Resources Safety & Health
Queensland

QGL04

Guideline for respiratory health surveillance of workers in Queensland mineral mines and quarries

Mining and Quarrying Safety and Health Act 1999
Mining and Quarrying Safety and Health Regulation 2017

Month 2020, DRAFT Version 1.0

This publication has been compiled by Resources Safety & Health Queensland.

Interpreter statement:

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This document is issued in accordance with Part 5 and Section 63(1) of the Mining and Quarrying Safety and Health Act 1999

Part 5 Guidelines

62 Purpose of guidelines

A guideline may be made for safety and health stating ways to achieve an acceptable level of risk to persons arising out of operations.

63 Guidelines

(1) The Minister may make guidelines.

(2) The Minister must notify the making of a guideline by gazette notice.

(3) The CEO must publish on a Queensland government website each guideline and any document applied, adopted or incorporated by the guideline.

(4) In this section—

Queensland government website means a website with a URL that contains 'qld.gov.au', other than the website of a local government.

64 Use of guidelines in proceedings

A guideline is admissible in evidence in a proceeding if—

(a) the proceeding relates to a contravention of a safety and health obligation imposed on a person under part 3; and

(b) it is claimed that the person contravened the obligation by failing to achieve an acceptable level of risk; and

(c) the guideline is about achieving an acceptable level of risk.

The words 'shall', 'must' or 'mandatory' place a legal obligation on the identified person or entity. The word 'should' indicates a recommended course of action, while 'may' indicates an optional course of action.

This guideline is issued under the authority of the Minister for Natural Resources, Mines and Energy and applies to all Queensland mineral mines and quarries.

[Gazetted XX Month 2020]

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Definitions of key terms

Act (the)	*Mining and Quarrying Safety and Health Act 1999.*
Appropriate Doctor	A doctor who is appropriately qualified and has demonstrated knowledge of the risks associated with activities performed by workers at the mine at which the person becomes, is or stops being a worker (Schedule 7 of the Regulation).
Auscultation	Listening, generally through a stethoscope or other instrument, to sounds within the body.
Health assessment	A physical and medical assessment of the worker to evaluate the worker's ability to tolerate a hazard without harming the worker or the worker's future children (Section 131 of the Regulation).
Health surveillance	Monitoring, including biological monitoring and medical assessment, of a person to check for changes in the person's health because of exposure to a hazard (Schedule 7 of the Regulation).
Health surveillance report	Information, other than a medical record, about the effects on a person's health related to the person's exposure to a hazard at a mine, and the need, if any, for remedial action (Section 145A of the Regulation).
HRCT scan	High Resolution Computed Tomography (HRCT) scan.
Medical record	Personal medical results or clinical findings obtained from a fitness or health assessment or health surveillance of the person (Schedule 7 of the Regulation).
Mine	A mine as defined in the Act includes a place where operations are carried on continuously or from time to time, it also includes a quarry (Section 9 of the Act).
NIOSH	National Institute for Occupational Safety and Health.
Worker	For the avoidance of doubt a worker for the purposes of this guidance includes contractors, employees, labour hire worker, service providers, and any person who performs any work activity at a mine or quarry. This also includes family members and friends who work on the site.
Monitoring	A program or strategy that uses sampling to estimate workers' exposure or assessing the magnitude of exposure, in particular to respiratory hazards.
Operations	Means activities carried on principally for, or in connection with, exploring for, winning, or winning and treating, minerals or hard rock (Section 10 of the Act).
QGL02	*QGL02: Guideline for management of respirable dust in Queensland mines and quarries.*
Regulation (the)	Mining and Quarrying Safety and Health Regulation 2017.
Respiratory hazard	The term 'respiratory hazard' used in this guideline means a hazard with the potential to cause injury or illness to a person's respiratory system. Respirable hazards typically found in a mineral mine or quarry include respirable crystalline silica and other airborne dusts, particulates, fibres, asbestos, welding fumes and diesel exhaust.

RSHQ	Resources Safety & Health Queensland (RSHQ) – responsible for administering the Act and Regulation under the *Resources Safety and Health Queensland Act 2020.*
Site senior executive (SSE)	A site senior executive (SSE) for a mine as defined in the Act is the most senior officer employed or otherwise engaged by the operator for the mine who is located at or near the mine; and has responsibility for the mine. One of the key direct responsibilities of this individual is the safety and health obligations for workers at the mine under the Act. This includes the assessment of the operational requirements and frequency of health surveillance.

