



# **Commissioner for Mine Safety and Health**

Annual performance report 2016–17

© State of Queensland, 2017.

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence.



Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.

You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

For more information on this licence, visit <https://creativecommons.org/licenses/by/4.0/>.

The information contained herein is subject to change without notice. The Queensland Government shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.



25 October 2017

The Honourable Dr Anthony Lynham MP  
Minister for State Development and  
Minister for Natural Resources and Mines  
1 William Street  
Brisbane Qld 4000

Dear Minister

In accordance with section 73E(1) of the *Coal Mining Safety and Health Act 1999*, I am pleased to submit to you the Commissioner for Mine Safety and Health's annual performance report for the year ending 30 June 2017.

Yours sincerely

Kate du Preez  
Commissioner for Mine Safety and Health

# CONTENTS

---

BACKGROUND . . . . .	1
MESSAGE FROM THE COMMISSIONER. . . . .	2
INDUSTRY OVERVIEW . . . . .	4
Coal Workers’ Pneumoconiosis Select Committee . . . . .	8
PERFORMANCE OF THE INSPECTORATE. . . . .	9
Compliance and enforcement . . . . .	9
Review of compliance and enforcement functions. . . . .	13
Major projects . . . . .	13
Coal workers’ pneumoconiosis. . . . .	17
Small mines . . . . .	20
Management of respirable crystalline silica . . . . .	21
Management of exposure to lead . . . . .	23
Mines rescue. . . . .	25
Mine Safety and Health performance accountability framework. . . . .	28
Implementation of recommendations from the Coroners Court of Queensland . . . . .	28
Stakeholder engagement . . . . .	30
PEOPLE . . . . .	31
Resourcing . . . . .	31
Workforce skills development . . . . .	32
Leadership realignment . . . . .	32
Regulatory capture . . . . .	32
COMMISSIONER’S ACTIVITIES . . . . .	33
Advisory committee meetings . . . . .	33
Mine and quarry site visits . . . . .	33
Presentations . . . . .	36
Coal Mining Safety and Health Advisory Committee. . . . .	36
Mining Safety and Health Advisory Committee. . . . .	38
Occupational Health Mining Advisory Committee . . . . .	40
Mount Isa Lead Health Management Committee. . . . .	41
APPENDIX 1: QUEENSLAND GOVERNMENT ACTIONS TO DELIVER MONASH REVIEW RECOMMENDATIONS. . . . .	42
APPENDIX 2: RESPIRABLE CRYSTALLINE SILICA WORKSHOP FINDINGS . . . . .	47
ABBREVIATIONS AND DEFINITIONS . . . . .	48

## BACKGROUND

The office of the Commissioner for Mine Safety and Health was established under the *Coal Mining Safety and Health Act 1999* and the relevant provisions commenced under this Act and the *Mining and Quarrying Safety and Health Act 1999* on 1 July 2009.

The functions of the Commissioner for Mine Safety and Health are to:

- advise the Minister for Natural Resources and Mines on mine safety and health matters generally
- fulfil the roles of chair of the Coal Mining Safety and Health Advisory Committee (CMShAC) under the *Coal Mining Safety and Health Act 1999* and chair of the Mining Safety and Health Advisory Committee (MSHAC) under the *Mining and Quarrying Safety and Health Act 1999*
- monitor and report to the Minister for Natural Resources and Mines and to the Queensland Parliament on the administration of provisions about safety and health under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*
- perform the functions given to the Commissioner under the provisions of the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*.

In addition, the Commissioner is required under section 73E(1) of the *Coal Mining Safety and Health Act 1999* to provide a report to the Minister for Natural Resources and Mines on the performance of the department in regulating mine safety.

The Queensland Mines Inspectorate enforces the provisions of the *Coal Mining Safety and Health Act 1999*, *Coal Mining Safety and Health Regulation 2017*<sup>1</sup>, *Mining and Quarrying Safety and Health Act 1999* and *Mining and Quarrying Safety and Health Regulation 2017*<sup>2</sup>, and advises, mentors and educates the mining industry about safety and health. The activities of the Queensland Mines Inspectorate for 2016–17 are summarised in the body of this report.

<sup>1</sup> Including the 15 recognised standards published on the Business Queensland website at [www.business.qld.gov.au](http://www.business.qld.gov.au).

<sup>2</sup> Including the two guidelines published on the Business Queensland website at [www.business.qld.gov.au](http://www.business.qld.gov.au).

In addition, information on the operations of the Board of Examiners, the advisory committees and more comprehensive mining industry safety and health information can be obtained in the following reports:

- Board of Examiners annual report
- Coal Mining Safety and Health Advisory Committee annual report
- Mining Safety and Health Advisory Committee annual report
- Queensland Mines and Quarries Safety Performance and Health report
- Department of Natural Resources and Mines annual report.

These reports can be downloaded from the Queensland Government publications website at [www.publications.qld.gov.au](http://www.publications.qld.gov.au) (search for the title of the report).

## MESSAGE FROM THE COMMISSIONER

---

The mining industry has come a long way from the days when safety was simply a matter of wearing personal protective equipment such as hard hats and safety glasses. The industry's fast-changing and dynamic nature means that alongside the historical hazards, which continue to be an ever-present danger to mine workers, mining operations are constantly facing new and emerging safety and health challenges.

