

Information for employers



NSW Coal Industry Respiratory Health Standard

Second Edition

October 2025

Introduction

Coal mining produces coal dust and dusts from other minerals, including silica. Repeated exposure to coal mine dust can put coal mine workers at risk of developing coal mine dust lung diseases (CMDLD).

Coal mine dust lung disease includes not only the “classic” pneumoconioses of coal workers’ pneumoconiosis (CWP), mixed dust pneumoconiosis, and silicosis, but also obstructive lung diseases including emphysema and chronic bronchitis; lung function decline; and pulmonary fibrosis, known as dust-related diffuse fibrosis.

It is well established that the early detection of disease can allow for better treatment options and improved health outcomes. Therefore, detecting, identifying, and diagnosing any potential CMDLD as early as possible is important to protect against further damage to the lungs.

Since the re-identification of black lung in Queensland in 2015, there have been significant developments relating to the identification and management of these conditions.

Recommendations and guidance from the Thoracic Society of Australia and New Zealand (TSANZ), National Dust Disease Taskforce, Workers’ Compensation Regulatory Services Queensland, Resources Safety and Health Queensland, the Review of the NSW Health Surveillance Scheme for Coal Mine Workers, and most recently the Coal Services Health Inhalable Mine Dust Restrictions Review (April 2025), have further informed these practices.

Respiratory Health Standard

The NSW Coal Industry Respiratory Health Standard (Respiratory Health Standard), initially released in August 2024, was the first in a series of health standards to be developed specifically for the NSW coal industry.

The Respiratory Health Standard supports approved medical practitioners (AMPs) to make consistent, evidence-based clinical decisions regarding respiratory health. It instructs them on which respiratory investigations to arrange when assessing the health of a coal mine worker’s lungs and provides clear clinical pathways and protocols for managing respiratory impairment.

Following its release, the Respiratory Health Standard has undergone a comprehensive 12-month review and is now in its second edition. This edition has incorporated key changes which aim to provide clearer guidance to AMPs, improve coal mine worker outcomes and clarity for employers.

The updated Respiratory Health Standard was reviewed and endorsed by the Coal Services Standing Health Committee, Professor Deborah Yates (respiratory physician and subject matter expert), the Coal Services Clinical Governance Committee and an independent Occupational and Environmental Physician.

This information pack includes:

- background to the Respiratory Health Standard
- a summary of the key changes and updates within the second edition of Respiratory Health Standard
- an overview of the clinical pathways and guidelines contained in the Respiratory Health Standard
- working examples of the guidelines in application
- details of further resource materials.

Background to the Respiratory Health Standard

In 2021, the NSW Government (Department of Regional NSW) commissioned an independent quality assurance review of the NSW Health Surveillance Scheme for Coal Mine Workers (the Review). The University of Illinois School of Public Health (Chicago) was selected through an open tender process to conduct the Review.

The Review was a recommendation of, and overseen by, the NSW Mine Safety Advisory Council (MSAC) and is commonly known in the NSW coal industry as the 'MSAC Review'.

A report was handed down to the NSW Resources Regulator on 20 February 2023 and shared publicly on 1 September 2023. The full report is available on the NSW Resources Regulator's website.

The Review found that CS Health has a robust system for medical health surveillance of coal mine workers in NSW, noting that considerable improvements have been made to the scheme since the re-identification of black lung disease in Australia in 2015.

The report detailed 16 recommendations to further strengthen the health surveillance of coal mine workers and to provide enhanced health protection. These recommendations were unanimously accepted by MSAC, with Coal Services (through CS Health) being tasked to implement the recommendations.

There are 2 recommendations that are of particular importance to industry:

- **Recommendation 2** which advised that CS Health should develop clear, formal guidelines for the management of abnormal findings on spirometry and chest x-ray; and
- **Recommendation 14** which advised that CS Health establish formal criteria to return workers with early coal mine dust lung disease (CMDLD) and/or other non-occupational lung diseases to work, and for those with more advanced lung disease, removal from dust exposure altogether.