1 Purpose and scope

This document is issued in accordance with Part 5, Section 63(1) of the Act and states ways a site senior executive (SSE) can achieve an acceptable level of risk related to preventing occupational respiratory disease through respiratory health surveillance. Respiratory health surveillance of workers is required under Section 7(j) of the Act and Section 145C of the Regulation. The guideline provides advice on:

a) the importance of respiratory health surveillance;

b) frequency of respiratory health surveillance;

c) when respiratory health surveillance may not apply;

d) examinations that constitute a respiratory health surveillance medical; and

e) practitioners that can undertake the examinations that constitute respiratory health surveillance.

This guideline must be used to develop and implement respiratory health surveillance to check for changes in a person's health because of exposure to a respiratory hazard. Respiratory hazards typically found in a mineral mine or quarry include dusts (such as respirable crystalline silica and other airborne inhalable and respirable dusts), asbestos, welding fumes and diesel engine exhaust particulates.

1.1 Other references

This guideline must be read in conjunction with the Act, Regulation and *QGL02: Guideline for management of respirable dust in Queensland mines and quarries*, which deals with:

a) identification, analysis and monitoring the risks associated with respirable dust hazards; and

b) establishing and maintaining effective controls associated with respirable dust exposure.

1.2 Additional resources

a) *Miners' Health Matters* website – for educational videos and further information about types of disease, exposure controls, health surveillance and support for workers: www.rshq.qld.gov.au/miners-health-matters

b) *Mine Dust Health Support Service* – help for current and former workers with understanding the screening and diagnostic process, their compensation rights and how to access ongoing support. This includes free lung checks for retired and former workers. The service can be contacted either by calling 1300 445 715 or by email: info@minedusthealthsupport.com

2 Introduction

The Act and Regulation establish a regulatory framework that protects the safety and health of persons at mines and persons who may be affected by operations. This includes requirements for health surveillance. Health surveillance is the monitoring or testing of a person's health to identify changes in their health because of exposure to a hazard.

On 1 September 2020, the Regulation was amended to prescribe specific respiratory health surveillance requirements for all mineral mine and quarry (MMQ) workers in Queensland. The changes introduced a regulatory framework that ensures:

a) respiratory health surveillance is provided to workers prior to commencing work in the MMQ industry and then at least once every five years;

b) that medical examinations are consistent with best practice respiratory screening including spirometry and chest X-ray reported to the International Labour Organisation (ILO) standard;

c) retired and former workers have voluntary access to free respiratory health surveillance; and

d) a doctor can delay a medical examination for up to a year if it creates an unnecessary risk, for example exposing a pregnant worker to radiation from chest X-rays.

A respiratory hazard enters the body through inhalation and has the potential to cause injury or illness to the respiratory function of the person.

Undertaking respiratory health surveillance does not remove the requirement to implement and constantly review control measures to reduce exposure. These control measures should be applied in accordance to the hierarchy of controls. Additionally, this guideline does not remove the requirement under the Regulation to arrange health surveillance for other health hazards.

2.1 Importance of respiratory health surveillance

Queensland mineral mine and quarry workers can be exposed to a broad range of respiratory hazards. These include mineral and metallic dusts arising from production and refining processes (such as silica, asbestos, aluminium, beryllium, iron, and cadmium) in addition to welding fumes and diesel particulates.

Occupational exposure to respiratory hazards can lead to a range of lung scarring and inflammatory diseases. These include occupational asthma, pneumoconiosis (such as silicosis, asbestosis, aluminosis, berylliosis and siderosis), and chronic obstructive pulmonary diseases (such as chronic bronchitis and emphysema).

The likelihood of developing disease is dependent on the toxicity of the hazard, the concentration, frequency and duration of exposure. Susceptibility can vary from person-to-person and other factors, such as smoking, can also affect the likelihood of disease developing and the extent of health impacts.

Exposure to some respiratory hazards may also increase the risk of lung cancer. The International Agency for Research on Cancer has classified many potential respiratory hazards in mining and quarrying as Group 1 human carcinogens such as respirable crystalline silica, asbestos, welding fume and diesel engine exhaust.

Occupational lung diseases generally have long latency, meaning they take many years to develop and can present long after exposure has ceased. Once diagnosed, most treatments aim to limit further damage to the lungs, manage symptoms and improve quality of life. For mild or early cases, there may be no symptoms and managing further exposure may stabilise the disease, preventing it from getting worse. However, with continued exposure to respiratory hazards, mild disease can advance, for example pneumoconiosis reaching a state of Progressive Massive Fibrosis (PMF), which is the most severe or debilitating stage of lung scarring and inflammatory disease.