This year has been a difficult one for the industry. Both the mineral mining and quarrying industry and the coal mining industry each had a fatality, and there were a number of serious accidents and high potential incidents.

In August 2016, Ian Hansen was fatally injured at a coal handling preparation plant when he was hit by an uncontrolled falling steel plate while undertaking maintenance work, and in October 2016, opal miner Sidney Cuddy died after he was buried by a fall of ground in the wall of a shallow trench he was undercutting. I would like to extend my sincere condolences to the families, friends and colleagues of those who lost their lives.

The industry has also faced a number of other challenges, including organisational changes and contraction, changes to workforce composition, environmental changes and the loss of experience due to industry restructuring.

The lost time injury frequency rate for the Queensland mining industry for 2016–17 was 3.0 injuries per million hours worked, which is the same rate as that recorded in 2015–16 and only slightly lower than the 3.1 injuries per million hours worked recorded in 2014–15. This plateauing in the rate of safety improvements presents a significant concern for the industry.

In addition, the rise in the number of confirmed cases of coal workers' pneumoconiosis to 23 is further indication that there has been a systemic failure in the detection of the disease. This failure has been acknowledged by the Minister for Natural Resources and Mines and confirmed by the findings of the independent reviews by the Monash University Centre for Occupational and Environmental Health and the Coal Workers' Pneumoconiosis Select Committee. In 2016–17, significant reforms were implemented to manage the disease, but there is still a long way to go.

These issues have all added to the level of industry uncertainty and the question has been asked: Does the industry have the right environment and tools to take the next step in its safety and health journey and to drive further improvements to ensure Queensland's mine workers go home safe and healthy every day?

I believe that the industry does have the right mix of legislation, resources and skills, and it also has the necessary commitment to safety and health to achieve this vision. In addition, the industry has the support of a competent and dedicated Queensland Mines Inspectorate that provides fundamental guidance and assistance to the industry.

This report outlines the considerable work that has been done over the past 12 months by the Queensland Mines Inspectorate, and the industry more broadly, to protect the safety and health of Queensland mine workers. It shows that despite the challenges, the inspectorate and the industry are capable of working together to achieve good results.

Initiatives such as the continuing action to address coal workers' pneumoconiosis and the timely responses to the issues of respirable crystalline silica and lead management show that the inspectorate is responsive to emerging issues. The development of a dust monitoring database shows the capability of the inspectorate to work strategically and collaboratively to overcome industry-wide issues.

The inspectorate maintains a regular schedule of inspections and other compliance activities, and engages with industry at a number of levels. These routine activities are an essential part of the regulation of the industry and are a starting point to some of the deeper engagement and collaboration that goes on between industry and the inspectorate. For example, I would like to commend the inspectorate and industry for their work to conduct a pilot level 1 emergency exercise for the first time in a mineral mine in Queensland. This is a significant positive step in mine safety in Queensland and I hope it becomes a regular activity.

Looking ahead, I believe the industry and inspectorate need to focus on consolidating and embedding the tools and lessons that have been learned to provide certainty and to allow the good work that has been done to take effect.

Over the next 12 months, I intend to maintain and improve on the work already done by:

- providing timely and transparent advice to the Minister for Natural Resources and Mines and the Queensland Parliament on the administration of mine safety and health legislation
- improving broad engagement and communication with mine industry stakeholders to ensure all perspectives are considered in the regulation of the mining industry
- monitoring and reporting on the effective administration of mine safety and health legislation
- considering prosecution of offences if there is sufficient evidence and it is in the public interest.

My focus in 2017–18 will be to continue to:

- review the effectiveness of the Queensland mine safety and health legislation in consultation with the tripartite CSMHAC and MSHAC
- assess key actions and work to aid in the significant reforms to manage mine dust lung diseases
- push for a shift to the use of a combination of lead and lag indicators of performance as opposed to the current reliance on lag indicators—lead indicators are forward-looking and are designed to help organisations introduce preventive measures before harm occurs

- examine potential solutions to health issues such as the effect of drugs and alcohol in the short term and fatigue and mental health in the long term.

In addition, I will be closely monitoring the progress of the implementation of the 68 recommendations made by the Coal Workers' Pneumoconiosis Select Committee, the 18 recommendations of the Monash University Centre for Occupational and Environmental Health review and the results of the Safe Work Australia airborne contaminant review.

Lastly, I would like to draw attention to the unprecedented way that the challenge of the re-emergence of coal workers' pneumoconiosis has seen government, unions and employers come together to quickly and effectively provide the best possible solutions and protection for Queensland coal mine workers. This tripartite collaboration is essential if we are to achieve the sustained action and vigilance necessary to overcome this and other issues, and to achieve the objectives of the legislation. All mining industry stakeholders must continue to work together if we are to ensure that every Queensland mine worker goes home safe and healthy every day.

**Kate du Preez**  
**Commissioner for Mine Safety and Health**

## ABOUT THE COMMISSIONER



Kate du Preez is the Queensland Commissioner for Mine Safety and Health. The role of Commissioner is a public service officer appointed by the Governor in Council and employed under the *Public Service Act 2008*. She is the first independent Commissioner and the first woman to be appointed to the role.