In recent years, there have been significant advancements in medical standards regarding the identification and management of respiratory conditions, incorporating new testing requirements to screening processes or procedures.

Based on these standards and testing requirements, the Review provided direction to CS Health on what should occur when lung abnormalities are identified. That is, when a certain degree of lung impairment is identified,

"Regardless of the putative underlying cause(s) of a worker's lung disease, the severity of lung function abnormalities should, by themselves, prompt consideration for reducing future dust exposure."

To address Recommendations 2 and 14 respectively, CS Health developed:

- *Clinical Pathways for Coal Mine Dust Lung Disease Monitoring*
- *Guidelines for Managing Identified Lung Disease in the NSW Coal Industry*

These documents (which form part of the Respiratory Health Standard) were developed to provide a consistent methodology for AMPs when performing Order 43 health assessments on NSW coal mine workers.

The Respiratory Health Standard: 12-month review

All NSW Coal Industry Health Standards will be reviewed 12 months after initial publication and then every 5 years thereafter, or sooner, as required. A comprehensive review process is essential to ensure currency of information and best practice standards are maintained.

The second edition of the Respiratory Health Standard introduces several key changes to improve the accuracy of respiratory assessments, streamline clinical pathways, and ensure alignment with the latest scientific evidence.

Key changes and updates to the Respiratory Health Standard include:

- **Clinical pathway improvements:**
 - The order and application of complex lung function testing (CLFT) and high-resolution computed tomography (HRCT) scans have been revised for some coal mine worker groups. These updates aim to enhance diagnostic accuracy, reduce wait times, and improve health outcomes.
 - These improvements were informed by data from CS Health, which provided key insights into the performance and outcomes of the existing pathways, helping to identify where adjustments would deliver the greatest clinical benefit.
 - Refer to pages 5 and 6 for further information about the clinical pathways.
- **Integration of Inhalable Mine Dust (IMD) Study Findings:**
 - The revised Respiratory Health Standard includes the results of the Review of the Coal Services Health Inhalable Mine Dust Restrictions study, conducted by Professor Robert Cohen and his team at the University of Illinois.
 - The study found no additional benefit in restricting IMD levels for coal mine workers with lung impairments when respirable coal dust and respirable crystalline silica are adequately controlled. Based on these findings, and the IMD Restriction Review Executive Summary (University of Illinois, Chicago, 2025), the transitional arrangements and IMD thresholds for lung impairment have been removed.
- **Adoption of Z-scores for spirometry:**
 - Spirometry results will now be interpreted using Z-scores, improving the accuracy and consistency of lung function assessments and impairment.
- **Clarification on dust monitoring scope:**
 - References to ‘Enhanced Dust Monitoring’ have been removed, as it falls outside of the scope of the Respiratory Health Standard.
 - Dust monitoring remains the responsibility of the person conducting a business or undertaking with support and guidance from occupational hygiene specialists.
- **Ongoing review mechanism introduced:**
 - A formal process has been added to ensure the Respiratory Health Standard remains current with evolving clinical and scientific knowledge.

Guidelines for managing identified lung disease in the coal mining industry

The Review recommended that coal mine workers with increasing respiratory function impairment should have reduced ongoing potential coal mine dust exposure, to preserve their respiratory function and quality of life.

Therefore, health assessments must also consider the coal mine worker's current capacity to perform their role and the preservation of their remaining lung function once a certain level of lung impairment is confirmed.

The *Guidelines for Managing Identified Lung Disease in the NSW Coal Industry* (the guidelines) were developed for Order 43 AMPs to establish a consistent methodology for managing coal mine workers who have abnormal chest x-rays or spirometry results, or show a serial decline in spirometry.

The guidelines aim to facilitate either the safe return of affected coal mine workers to their roles or protect them from further exposure to coal mine dust in the workplace.

The guidelines consider:

- workplace occupational dust exposures
- enhanced medical surveillance
- dust exposure guidelines
- radiological abnormalities.

New entrants to the NSW coal industry with identified respiratory abnormalities must undergo investigations before a health certification can be completed. If a respiratory health diagnosis is confirmed, they may be subject to dust exposure restrictions on their health assessment certificates.