That is why early detection of occupational lung disease through respiratory health surveillance is so important. Disease can be detected and further exposure managed before health effects and impacts to quality of life become more severe. Detecting disease is also important to measure the effectiveness of hazard control measures and support targeted responses to address any deficiencies.

Professional advice is available from occupational hygienists specialising in mining and quarry hazards and doctors experienced in occupational medicine.

3 Undertaking respiratory health surveillance

Section 145C of the Regulation requires the SSE to arrange respiratory health surveillance for all workers before they start work in the industry, while they are working and when they retire. The section also provides that the SSE may determine through a risk assessment, that the person's current or previous exposure is very low which can be managed without respiratory health surveillance. Chapter 4 of this document provides guidance on assessing this risk.

The SSE, in consultation with an Appropriate Doctor, should design and implement a respiratory health surveillance program. The program should ensure that the frequency of respiratory health surveillance, or the medical examinations that make up the respiratory health surveillance, are appropriate to the level of risk identified by the SSE through a risk assessment. The factors to consider include the effectiveness of controls, the toxicity of respiratory hazards (both current and previous exposure) and the concentration, frequency and duration of exposure.

Workers exposed to elevated levels of respiratory hazards, even though they may be wearing personal protective equipment (PPE), should have their respiratory health monitored closely. If a person's duties or tasks significantly change, another risk assessment should be undertaken to ensure that their respiratory health surveillance remains appropriate.

The minimum frequency and requirements of respiratory health surveillance are detailed in sections 145F to 145I of the Regulation.

3.1 Frequency

Respiratory health surveillance must be undertaken at the following minimum occasions.

3.1.1 Before a person becomes a worker

Respiratory health surveillance is required before a person first joins, or re-joins, the industry and they have not had a respiratory health surveillance medical (that meets the regulatory requirements) in the previous five years.

3.1.2 Periodically for a current worker

The maximum period between respiratory health surveillance must not be more than five years for current workers. The frequency of respiratory health surveillance, or the medical examinations that make up the respiratory health surveillance, will be determined by:

a) the respiratory health surveillance program determined by the SSE in consultation with the Appropriate Doctor; or

b) the recommendation of the Appropriate Doctor made in the health surveillance report; or

c) advice from the Appropriate Doctor at any time.

Higher frequencies should be implemented where changes in a worker's health can be detected in a period shorter than five years and the potential health impacts can be reduced or avoided with earlier intervention. For example, early signs of lung function decline should have spirometry repeated again in 12 months.

If there are two or more recommendations made by an Appropriate Doctor, the shortest period recommended must be used by the SSE. This may occur when a recommendation is made in a health

surveillance report, which is later superseded by an Appropriate Doctor's recommendation based on change in risk or best practice.

Respiratory health surveillance is not required when changing employers or sites if the risks are unchanged.

3.1.3 When a worker retires

A worker that is permanently stopping work in the industry may request the SSE arrange an exit respiratory health surveillance medical. The SSE must arrange this if the person has worked in the industry for at least three years and has not had a respiratory health surveillance medical during the last three years.

3.2 Delaying an examination

3.2.1 Where an examination presents risks

In exceptional circumstances, an Appropriate Doctor has the discretion to delay an examination for up to 12 months. The Appropriate Doctor will consider the risks associated with the examination against the risks of not doing the examination.

This provision addresses potential situations where there is a health risk to the worker associated with the examination that outweighs the risk to the worker or co-worker of delaying the examination.

For example, where a worker is pregnant, the chest X-ray examination could be performed up to 12 months after the due date for the respiratory health surveillance, to minimise any risk to an unborn child.

3.2.2 Additional examinations

If an additional examination is required (e.g. HRCT scan), and it cannot be carried out within the required period (e.g. before five years since the previous medical, or before the person starts work), it must be carried out as soon as practicable.

3.3 Payment

The employer is required to pay for their workers' health surveillance. This includes examinations, referrals, further tests and reasonable travel expenses for any further investigations required to complete the health surveillance (e.g. HRCT scan, respiratory physician assessment).

4 When respiratory health surveillance may not apply

The default requirement of the Regulation is that respiratory health surveillance is required for all workers. However, Section 145C(2) recognises that some workers' current and previous exposure to respiratory hazards is so minimal, any risk can be managed without respiratory health surveillance.