Mrs du Preez has more than 20 years of experience in the mining industry across Africa and Australia, including working in underground coal mines and in management positions. She holds a Bachelor of Science in Mining Engineering and was the first woman in South Africa to hold a mine manager's certificate of competency in coal mining. As a miner herself, Mrs du Preez is passionate about the mining industry and is a strong advocate for mining safety and health issues.

# INDUSTRY OVERVIEW

Queensland has some of the strongest and most effective laws in the world to minimise the risk of harm to mine workers and to ensure mining operations are conducted according to the highest safety standards. The cornerstone of Queensland’s contemporary mine safety and health legislation is that it is risk-based, requiring a single integrated safety and health management system for each mine that anticipates risk. It aims to strike a balance between prescriptive regulation and risk management, and prevents harm by controlling those factors that contribute to incidents.

Mining is a dynamic industry and the operating environment is constantly changing—new hazards emerge as technology continues to evolve, and older and existing hazards continue to pose a risk to mine workers. To ensure the safety and health of mine workers and to minimise risk, it is important for all stakeholders to have appropriate safety and health strategies in place and to keep ahead of these new challenges and the risks they pose.

The Queensland Mines Inspectorate works with mine operators and unions in a tripartite relationship to identify these existing and emerging risks, and to implement appropriate measures to ensure that all mine workers go home safe and healthy every day.

Over the past few decades, mine safety has advanced at a dramatic rate. However, mine workers continue to be killed or injured as a result of serious accidents, and continue to be involved in high potential incidents that result in, or have the potential for, serious adverse outcomes.

In 2016–17, two mine workers lost their lives in Queensland mines (Table 1). While this is in line with fatalities in the industry in recent years—and significantly lower than the numbers of fatalities seen in the decades prior to 2004—it is two fatalities too many.

**Table 1:** Numbers and rates of incidents in 2016–17 compared to 2015–16

ALL MINE TYPES					
	2016–17		2015–16		
Number of lost time injuries	269		266		
Lost time injury frequency rate	3.0		3.0		
Fatalities	2		0		
Number of high potential incidents	1754		1769		
High potential incident frequency rate	19.5		19.7		
COAL MINES			MINERAL MINES AND QUARRIES		
	2016–17	2015–16		2016–17	2015–16
Number of lost time injuries	201	195	Number of lost time injuries	68	71
Lost time injury frequency rate	3.2	3.1	Lost time injury frequency rate	2.5	2.7
Fatalities	1	0	Fatalities	1	0
Number of high potential incidents	1432	1437	Number of high potential incidents	322	332
High potential incident frequency rate	22.7	22.6	High potential incident frequency rate	12.0	12.5



Although the longer term trend has seen the number of injuries and the time lost to those injuries decline, there has been a plateauing of improvements—with increases in some sectors—in the measures used to compare safety across the industry.

In the Queensland mining industry in 2016–17, there were 3.0 injuries per million hours worked. This is the same lost time injury frequency rate as recorded in 2015–16 (Table 1). Of considerable concern were the increases in injury rates for the underground coal and quarrying sectors. The injury rate for the underground coal sector rose to 7.2 injuries per million hours worked from 5.8 in 2015–16, and the injury rate for the quarrying sector rose to 8.6 from 4.6 in 2015–16 (Figure 1).

## COAL MINES

In 2016–17, there was one fatality in the coal mining sector. In August 2016, a contract coal mine worker was fatally injured at a coal handling preparation plant. The worker was hit by an uncontrolled falling steel plate while undertaking maintenance work.

Workers in the coal sector have continued to be injured as a result of serious accidents or involved in high potential incidents, including the following examples:

- A coal mine worker was injured while installing strata support on a longwall face. He had just completed installing roof bolts when the face failed and fell on him. The coal mine worker suffered a fractured pelvis and soft tissue injury.
- An abrasive blaster and painter was injured while blasting a section of steel structure in a mine preparation plant. He received injuries to his forehead when blast material (garnet) and compressed air penetrated the face shield of his helmet.

