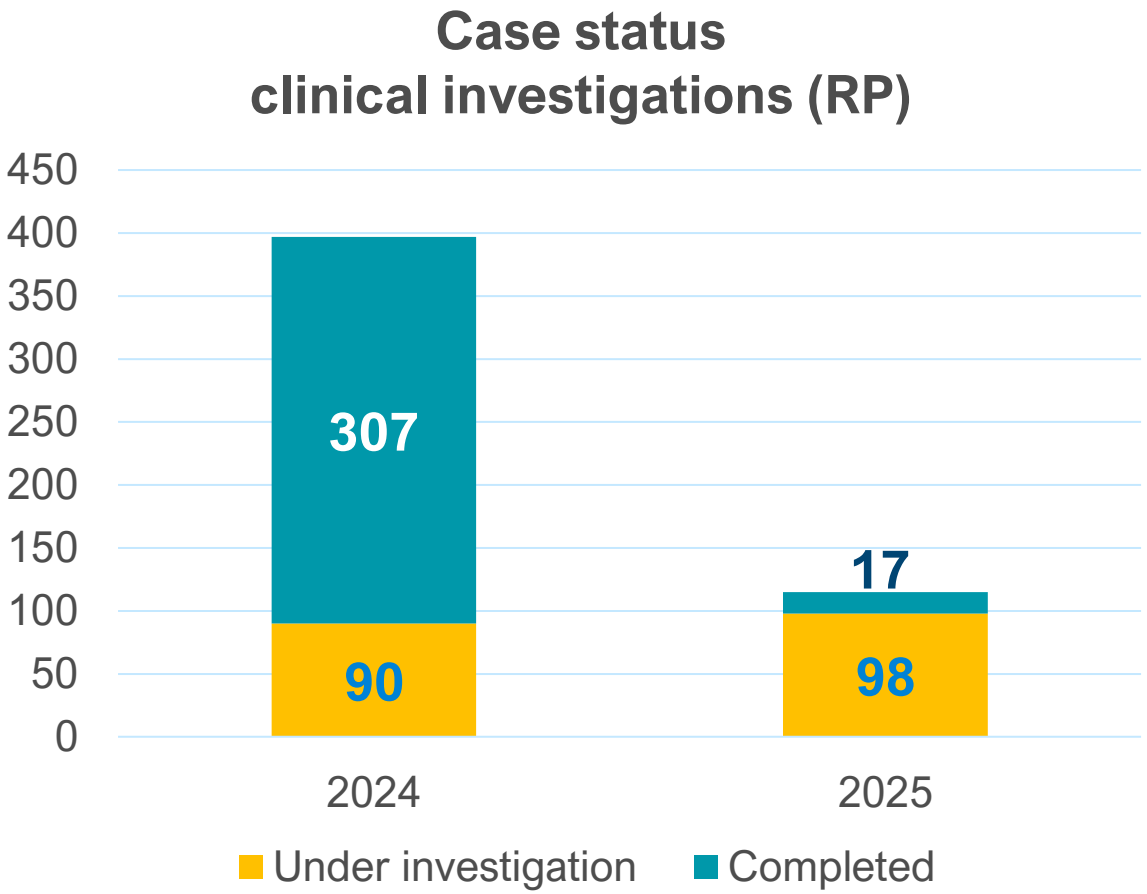
CS Health



# Lung health

# Clinical pathways investigation insights

## April monthly (2025)




**101** Complex lung function tests at CS Health

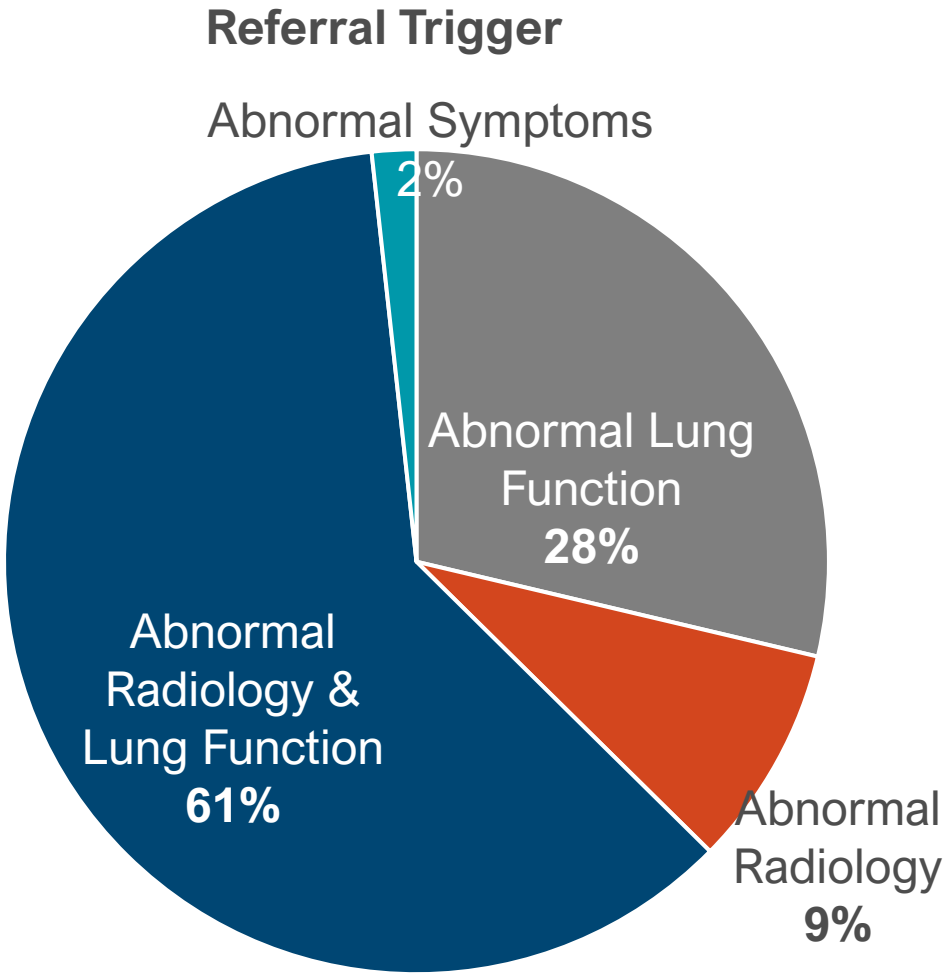
**83** High resolution CT chest scans

**11** New RP referrals

# Specialist respiratory investigations

## Worker profile (Basic) 30 April 2025

| **115 workers** | **Female: 10<br>Male: 105** | |
|---|---|---|
| **Exposure environment** (primary) | CHPP | 13 |
| | Surface/open cut | 72 |
| | Underground | 29 |
| | Other industry/non mining | 1 |
| **Exposure years** (respiratory dust) | < 10 years | 42 |
| | 10-20 years | 38 |
| | >20 years | 45 |
| **Exposure years** (smoking/vaping) | Current smoker/vaper | 55 |
| | Never smoked/vaped | 27 |
| | Past smoker/vaper | 23 |



# Specialist respiratory investigations

## Overview of outcomes CY 2025 – updated 30 April 2025

CS Health

**115 workers referred**

| Diagnosis unconfirmed | Lung condition (non-occupational) | Lung disease (occupational) | Mine dust lung disease | No significant abnormalities |
|---|---|---|---|---|
| **91** | **14** | **5** | **1** | **4** |
| 84 pending assessment | Asthma<br>Emphysema<br>COPD | COPD<br>Emphysema | Silicosis | |

CS Health

# Dust restrictions

# MSAC Working Group

- Identified problems with the inhalable dust limits
  - Compliance in underground mines
  - Accuracy of measurement

- Commissioned an independent scientific review
  - Reported in April 2025
  - Unable to recommend use of IMD as a criteria for returning workers
    - Lack of evidence
    - Technical difficulties

# Dust Restrictions

Initially restrictions based on a measure of impairment as a percentage of normal

New recommendation is to use the “Z” score

Takes individual characteristics into account and will move many into milder categories

CS Health

# Cardiovascular Health Standard

# Risk Category Guidelines

Risk categories are used to determine the level of risk for a coal mine worker ***based on the tasks performed by them***.