If an SSE is managing these minor risks without respiratory health surveillance, this must be documented by a risk assessment. The risk assessment must include an evaluation of current occupational exposure, a workers' previous work history and any relevant medical conditions the worker may have. Consideration should also be given to relevant information and data from, and practices in, other industries and mining operations.

Further guidance on the requirements for the risk assessment are provided in the following.

4.1 Current operations

The risk assessment must also consider:

a) the potential for workers to be exposed to respiratory hazards while undertaking their duties, including infrequent tasks;

b) whether there are control measures in place to protect the worker from respiratory hazards;

c) the effectiveness and reliability of the control measures, and the probability of unacceptable exposure in the event of its ineffective application;

d) whether there is available occupational exposure monitoring data relevant to each worker's exposure; and

e) the level of unprotected exposure each worker may experience and the potential for that exposure to cause an adverse health effect.

In addition, the risk assessment should also consider any risk assessments and exposure monitoring conducted pursuant to the requirements of QGL02.

4.2 Worker specific considerations

If a worker has previously been subject to respiratory health surveillance, the presumption is that the worker should be subject to ongoing respiratory health surveillance.

The risk assessment must consider any relevant medical conditions that may increase the worker's susceptibility to respiratory health hazards.

Occupational exposure for each worker includes:

a) previous occupational history of the person in its entirety;

b) the effectiveness and reliability of the historical control measures and the level of protection afforded to the person against the respiratory hazard;

c) the potential for the person to have been exposed to the respiratory hazard while undertaking those roles, duties and tasks;

d) whether there is occupational exposure monitoring data relevant to the person's historical exposure; and

e) the level of unprotected exposure the person may have suffered and the potential for that exposure to have caused an adverse health effect.

4.3 Review of health risk

The SSE, in consultation with workers, must review the information collected. If this review finds that the risk to the respiratory health of workers is so minimal that that it can be managed without respiratory health surveillance, the SSE must ensure that sufficient documentary evidence is collated to support the findings.

The use of PPE is not an acceptable justification for exemption from respiratory health surveillance for workers in environments that have elevated levels of respiratory hazards.

The SSE must ensure that the findings of the review are documented in the Mine Record.

An Inspector of Mines may direct a mine to undertake respiratory health surveillance if the Inspector of Mines reasonably believes that a risk to the respiratory health of a worker or workers exists at the mine.

5 Examinations required for respiratory health surveillance

The Regulation specifies the minimum medical examinations required for respiratory health surveillance to detect signs of respiratory disease early. The following procedures and standards are ways of performing these examinations to achieve an acceptable level of risk when implementing respiratory health surveillance.

5.1 Chest examination

A chest examination must be conducted that includes:

a) an examination of chest expansion; and

b) auscultation.

5.2 Chest X-ray examination

A chest X-ray examination must be conducted in accordance with the following:

a) digitally-acquired posterior-anterior chest X-ray image;

b) the *Standards for acquiring digital chest radiography images for medical surveillance of Queensland coal mine workers* for acquiring the image[1];

c) the chest X-ray must be reported in compliance with the *Guidelines for the use of the ILO International Classification of Radiographs of Pneumoconioses* (ILO Guidelines) published by the International Labour Organization;

d) only authorised ILO standard digital images must be used and not modified using software tools;

e) chest X-rays that are graded ILO image quality 4 must not be reported – they must be rejected back to the imaging clinic or referring entity and another image acquired;

f) comparative assessment with previous images should be conducted where available; and

g) technical specifications and related requirements as specified in **Appendix 1.**

5.3 Further reading of the chest X-ray

Additional readings of the chest X-ray must be conducted to deliver a single final ILO classification report, including:

a) read in accordance with the reporting requirements of a chest X-ray examination as specified in 5.2 and **Appendix 1**;

b) read independently to the chest X-ray examination (i.e. blind read);

c) where there is agreement between the first two reported classifications, the result is considered final and a single ILO classification report provided to the referring entity;

d) when agreement cannot be reached between the first two readings, a third independent classification must be obtained;