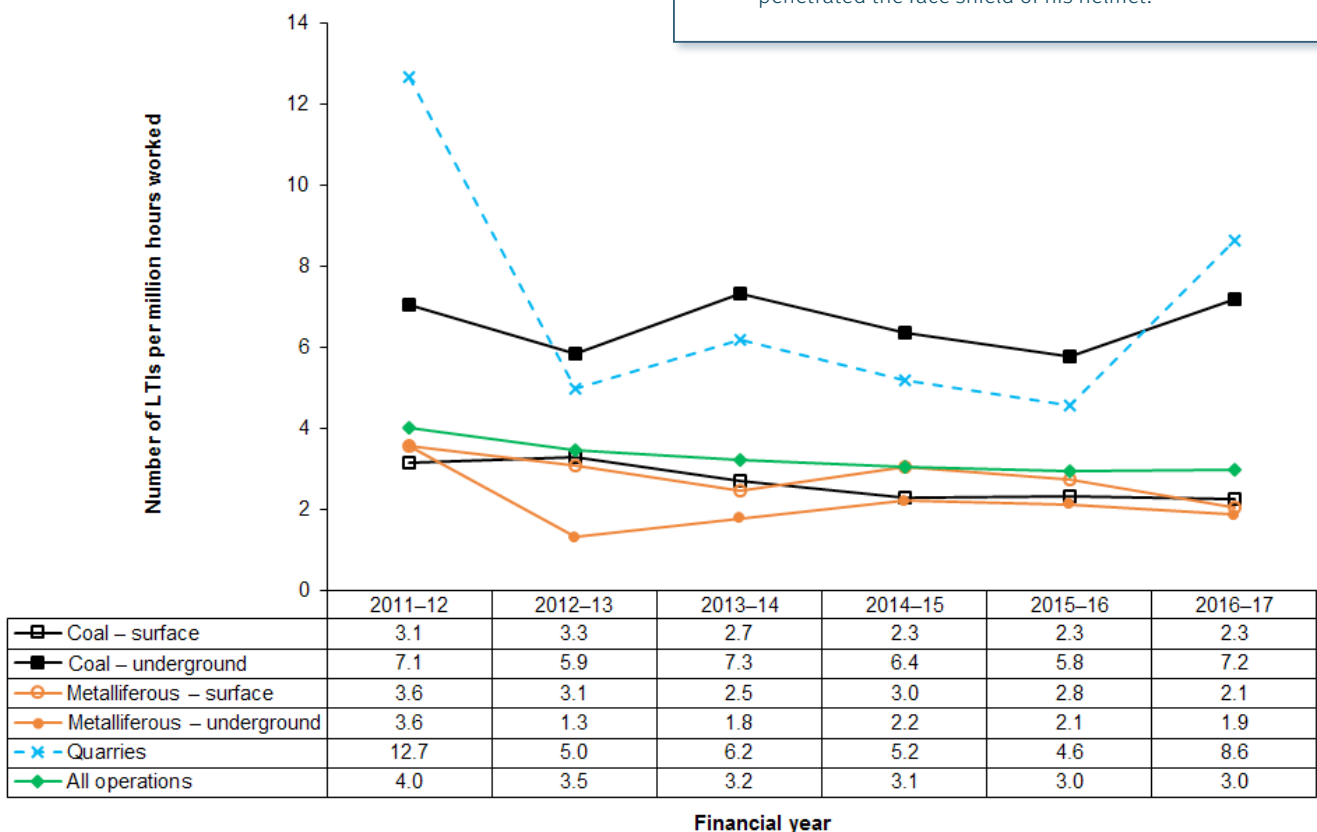


Figure 1: Lost time injury frequency rate, 2011–17

## MINERAL MINES AND QUARRIES

In 2016–17, there was one fatality in the mineral mines and quarrying sector. An opal miner working alone was buried by a fall of ground in the wall of a shallow trench he was undercutting.

Serious incidents continue to occur in the mineral mines and quarrying sector and mine workers continue to be involved in high potential incidents. For example:

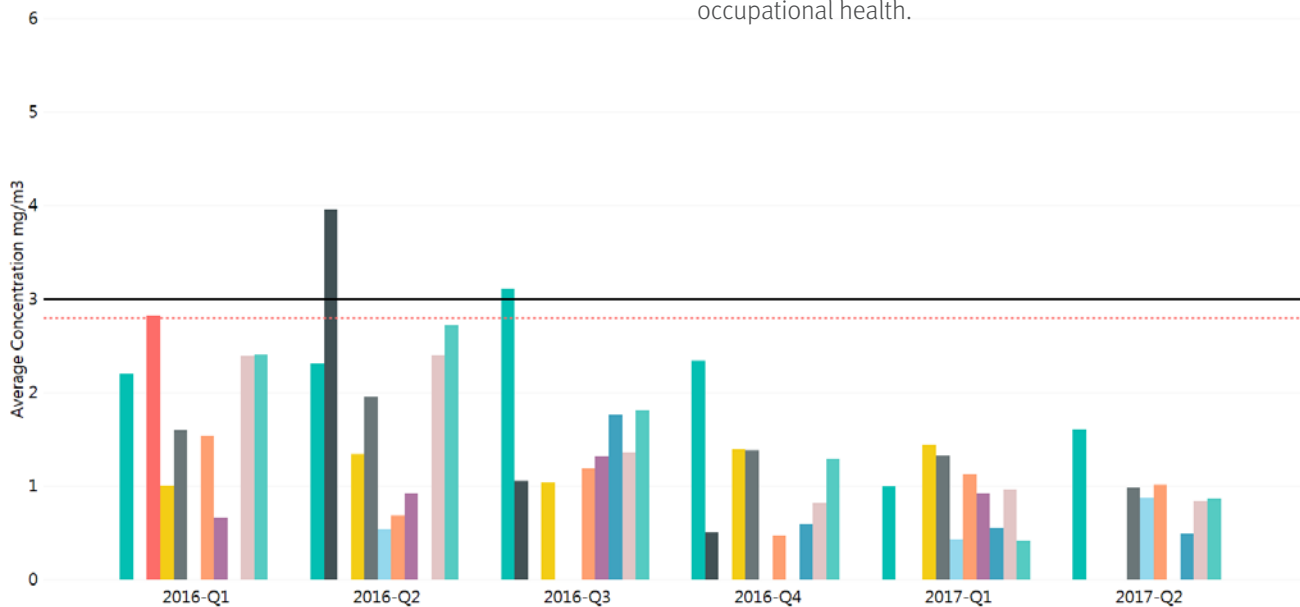
- Two drilling operators escaped serious injury when they fell into a void created when the ground behind their drill rig subsided.
- An articulated truck operator sustained serious injuries when his vehicle tipped over and he was thrown from the cabin.
- A worker charging an underground mining face with explosives sustained serious injuries when he was struck by rocks that fell from the face he was charging.