Existing coal mine workers identified with respiratory abnormalities will be managed as per the clinical pathways in the Respiratory Health Standard and may be subject to dust exposure restrictions on their health assessment certificates.

Clinical pathways for CMDLD monitoring

As part of their Order 43 health assessment, NSW coal mine workers are assessed by an Order 43 AMPs for any signs of respiratory impairment.

These health investigations include:

- chest-imaging (chest x-ray and/or HRCT)
- spirometry
- clinical findings and symptoms.

Additional investigations may be required where results from these assessments suggest possible CMDLD. Coal mine dust can affect individuals differently, making it important to have different clinical pathways to check for respiratory damage.

Clinical Pathway 1: Respiratory conditions detected on a chest x-ray

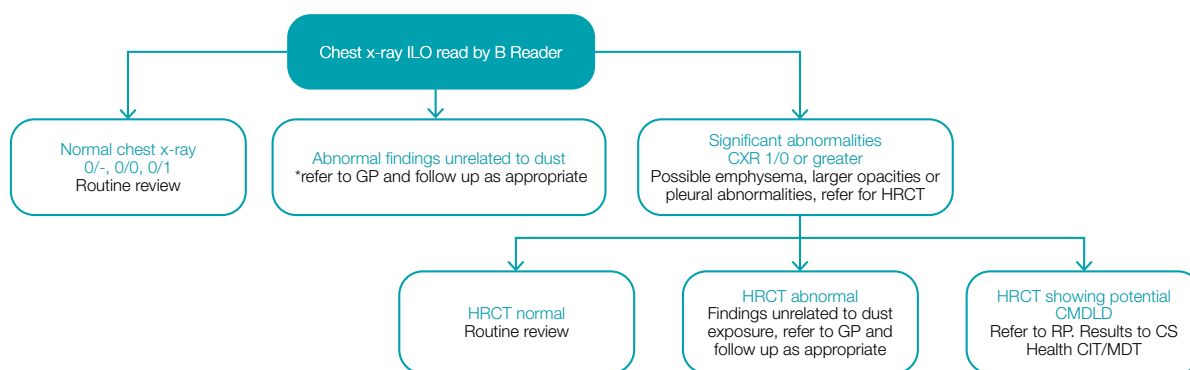
In some cases, respiratory damage may appear as scarring in the respiratory tract which is identified on the chest x-ray. However, early disease can be difficult to see clearly on a standard Order 43 chest x-ray, so a coal mine worker will be referred for an HRCT scan.

An HRCT can clarify whether there are respiratory abnormalities that require further investigation.

Occasionally, abnormalities may be detected that are not related to coal mine dust exposure and do not affect a coal mine worker's ability to work safely. These cases can be followed up by the coal mine worker's general practitioner (GP) or treating doctor. Where a non-occupational respiratory condition is identified that could be exacerbated by workplace dust exposure, a restriction may be applied, but the ongoing management remains with the coal mine worker's GP or treating doctor.

When CMDLD or other occupational respiratory abnormalities are suspected or confirmed, a referral to a respiratory physician is organised by CS Health.

Diagram 1: Chest x-ray pathway



Pathway 2: Respiratory conditions detected via spirometry and/or clinical symptoms

This clinical pathway requires the Order 43 AMP to assess for changes in spirometry results and/or the presence of new or worsening respiratory symptoms. Examples include a decrease in airflow on spirometry or the development of symptoms such as cough, sputum production, or shortness of breath.

Order 43 AMPs are required to complete specific training in spirometry interpretation to ensure accurate and consistent detection of changes in lung function over time.

Updates to Pathway 2: Respiratory Health Standard Second Edition

Under the revised pathway, a confirmed spirometry abnormality (following repeat testing where needed) now triggers an HRCT scan as the next step in the investigation. This ensures early detection of respiratory changes, including those not visible on spirometry alone.

If mild spirometry abnormalities are identified, the coal mine worker will be referred for an HRCT scan, and further management will depend on the HRCT findings.