[1] Chest X-ray standards https://www.rshq.qld.gov.au/__data/assets/pdf_file/0012/1276797/standards-for-digital-chest-radiography-images-for-medical-surveillance-of-queensland-coal-mine-workers.pdf

e) if any two of the three classifications demonstrate agreement, the result must be considered the final determination;

f) when agreement cannot be reached among the three classifications, two further independent classifications must be obtained, and the final determination will be the median category derived from the total of five classifications;

g) two classifications are considered to be in agreement when:

   i. both find either stage A, B or C complicated pneumoconiosis; or

   ii. for simple pneumoconiosis, are both in the same major category or are within one minor category (ILO classification 12-point scale) of each other (subject to the exception stated below) – the higher of the two classifications must be reported;

   iii. the only exception to the one minor category principle is a reading sequence of 0/1, 1/0 or 1/0, 0/1, which are not considered in agreement.

h) the final ILO classification report must be represented in a structured template document that covers all components of the example Reading Sheets as described in Appendix B of the ILO Guidelines, see the NIOSH Coal Workers' Health Surveillance Program Chest Radiograph Classification Form[2] for an example (unstructured plain text descriptions are not acceptable).

i) a quality control program that meets the requirements specified in **Appendix 2**.

5.4 Spirometry

A lung function test by spirometry must be conducted including:

a) in accordance with the *Thoracic Society of Australia and New Zealand (TSANZ) standards for the delivery of spirometry for coal mine workers*[3]; and

b) a comparative assessment of the person's spirometry if the results of one or more previous spirometries for the person are available.

5.5 Further examination

The Appropriate Doctor must undertake further examinations necessary to follow-up and investigate abnormalities to ensure early detection and diagnosis of injury or illness to the person's respiratory system. This includes referring the worker for additional tests e.g. HRCT scan or advanced lung function tests and to an appropriate respiratory specialist for review and diagnosis.

The further examination must be carried out as soon as practicable, even if it occurs after the date the respiratory health surveillance must have been completed.

The Coal Mine Workers' Health Scheme (CMWHS) Clinical Pathways Guideline[4] lays out the recommended processes for follow-up investigations and referrals resulting from regular screening and, if appropriate, reaching a confirmed diagnosis. The pathway must be used unless there is a valid

[2] Example ILO report https://www.cdc.gov/niosh/topics/cwhsp/pdfs/cwhsp-readingform-2.8.pdf

[3] Spirometry standards www.rshq.qld.gov.au/__data/assets/pdf_file/0003/1274421/tsanz-spirometry-standards.pdf

[4] Clinical Pathways Guideline www.rshq.qld.gov.au/__data/assets/pdf_file/0005/1278563/cmwhs-clinical-pathways-guideline.pdf

medical reason for an alternate action. These reasons should be documented by the Appropriate Doctor.

5.6 Documenting and reporting

The medical records and clinical results of the respiratory health surveillance examinations should be documented and a report must be produced that describes the outcome.

5.6.1 Respiratory health surveillance medical examination form

The clinical findings from the respiratory health surveillance examinations and associated medical records should be documented by the Appropriate Doctor. A recommended example of an appropriate form is available from RSHQ's website.

An SSE must obtain written consent from a worker before obtaining a copy of this form or any associated medical records. The SSE may then only disclose this information with consent of the worker[5].

5.6.2 Health surveillance report

The Appropriate Doctor must prepare a health surveillance report and give:

a) a copy to the SSE; and

b) a copy and explanation to the worker.

The report must include information about:

a) any effects on a worker's health related to the worker's exposure to a hazard at a mine or quarry; and

b) the need, if any, for remedial action.

This report must not include any medical records such as the examination form.

A recommended example of an appropriate report template is available from RSHQ's website.

[5] Section 120 of the Regulation.

6 Choosing a medical practitioner

Medical practitioners with the following qualifications and experience are considered adequate to achieve an acceptable level of risk when undertaking respiratory health surveillance.

6.1 Appropriate Doctor

Respiratory health surveillance examinations must be done by, or under the supervision of, an Appropriate Doctor. It is their role to ensure the examination is conducted appropriately and to advise the SSE on risks and recommended health surveillance programs for workers. It is vital that they are appropriately qualified in occupational health and have suitable experience within the resources industry. If another doctor performs the examination, the Appropriate Doctor must complete the health surveillance report.

The specific qualifications and experience for the Appropriate Doctor, or another doctor performing the examination, are provided in **Appendix 3.**

Doctors approved under the Coal Mine Workers' Heath Scheme as Supervising Doctors are considered adequately qualified and experienced to be used as an Appropriate Doctor.

Doctors approved under the Coal Mine Workers' Heath Scheme as Examining Medical Officers are considered adequately qualified and experienced to complete an examination under the supervision of an Appropriate Doctor.