In addition, the re-identification of coal workers’ pneumoconiosis in 2015 has renewed the industry’s focus on the dangers of long-latency dust diseases in both coal and mineral mines and quarrying operations. The long-term health of coal mine workers is a less visible, but just as important, consideration for the industry. As at 30 June 2017, there were 23 confirmed cases of coal workers’ pneumoconiosis in Queensland mine workers, with more expected to be identified in 2017–18.

The industry is acutely aware of the need to minimise exposure to coal dust and has taken a range of measures to do so. Significant reductions in the levels of coal dust have been recorded in the past 12 months and the Queensland coal mining industry is now at the forefront of the fight against coal workers’ pneumoconiosis. A great deal of work has been done, but there is still a long way to go.

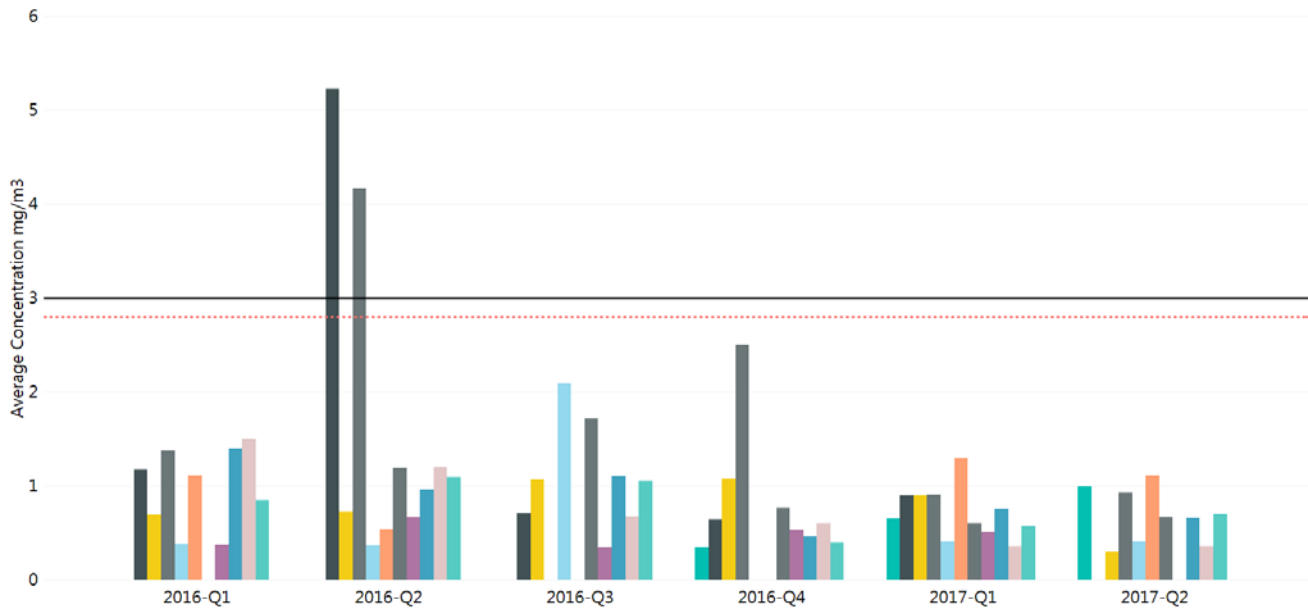
In the first half of 2017 (January–June), the average respirable coal dust concentration for all underground sites for their longwall work group was 0.9 mg/m<sup>3</sup>, compared to 1.9 mg/m<sup>3</sup> for the same period in 2016 (Figure 2). The development work group across all underground sites showed a similar trend, with an average of 0.7 mg/m<sup>3</sup> for the first half of 2017 compared with 1.3 mg/m<sup>3</sup> for the same period in 2016 (Figure 3).

This result is well below the most common shift-adjusted occupational exposure limit of 2.8 mg/m<sup>3</sup> and shows a significant improvement in respirable coal dust management that is more protective of coal mine worker occupational health.