It is the associated risk to themselves and others, in the event of a sudden medical incapacity.

**Category A**
**Safety Critical**

A medical emergency will put others at risk of a serious injury.

**Category B**
**Safety Sensitive**

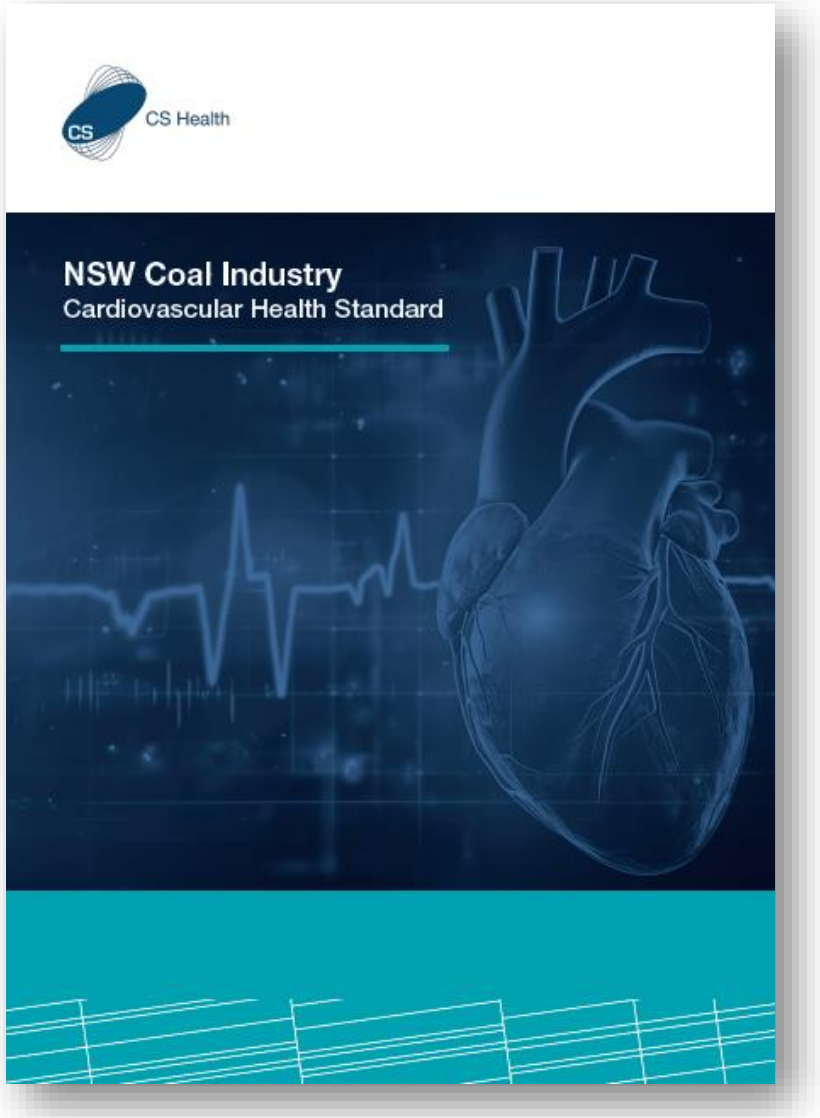
A medical emergency will put the worker at risk.

**Category C**
**Non-Safety Sensitive**

The work environment will not contribute to a worker's medical emergency.