A register of approved Supervising Doctors and Examining Medical Officers is available on RSHQ's website:
www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/medicals/register-providers

6.2 Chest examination

An Examining Medical Officer under the supervision of the Appropriate Doctor, or an Appropriate Doctor, can undertake a chest examination.

6.3 Chest X-ray examination

6.3.1 Imaging clinic

Chest X-ray imaging clinics that meet the requirements stated in Chapter 5.2 of this guideline and comply with the *Standards for acquiring digital chest radiography images for medical surveillance of Queensland coal mine workers* are suitable to acquire images for chest X-ray examinations.

A register of approved chest X-ray imaging clinics that meet the requirements and comply with the standards is available on RSHQ's website:
www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/medicals/register-providers

6.3.2 Radiologist

A radiologist must report the chest X-ray to provide the first ILO classification report in accordance with the requirements stated in Chapter 5.2 of this guideline. They may be employed at the same

imaging clinic where the image was acquired (or the same radiology company network), or it can be a radiologist from a different radiology company.

The radiologist must have the following minimum qualifications and experience:

a) registered as a specialist in radiology with the Australian Health Practitioner Regulation Agency;

b) Fellow of the Royal Australian and New Zealand College of Radiologists;

c) successfully completed the NIOSH B-reader competency exam in the use of the ILO International Classification of Radiographs of Pneumoconioses; and

d) maintain B-reader proficiency by both:

   i. completing a minimum of 8000 reads over four years; and

   ii. successfully completing the NIOSH B-reader retest every four years (or as otherwise required by NIOSH to maintain B-reader status).

A register of approved radiologists that meet these requirements is available on RSHQ's website:

www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/medicals/register-providers

Other radiology providers that RSHQ has validated against these requirements will be notified on RSHQ's website and also noted in the recommended template respiratory health surveillance examination form.

6.3.3 Further reading provider

Radiology providers can deliver further reading services if they meet the requirements of both:

a) the further reading program specified in Chapter 5.2 of this guideline; and

b) the minimum qualifications and experience for radiologists specified in Chapter 6.3.2 of this guideline.

Radiology providers that RSHQ has validated to deliver further reading services against these requirements will be notified on RSHQ's website and also noted in the recommended template respiratory health surveillance examination form.

6.4 Spirometry

Spirometry tests must be taken by medical practices that:

a) are accredited against the *Thoracic Society of Australia and New Zealand standards for the delivery of spirometry for coal mine workers*; and

b) utilise staff that have successfully completed training courses accredited against the *Thoracic Society of Australia and New Zealand Standards for Spirometry Training Courses*.

A register of approved spirometry practices and spirometry training courses accredited against the standards is available on RSHQ's website:
www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/medicals/register-providers

6.5 Further examinations

The Appropriate Doctor must use their professional judgement to choose relevant medical providers to deliver further examinations that may be required. They should undertake prior confirmation with specialists that workers may be referred, to ensure they are suitably experienced, willing and able to deliver accurate diagnostic advice in relation to occupational respiratory disease. The following medical practitioners are recommended:

6.5.1 HRCT

A chest radiologist with B-reader certification.

6.5.2 Advanced lung function testing

A Thoracic Society of Australia and New Zealand accredited respiratory function laboratory[6] should be used for advanced testing such as diffusing capacity of the lung for carbon monoxide (DLCO) and lung volume tests.

6.5.3 Respiratory physician

A specialist physician on the Thoracic Society of Australia and New Zealand register[7] for mine dust lung disease.

6 https://www.thoracic.org.au/respiratorylaboratoryaccreditation/australia
7 https://www.thoracic.org.au/information-public/register-of-physicians-in-queensland

7 The respiratory health surveillance process

The SSE is responsible for the respiratory health surveillance process. The following six key steps are provided to guide an SSE to establish and undertake respiratory health surveillance.

Step 1: Engage with your workers

Workers may be reluctant to participate in respiratory health surveillance. It is therefore important to engage and support workers by highlighting the importance and benefits of respiratory health surveillance.

The Miners' Health Matters website (search Miners' Health Matters) provides short informative videos to describe disease risks and what the medical examinations involve.

Step 2: Appoint an Appropriate Doctor

The Regulation requires that an Appropriate Doctor is to supervise or undertake the respiratory health surveillance. Guidance on identifying an Appropriate Doctor is provided earlier in this document.