Note: Each bar represents the results from an individual mine

Figure 2: Longwall workers similar exposure group—coal dust

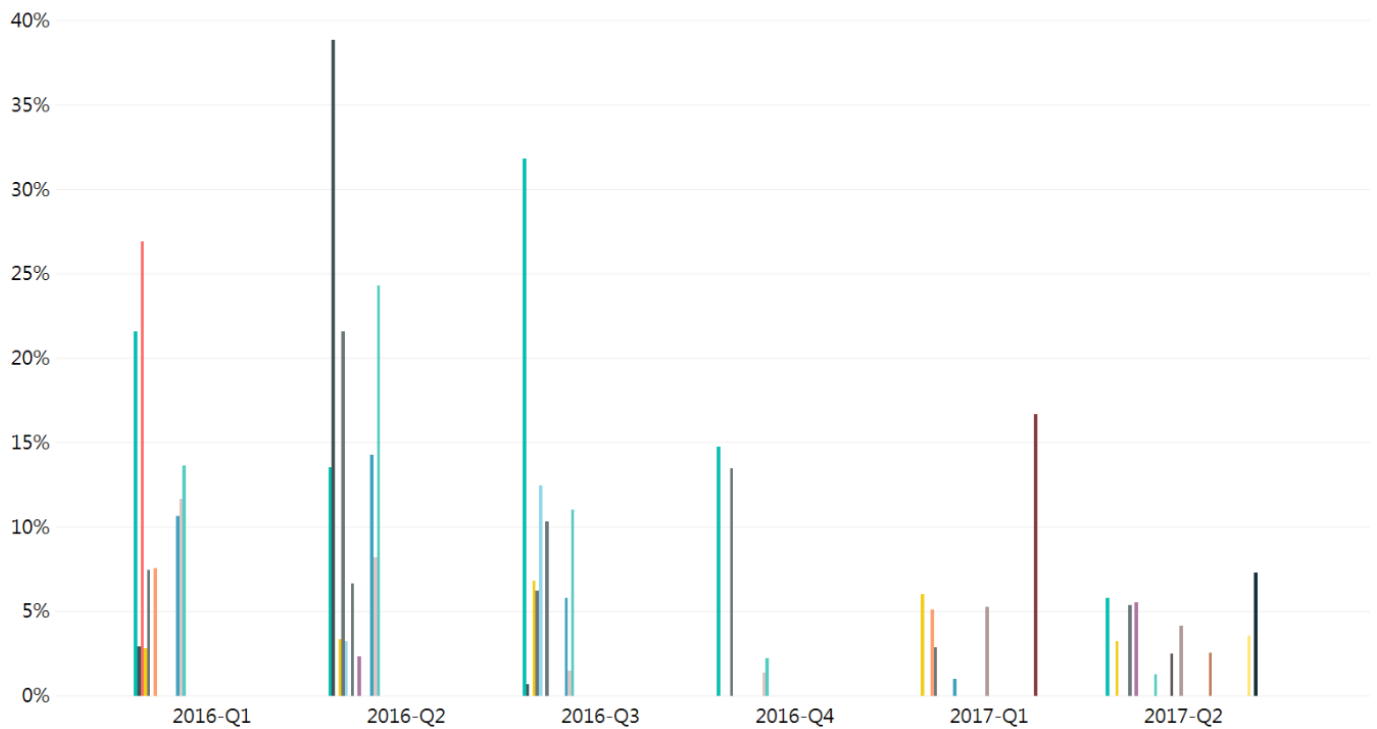


Note: Each bar represents the results from an individual mine

**Figure 3:** Development workers similar exposure group—coal dust

In addition to the significant reductions in the average concentration of respirable coal dust, there have been dramatic reductions in the number of times that mines have exceeded the occupational exposure limit. This means that not only have mines been successful in reducing their average levels of coal dust, they have also been successful in reducing the number of times the concentration exceeds the set limit.

In total, for underground sites only, the total percentage of respirable dust samples that exceeded the occupational exposure limit in the first half of 2017 (January–June) was 1.0 per cent of all samples taken (17 instances), compared to 10 per cent during the same time period in 2016 (157 instances) (figures 4 and 5).



Note: Each bar represents the results from an individual mine

**Figure 4:** Percentage of samples that exceeded the occupational exposure limit—underground and surface operations



**Figure 5:** Total number of exceedances—underground and surface operations

In addition to reducing coal dust, the industry has also recognised that chronic exposure to respirable crystalline silica can cause a long-latency disease. Over the past 20 years, WorkCover Queensland has reported 18 claims for silicosis from workers in the mining industry, including three claims in 2016–17. However, up until 1 January 2017 (when the Mining Safety and Health Regulation 2001 was amended to include silicosis as a notifiable disease), the actual number of cases could only be cautiously inferred and may not be a true reflection of the number of workers affected. Working together, the department, unions and industry have taken action to better identify incidences of silicosis, and to reduce exposure and minimise potential harm to mine workers.

## Coal Workers’ Pneumoconiosis Select Committee

In 2016–17, the Queensland Government implemented significant reforms to manage coal workers’ pneumoconiosis.

In July 2016, a review undertaken by the Monash University Centre for Occupational and Environmental Health, in consultation with the University of Illinois at Chicago, made 18 recommendations to improve the Coal Mine Workers’ Health Scheme. Improvements were recommended to chest

X-rays, lung function testing (spirometry), medical records management and health surveillance on data collected. The Queensland Government supported all 18 recommendations.

In September 2016, the Queensland Parliament established a select committee to inquire into the re-emergence of coal workers’ pneumoconiosis. The select committee held a number of public and departmental hearings across Queensland, with submissions made by mine operators, unions, government agencies and individual coal mine workers.