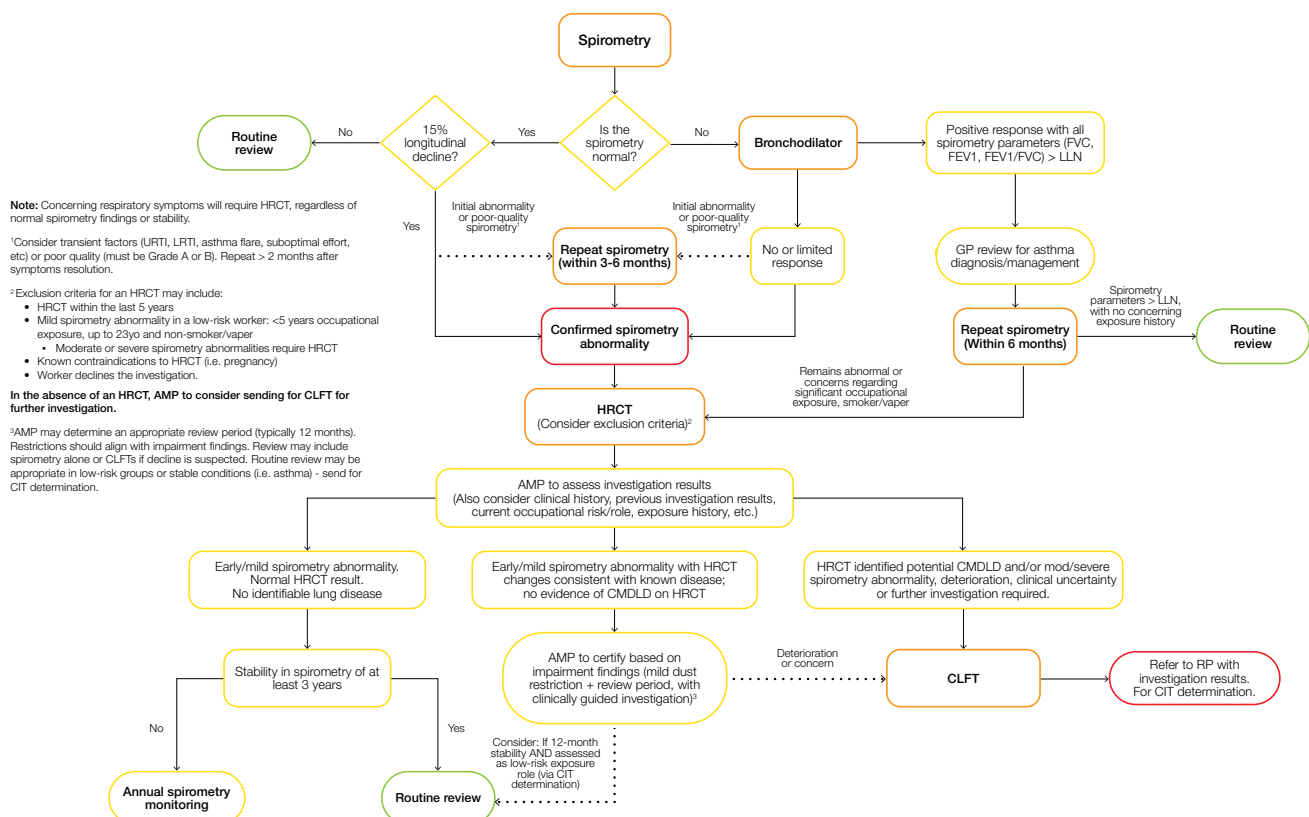
- If the HRCT is normal, the coal mine worker may require a period of increased surveillance (spirometry) or return to routine monitoring.
- If abnormalities are present, additional investigations, work restrictions, or specialist review may be required.

Coal mine workers with moderate or severe spirometry abnormalities will also undergo an HRCT scan, but are more likely to require CLFT and referral to a respiratory physician for further assessment and management.

All results from these investigations are reviewed by CS Health's Clinical Investigations Team (CIT) to determine appropriate ongoing medical management, certification outcomes, and follow-up.