Step 3: Organise and pay for the respiratory health surveillance

The SSE arranges the respiratory health surveillance for each worker in line with the program developed in consultation with an Appropriate Doctor.

A worker's employer must pay for a worker's medical examinations, consultation, travel, and the health surveillance report. If a worker requires further examinations and tests to confirm a diagnosis, for example by a specialist, the employer must also pay for these costs. The employer is not responsible for the treatment of any medical condition.

Step 4: Review the health surveillance report

The health surveillance report is prepared by the Appropriate Doctor and provided to the SSE and the worker. The worker can request that this report is also provided to a doctor they nominate.

The health surveillance report may include actions or recommendations. These actions and recommendations must be considered and should be addressed, as far as is reasonably practicable, as workers should be given the highest level of protection.

The Appropriate Doctor may recommend that respiratory health surveillance, or one or more of the medical examinations, is to be carried out more frequently. The SSE must ensure that this new frequency of examinations is followed. The worker's employer must continue to pay for the more frequent examinations. However, the employer is not responsible for the treatment of any medical condition.

The Appropriate Doctor may place / recommend restrictions on a worker to minimise their risk and prevent further injury or illness. These restrictions aim to manage the risk for the worker and should be detailed in the health surveillance report and explained to the worker by the Appropriate Doctor when the report is completed.

Step 5: Reporting disease

The SSE must report diseases to an inspector and district workers' representative[8].

The list of diseases that must be reported can be found in Schedule 1A of the Regulation, available at www.legislation.qld.gov.au. The reporting requirements can also be found at: https://www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/accidents-incidents-reports/report-prescribed-disease.

Step 6: Keeping accurate records

The SSE is responsible for keeping records for workers who undertake health surveillance. The health surveillance report must not contain clinical notes or medical test results, unless written consent has been given by the worker.

The health surveillance report contains sensitive and personal information about the worker. This report, and the information it contains, should be stored, used and disposed appropriately. The SSE should therefore take reasonable steps to protect this information from loss, unauthorised access or unauthorised disclosure or alteration. These records should be auditable. The confidentiality provisions included in the Act[9] requires that personal information shall only be disclosed with the consent of the person or in the administration of the Act.

The Regulation[10] requires the SSE to obtain the written consent of the worker before obtaining a worker's medical record. It also provides that the SSE can only disclose this information with consent of the worker.

Many respiratory diseases have a long latency period. In accordance with the Regulation, health surveillance reports must be kept for 30 years[11].

In the event that the mine or quarry ceases operation, the SSE must ask for, and comply with the directions from the CEO of RSHQ[12] about these records.

8 Section 195(6) of the Act.
9 Section 255 of the Act.
10 Section 120 of the Regulation.
11 Section 145E of the Act.
12 Section 145E of the Regulation.

Appendix 1. Technical requirements for chest X-ray examinations and further readings

Chest X-ray examinations and associated further readings must be conducted in accordance with the following technical specifications and related requirements:

a) technical specifications and relevant requirements for reporting chest X-rays should be in accordance with the latest edition of the *NIOSH Guideline - Application of Digital Radiography for the Detection and Classification of Pneumoconiosis*[13];

b) relevant requirements of the latest version of the *Royal Australian and New Zealand College of Radiologists Standards of Practice for Clinical Radiology*[14] (RANZCR SOP) should be used;

c) if the RANZCR SOP requirements conflict with this document, this document applies unless there is a sound medical reason or an equivalent or better outcome achieved;

d) viewing software (such as NIOSH B-Viewer, equivalent or superior) must be used that is capable of ensuring the reader's ability to modify the appearance of the ILO standard comparison images is limited and the specific settings used for displaying the chest X-ray images are documented;

e) calibrated software measuring tools must be used to measure the width and length of pleural shadows and the diameter of opacities;

f) software tools whose purpose is to reduce noise, enhance edges, or restore image appearances should not be applied to the subject image;

g) the presentation state(s) that were used in performing the actual classification should be saved, if possible;

h) viewing systems must enable readers to display the chest X-ray image at the full resolution of the image acquisition system, side-by-side on an identical display device with the selected ILO standard images for comparison;

i) two side-by-side flat panel colour-matched diagnostic quality medical displays must be used that are capable or monochrome display and compliant with DICOM Grayscale Standard Display Function standard;

j) the viewing panels must be of identical make and model, displaying at a minimum 3MP at 10 bit depth;

k) display system luminance (maximum and ratio), relative noise, linearity, modulation transfer function, frequency, and glare in relation to diagnostic imaging monitors must be appropriate for the activity for which they are used and at a minimum, the RANZCR SOP requirement for monitors should be complied with for primary monitors;

l) viewing displays must provide a maximum luminance of at least 171 candelas/m^2, a ratio of maximum luminance to minimum luminance of at least 250, and a glare ratio greater than 400 (the contribution of ambient light reflected from the display surface should be included in luminance measurement considerations since some level of ambient light is always present;