The select committee handed down its report containing 68 recommendations on 29 May 2017. As well as supporting the recommendations made by the Monash review, the report recommended structural changes for the regulator and the formation of an independent mine safety and health authority. The government handed down its response to the report on 8 September 2017 and indicated support, or in-principle support, for all 68 recommendations.

Under its extended terms of reference, the select committee also considered coal rail workers, coal port workers, coal-fired power station workers and other workers as part of its inquiry. The select committee handed down its report on the extended terms of reference in September 2017. A further five recommendations were made.

# PERFORMANCE OF THE INSPECTORATE

The Queensland Mines Inspectorate is part of Mine Safety and Health in the Department of Natural Resources and Mines.

Mines inspectors are statutory officers appointed under the *Coal Mining Safety and Health Act 1999* and the *Mining and Quarrying Safety and Health Act 1999*. Inspectors are responsible for:

- monitoring safety and health performance at mines
- taking action if unsafe practices or conditions are detected
- investigating incidents and complaints
- providing advice to the chief inspectors regarding mine safety and health
- making recommendations to the Commissioner about prosecutions.

Inspectors have specific powers under the respective Acts to:

- enter workplaces and other places
- apply for and execute warrants
- seize or restrict access to evidence
- stop and secure plant and equipment
- obtain information.

The inspectorate employs two chief inspectors—Chief Inspector of Coal Mines and Chief Inspector of Mines (Mineral Mines and Quarries)—who have additional powers to give directives and to review and confirm, vary or set aside directives given by inspectors, inspection officers or industry safety and health representatives. The chief inspectors may delegate their powers to issue directives to an inspector who is appropriately qualified and experienced.

Mine inspections are completed on a structured and routine basis—both announced and unannounced—as well as in response to incidents, direct complaints and if there is a perceived risk in particular sectors or on individual sites. When inspectors consider that the safety and health risk is not being adequately managed, corrective action can be imposed.

## Compliance and enforcement

The inspectorate can undertake a variety of compliance activities, including inspections and investigations of complaints and incidents. In 2016–17, the inspectorate conducted 1476 mine inspections, 52 audits and 94 investigations, and received 98 complaints (tables 2–5). The inspectorate also issued 1097 substandard conditions or practice notices, 455 directives, 15 safety alerts and 9 safety bulletins, and held 19 compliance meetings (tables 6–8).

The inspectorate engages closely with industry to ensure sites operate safely and comply with legislation. Activities include inspections, audits, industry forums, site senior executive meetings and other industry engagement activities.

In instances of non-compliance, the inspectorate has a range of compliance tools that can be used:

- A substandard conditions or practice notice (level 1—low to medium risk) can be issued requesting that particular actions be taken within a specified timeframe to address an issue of non-compliance at a mine. Once complied with, the requirement of the notice ceases.
- A directive (level 2—unacceptable level of risk) can be issued, which is a statutory, enforceable notice requiring a mine to take particular action within a specified timeframe. Directives remain in force at the operation they were issued to, unless withdrawn in writing.
- A compliance meeting (level 3 and level 4) can be held by a chief inspector or regional inspector with either the site management or senior company management of the relevant mine. Compliance meetings are usually held for repeated or serious failings leading to an unacceptable level of risk.
- Prosecution (level 5) can be used if the public interest requires a punitive response to non-compliance.

The inspectorate—or in the case of prosecutions, the Commissioner for Mine Safety and Health or the chief executive (Director-General) or delegate—determines the most appropriate course of action on a case-by-case basis.

In all cases of non-compliance, a mine record entry is prepared and forwarded to the site senior executive and mine operator.

## Mine inspections

**Table 2:** Mine inspections conducted in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	419	429	329
Mineral mines and quarries	1057	1168	1216
<b>TOTAL</b>	<b>1476</b>	<b>1597</b>	<b>1545</b>

## Mine audits

**Table 3:** Mine audits conducted in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	10	4	53
Mineral mines and quarries	42	28	17
<b>TOTAL</b>	<b>52</b>	<b>32</b>	<b>70</b>

## Investigations

**Table 4:** Investigations conducted in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	41	65	66
Mineral mines and quarries	53	36	52
<b>TOTAL</b>	<b>94</b>	<b>101</b>	<b>118</b>

## Complaints received

**Table 5:** Complaints received in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	43	62	59
Mineral mines and quarries	55	54	49
Other—no mine involved	0	5	7
<b>TOTAL</b>	<b>98</b>	<b>121</b>	<b>115</b>

## Substandard conditions or practice notices

**Table 6:** Substandard conditions or practice notices issued in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	278	243	294
Mineral mines and quarries	819	758	758
<b>TOTAL</b>	<b>1097</b>	<b>1001</b>	<b>1052</b>

## Directives

**Table 7:** Directives issued in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	130	149	112
Mineral mines and quarries	325	185	124
<b>TOTAL</b>	<b>455</b>	<b>334</b>	<b>236</b>

## Compliance meetings

**Table 8:** Compliance meetings held in 2016–17 (compared to 2014–15 and 2015–16)

	2016–17	2015–16	2014–15
Coal mines	10	22	6
Mineral mines and quarries	9	9	8
<b>TOTAL</b>	<b>19</b>	<b>31</b>	<b>14</b>

## Safety alerts

In 2016–17, the inspectorate issued 15 safety alerts on a range of issues. This is compared to 10 in 2015–16 and 9 in 2014–15.