In some cases, investigation outcomes may remain inconclusive. Many respiratory conditions can present similarly, and a lung biopsy may occasionally be required for diagnostic clarity. However, this procedure is not without risk and is generally not recommended when the coal mine worker is otherwise well and asymptomatic. Such complex or uncertain cases may be referred to an independent multidisciplinary team comprising a radiologist, respiratory physician, and occupational physician for further expert opinion.

Diagram 2: Spirometry/symptoms pathways



Examples

Chest x-ray pathway

Chest x-ray	Action and next steps
Normal	No further action required. The coal mine worker will attend their routine Order 43 periodic health assessment as scheduled.
Routine abnormal	There are changes on the chest x-ray unrelated to possible CMDLD. The coal mine worker is referred to their GP with follow-up as required. This is an existing process at CS Health.
Significant abnormality	These are any radiological changes that could indicate a possible CMDLD. The coal mine worker is referred for an HRCT scan. For an existing coal mine worker: • If HRCT is normal, the coal mine worker attends a routine health assessment review. • If HRCT is abnormal and found to be unrelated to coal mine dust exposure, the coal mine worker is referred to their GP with health assessment review as per routine abnormal process. • If HRCT is abnormal and is consistent with possible CMDLD, the coal mine worker is referred to a respiratory physician. In these cases, CS Health contacts the coal mine worker to explain the HRCT findings and referral process. Consent from the coal mine worker is required to discuss the referral with their employer. CS Health coordinates the referral process, liaising with the respiratory physician and coal mine worker to arrange appointments and transfer of clinical information (with coal mine worker's consent). CS Health will pay for the respiratory physician assessment and any required testing (excluding inpatient procedures, which are rarely required). For a new entrant to the NSW coal industry: • If HRCT is normal, the worker attends a routine health assessment review. • If HRCT is abnormal and found to be unrelated to coal mine dust exposure, the coal mine worker is referred to their GP with health assessment review as per routine abnormal process. • If HRCT is abnormal and is consistent with possible CMDLD, the coal mine worker is referred to their GP for investigation and respiratory physician referral. <i>For new entrants to the NSW coal industry, an Order 43 health assessment certificate will not be finalised until all clinical investigations are completed and a diagnosis is confirmed.</i>

Spirometry/symptoms pathway

Spirometry	Action and next steps
Normal	No further action required. The coal mine worker will attend their routine (3-yearly) Order 43 periodic health assessment as scheduled.
Abnormal	The coal mine worker completes bronchodilator responsiveness testing (BRT). Ventolin is used to assess if there is a change to respiratory function BRT, which may indicate the presence of asthma. BRT is recommended for all abnormal spirometry in resource sector respiratory monitoring, as per the TSANZ standard. If BRT is positive (possible asthma) and there are no other concerning clinical factors: • The coal mine worker is referred to their GP for asthma diagnosis and management. • A six (6) month health assessment review is scheduled for repeat spirometry and baseline assessment. • If spirometry normalises with treatment, the coal mine worker returns to routine monitoring. • If spirometry remains abnormal despite treatment, further investigation is required to exclude concurrent asthma and CMDLD, and some coal mine workers may require workplace dust restrictions depending on the ongoing abnormalities. This process mainly applies to younger, undiagnosed, or untreated asthmatics, aiming to avoid unnecessary testing where other significant respiratory diseases are very unlikely. If the BRT is negative or only partially responsive: • The coal mine worker proceeds to the HRCT pathway. • Subsequent management (further investigation, CLFT, referral to a respiratory physician or return to routine monitoring) is determined based on the severity of the spirometry abnormality and HRCT findings.
Serial decline in respiratory function or unexplained symptoms	• The coal mine worker proceeds to the HRCT pathway. • Subsequent management (further investigation, CLFT, referral to a respiratory physician or return to routine monitoring) is determined based on the severity of the spirometry abnormality and HRCT findings.