***Images are examples only***

# Cardiovascular Health Standard




- Risk category guides the information and follow up required
- Workers not in the highest risk category will not require annual review for managed conditions
- Updates the testing criteria to reflect advances in medical management
- The screening calculator has been updated to better reflect the Australian population

# Cardiovascular Disease (CVD) Risk Score Pathway

## Cardiovascular Disease (CVD) Risk Score

**Calculated using the Australian CVD calculator**

### High Risk ≥10%

CVD risk score 10% to <15%

| | |
|---|---|
| **Cat A** | • Fit for work.<br>• Refer to GP for cardiologist referral*.<br>• AMP to review medical information from cardiologist within 6 months.<br>• If no information is received the coal mine workers health certificate will expire. |
| **Cat B** | • Fit for work.<br>• Refer to GP to manage risk factors.<br>• AMP to review medical information from GP within 6 months.<br>• If no information is received the coal mine workers health certificate will expire. |
| **Cat C** | • Fit for work.<br>• Refer to GP to manage risk factors.<br>• Routine review. |

CVD risk score ≥15%

| | |
|---|---|
| **Cat A** | • Temporarily unfit for work<br>• Refer to GP for cardiologist referral*.<br>• Worker to remain unfit until cardiology review.<br>• AMP to review medical information from cardiologist within 6 months. |
| **Cat B** | • Temporarily unfit for work.<br>• Refer to GP to manage risk factors.<br>• Worker to remain unfit until GP review.<br>• AMP to review medical information from GP within 6 months. |
| **Cat C** | • Fit for work.<br>• Refer to GP to manage risk factors.<br>• Routine review. |

*If GP repeats CVD risk score and worker is no longer classified high risk, the GP should provide medical information relating to cardiac risk to the AMP for review

Cardiac condition identified

- **Y** → Manage according to condition
- **N** → Adequate control of risk factors
  - **Y** → • Fit for work • Routine review
  - **N** → • Fit for work • Review in 12 months

### Intermediate Risk 5% to <10%

| | |
|---|---|
| **Cat A** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review. |
| **Cat B** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review. |
| **Cat C** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review. |

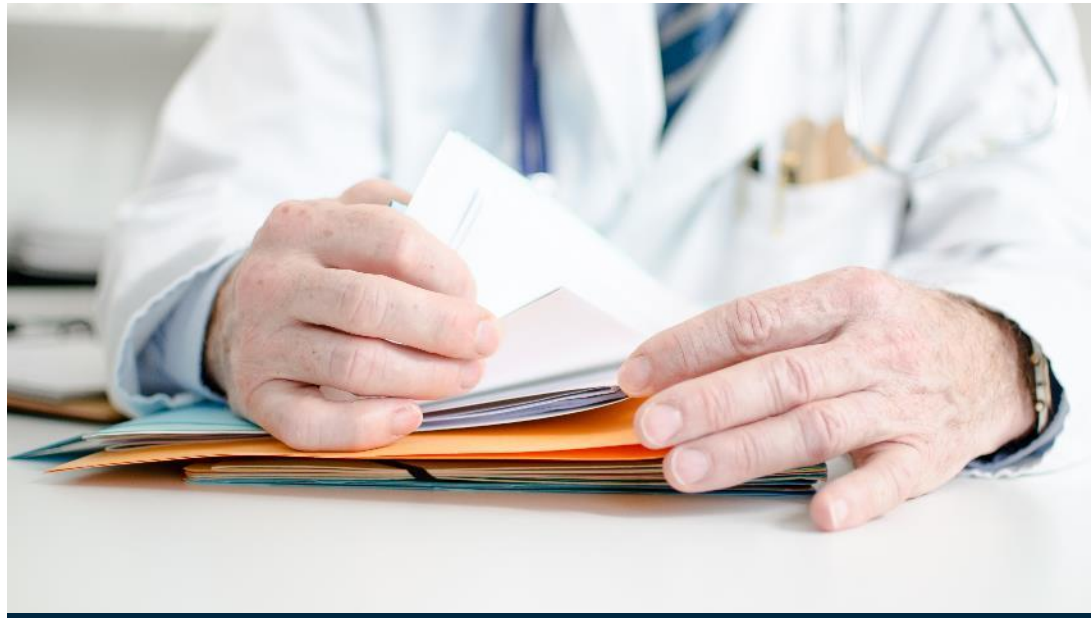
### Low Risk <5%

| | |
|---|---|
| **Cat A** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review |
| **Cat B** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review |
| **Cat C** | • Fit for work.<br>• Refer to GP to manage risk factors<br>• Routine review |

Cat A = Category A - safety critical
Cat B = Category B - safety sensitive
Cat C = Category C - non-safety sensitive

# Cardiovascular Health Standard transitional arrangements

- Risk categories not required until the new Order
- Optional for employers to advise worker risk categories until then
- If no category identified, default is Category A unless clearly office based.