[13] NIOSH Guideline https://www.cdc.gov/niosh/docs/2011-198/default.html
[14] RANZCR SOP https://www.ranzcr.com/college/document-library/standards-of-practice-for-clinical-radiology

m) colour displays may be used if the devices adhere to the requirements stated above, RANZCR SOP states that colour monitors should be at least a 24 bit colour display;

n) if a different display hardware and software is used, image uniformity can be maximised if image displays and associated graphics cards meet the calibration and other specifications of the current DICOM standards and does not deviate by more than 10 per cent from the grayscale standard display; and

o) The Commonwealth Department of Health Capital Sensitivity measure must be applied, with new innovative technology acceptable if an equivalent or superior outcome is achieved.

Appendix 2. Quality control program for further readings

Further readings of the chest X-ray examination must implement a quality control program that includes:

a) reports within 10 business days after the end of the quarter, to each imaging clinic or radiology house that specifies the following detail for the quarter, trends against previous quarters and an annual aggregate:
    i. name of each imaging clinic;
    ii. number of images reported;
    iii. feedback on ILO quality grading including percentage graded quality 1 or 2; and
    iv. other specific quality issues; and

b) quarterly reports within 10 business days to each reader that specifies the following detail for the quarter, trends against previous quarters and an annual aggregate:
    i. number of images reported;
    ii. breakdown of classifications by sub-category and comparison with other readers (de-identified) for each read in a rolled-up method;
    iii. average turnaround time from receiving the image to issuing a classification; and
    iv. number of classification reports with content errors or omissions.

Appendix 3. Doctor qualifications and experience

Appropriate Doctor

An Appropriate Doctor for respiratory health surveillance must meet all the following requirements (i.e. 1, 2A or 2B, 3, 4 and 5):

1. Hold general or specialist registration with the Australian Health Practitioner Regulation Agency (AHPRA); and

2A. Have a post-graduate qualification in occupational medicine or occupational health or an international equivalent, as per the Australian Qualifications Framework (AQF); or

2B. If a post-graduate qualification in occupational medicine or occupational health is not held, the following requirements must be met:

i. Have at least one of the following qualifications:

- Attained a Fellowship of the Royal Australian College of General Practitioners (FRACGP); or
- Attained a Fellowship of the Australian College of Rural and Remote Medicine (FACRRM); or
- Holds Specialist – General Practice registration with the Medical Board of Australia; and

ii. Have demonstrated experience of at least one of the following:

- Conducted at least 24 assessments and/or specific advice for the purposes of health surveillance (in any industry) each year over the last five years; or
- Conducted at least 24 assessments and/or specific advice regarding fitness to work (in any industry) each year over the last five years; or
- Have been employed/contracted to provide occupational health advice to a company/companies for at least 12 months in the last five years; and

Note: Occupational health advice could include health and wellbeing, vaccinations, providing strategies and education regarding occupational/mining hazards such as dust and silica dust exposure as well as advice relating to changes to dust screening and mandatory health assessments. Conducting assessments alone is not sufficient.

3. Have the following experience specific to the mining industry:

- Conducted at least 24 medicals for coal, mineral mine or quarry workers (face-to-face assessments, such as employer-specific pre-employment medicals) each year over the last three years; or
- Over-sighted at least 24 medical assessments each year for coal, mineral mine or quarry workers conducted by other health professionals each year over the last three years; or
- Provided at least 24 injury/illness management services each year to coal, mineral mine or quarry workers (for example for workers' compensation purposes) each year over the last three years; and

4. Visited an operating coal mine, mineral mine or quarry within the last three years; and

5. Enrolled in the Supervising Doctor training program required by RSHQ.

Examining Medical Officer

An Examining Medical Officer (EMO) for respiratory health surveillance must meet all the following requirements (i.e. 1 and 2):

1. Hold general or specialist registration with the Australian Health Practitioner Regulation Agency (AHPRA) – other registrations, such as limited registration, are not adequate; and

2. Enrolled in the EMO training program required by RSHQ.