Diagram 3: Example of a health assessment certificate detailing restricted dust exposure

Health assessment certificate

Determination

Coal mine worker can continue to carry out the work?
Yes ☒
No ☐

Comments

Remedial measures required?
Yes ☒
No ☐

Comments
Should aim, as far as reasonably practicable, to comply with reduced 8-hour time weighted exposures not likely to exceed 1mg/m³ RCD, 0.025mg/m³ RCS

Any test results indicating a disease, illness or injury as a result of carrying out the work?
Yes ☐
No ☒

Comments

Medical counselling required?
Yes ☐
No ☒

Comments

Follow up

Review type		Review time
Medical review	☒	12 months
Vision	☐	
Audiometry	☐	
Spirometry	☒	12 months
Other (refer to comments for details)	☐	

Follow up comments

Should aim, as far as reasonably practicable, to comply with reduced 8-hour time weighted exposures not likely to exceed 1mg/m³ RCD, 0.025mg/m³ RCS
Spirometry in 12 months

Employer actions

Is the Employer required to take any action as part of the follow up?
Yes ☒
No ☐

Actions (if required):
Recommend a Health Management Plan be developed

Comments:
Should aim, as far as reasonably practicable, to comply with reduced 8-hour time weighted exposures not likely to exceed 1mg/m³ RCD, 0.025mg/m³ RCS

Diagram 4: Example of health management process for affected workers and their employers



Support for affected coal mine workers

Being referred to a respiratory physician for further investigations can be stressful. Coal mine workers certified with dust exposure restrictions may feel anxious about their job security and livelihood, adding to their stress.

CS Health's Clinical Investigation Team (CIT) will support affected coal mine workers through the referral process and discuss the support options available which may include the workplace Employee Assistance Program.

CS Health also encourages coal mine workers to discuss the referral with their employer so they can be supported by their workplace.

Roles and responsibilities of the employer

In the context of the Respiratory Health Standard, employers are responsible for:

- ensuring coal mine workers have a health assessment and/or have attended any health assessment reviews and any further respiratory follow-up required under Order 43 and other relevant legislation
- notifying the AMP assessing the coal mine worker if any health monitoring requirements in NSW Work Health and Safety Regulation 2025 Sch 14 are required in addition to the standard monitoring under Order 43
- notifying the AMP assessing the coal mine worker if any remote work is undertaken by the coal mine worker
- considering and, where appropriate, implementing any recommended workplace remedial measures identified in the health certification provided by the AMP
- assessing and monitoring the coal mine dust, isocyanate, welding fumes, and any other exposure levels requiring environmental and/or health monitoring for all job roles
- ensuring coal mine workers adhere to any required dust level exposure restrictions.

Reference documents

[*Cohen R, Go L, Knott P, Shao Y, Yates D, Cleveland D, Kennedy D. Review of the Coal Services Health Inhalable Mine Dust Restrictions. University of Illinois Chicago School of Public Health April 2025*](#)

[*Standards for the delivery of Spirometry for resources sector workers*](#) TSANZ 2022

[*Mine Dust Lung Disease Clinical Pathways Guideline*](#) RSHQ 2023

[*Workers' Compensation Regulatory Services \(WCRS\) Returning workers with mine dust lung disease to the workplace guide*](#)

Information and resources

Resources for approved medical practitioners

CS Health has developed the following resources to assist approved medical practitioners when performing Order 43 health assessments on NSW coal mine workers:

- The NSW Coal Industry Respiratory Health Standard
- Clinical Pathways for Coal Mine Dust Lung Disease Monitoring: supporting clinical guidance notes for medical practitioners
- Guidelines for Managing Identified Lung Disease in the NSW Coal Industry

In addition to the above, coal mine workers and employers may find the following information on the Coal Services website: www.coalservices.com.au

Fact sheets for coal mine workers and employers

- Preparing for your Order 43 medical assessment
- Spirometry
- Complex lung function testing (CLFT)
- High resolution computed tomography (HRCT)
- Respiratory physician referrals

Frequently asked questions

A compilation of FAQs from stakeholder meetings and industry forums is also available on the Coal Services website. The FAQs will be reviewed and updated over time as required.

Contact us

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