Risk category default is Category A

CS Health

# Case Studies

# Case Study 1 - Geoff

Geoff, a 58-year-old male, attends his Order 43 periodic medical.

He has been an open cut operator since 2007. Prior to this he worked as a farmer.

**Medical history:**

- Hypertension
- Nil history of kidney disease, familial hypercholesterolaemia, atrial fibrillation or diabetes
- Never smoked

**Current medications:** Nil

**Order 43 periodic health assessment results:**

| Assessment | Result | Normal range |
|---|---|---|
| Blood pressure | 204/110 mmHg | <140/90 mmHg |
| Total Cholesterol /HDL ratio | 3.75 | <5 |
| Cardiovascular risk score | | Low <5%, Intermediate 5 to <10%, High ≥10% |

# Case Study 1

## Health Certification and Management

CS Health

Geoff is made temporarily unfit for his role (Category A) and is referred to his GP for urgent review

Geoff visits his GP and is commenced on an Telmesartin 80mg day

Information provided by GP that hypertension treated and BP is 160/90mmHg

CVD risk score calculated = 6% ‘intermediate risk’

Geoff is certified as fit for work

# Case Studies

# Case Study 2 - Mick

Mick, a 40-year-old male attends his Order 43 periodic medical.
He works as a coal coordinator in the CHPP.

**Medical History:**

- Hypertension – previously treated but not currently on medication
- Gout
- No history of kidney disease, familial hypercholesterolaemia, atrial fibrillation or diabetes
- Current Smoker

**Medications:**

- Perindopril (antihypertensive)
- Amlodipine (antihypertensive)

**Order 43 periodic health assessment results:**

| Assessment | Result | Normal range |
|---|---|---|
| Blood pressure | 180/110 mmHg | <140/90 mmHg |
| Total Cholesterol /HDL ratio | 10 | <5 |
| Cardiovascular risk score | | Low <5%, Intermediate 5 to <10%, High ≥10% |

# Case Study 2

## Health Certification and Management

CS Health

Mick is certified as fit for work and is referred to his GP

Mick visits his GP who provided information that HT is now treated and BP is139/98

CVD risk score calculated = 7% ‘intermediate risk’

Mick is still fit for work

GP to continue to manage BP and other risk factors

# Case Studies

# Case Study 3 - Kevin

Kevin, a 64-year-old male attends his Order 43 periodic medical.
He has worked as an underground operator since 1981.

**Medical History:**

- Hypertension
- No history of kidney disease, familial hypercholesterolaemia, atrial fibrillation or diabetes
- Never smoked

**Current medications:**

- Amlodipine (anti-hypertensive)

**Order 43 periodic health assessment results**

| Assessment | Result | Normal range |
|---|---|---|
| Blood pressure | 135/60 mmHg | <140/90 mmHg |
| Total Cholesterol /HDL ratio | 12 | <5 |
| Cardiovascular risk score | 18% | Low <5%, Intermediate 5 to <10%, High ≥10% |

# Case Study 3

## Health Certification and Management

CS Health

Kevin is made temporarily unfit for his role (Category A) and referred to his GP for review and cardiologist referral

Kevin sees the cardiologist and is diagnosed with single vessel disease and has a stent inserted

Kevin is temporarily unfit for his role for at least 4 weeks after the stent is inserted

Kevin attends cardiologist review. Cardiologist provides information to AMP to confirm Kevin meets required criteria to return to work

Kevin returns for AMP review in 12 months


CS Health