Safety alerts are short reports that provide an examination of safety and health incidents at mines in relation to specific incidents. They are issued to all mines and are published on the department's website. Alerts provide recommendations for mines to help reduce recurrence of incidents.

## Safety bulletins

In 2016–17, the inspectorate issued nine mines safety bulletins on a range of issues. This is compared to three in 2015–16 and four in 2014–15.

Safety bulletins are short reports that provide general advice on safety and health best practice at mines in relation to specific topics. They are issued to all mines and published on the department's website.

## Prosecutions

Prosecution is usually a last resort and is only used when there have been repeated incidences of non-compliance or when a serious incident has occurred—for example, a fatality or serious injury.

The decision to prosecute is made by the Commissioner for Mine Safety and Health or the chief executive (Director-General) or delegate and can be complex and influenced by a number of often competing factors, including whether there is a case to answer, the likelihood of conviction and the public interest. However, it is important that mine operators and supervisors are held accountable for the safety of their workers.

In 2016–17, there were 12 prosecutions before the courts involving 24 defendants. Four of these prosecutions were resolved as outlined below.

### Fatality

On 6 May 2014, Mr Paul McGuire, an electrician at a Central Queensland coal mine, was asphyxiated when he pushed open a sealed door to a longwall goaf area. Following an investigation of the incident, the Commissioner for Mine

Safety and Health commenced prosecutions against an employee and the operator company.

On 27 October 2016, the company pleaded guilty to breaches of the *Coal Mining Safety and Health Act 1999*. On 23 November 2016, the Court fined the company \$137 500 and ordered it to pay the department's investigation costs of \$15 000. A conviction was not recorded.

### Grasstree Mine—Anglo Coal

On 11 December 2014, Mr Ian Downes was killed at the Grasstree Mine when a section of coal and rock that he was working on fell on him. Anglo Coal had engaged contractors, VLI Drilling, to perform drilling activities at the mine. Mr Downes and his supervisor were both employed by VLI Drilling and had been working in a drill niche.

The Commissioner for Mine Safety and Health laid charges against Anglo Coal and three employees on 4 December 2015.

Anglo Coal entered a plea of guilty on 10 May 2017 and the charges against the three employees were discontinued. At the sentence on 18 May 2017, Anglo Coal was fined \$284 625 and a conviction was recorded. This is the largest recorded fine under current legislation and the first time a conviction was recorded against an operator company. In imposing the sentence, the industrial magistrate stated:

- the high-risk nature of underground coal mining requires a scrupulous level of vigilance
- it is unacceptable in any industry for workers to be sent into areas that have not been properly remediated, authorised, inspected or are in any way noncompliant
- workers should not be the last line of defence
- Mr Downes was entitled to believe that he was safe, that the risks had been minimised and that the company had complied with its obligations.

The magistrate took into account that it was a timely plea of guilty and that it was a second conviction for the company.

### Blackwater Mine—BMA

On 12 March 2015, mine worker Mr Laurie Donovan was fatally injured when he was thrown from the bus he was travelling in when the bus rolled on its side.



Following an investigation of the incident, the Commissioner for Mine Safety and Health commenced a prosecution against a mine worker in relation to the incident.

The trial took place on 9–10 March 2017. On 24 April 2017, the worker was found not guilty.

### **Crush incident—grievous bodily harm**

On 5 September 2014, a worker was crushed between the main gate drive and the mine wall in a longwall coal mine at a Central Queensland coal mine. He was undertaking ad hoc maintenance. The worker suffered grave injuries to his lower abdomen and pelvis that amounted to grievous bodily harm.

On 27 April 2016, the Commissioner for Mine Safety and Health laid charges against the operator company.

On 2 June 2017, the company entered a plea of guilty in the Rockhampton Industrial Magistrates Court. The Court fined the company \$60 000 and ordered it to pay investigation costs of \$25 785. No conviction was recorded.

## **Review of compliance and enforcement functions**

In June 2017, as part of an ongoing commitment to continuous improvement, the Commissioner commenced an independent review of the compliance and enforcement functions of the Queensland Mines Inspectorate. The objective of the review was to understand where improvements could be made to governance and administration functions to improve compliance and enforcement.

The Commissioner's review was initiated after an internal review of statutory appointments and delegations in Mine Safety and Health revealed a number of governance issues. The internal review identified a number of areas for improvement and those improvements were implemented in March 2017, including amendments to the suite of mine safety legislation to provide clarity about the appointment of office holders, the powers they can exercise and the information they can collect under the mining, petroleum and gas, and explosives safety legislation.

In June 2017, the Commissioner engaged an independent external consultancy to conduct the review, focusing on compliance and enforcement policy and practices.

As the Commissioner's powers to review do not include the power to compel or require the production of, or access to, documentation or files or attendance at interviews, the review was conducted with the support and cooperation of the Director-General.

The review will be completed in 2017–18 and the findings will be reported to the Minister.

## **Major projects**

In 2016–17, the Queensland Mines Inspectorate commenced, completed or progressed a number of major projects aimed at improving mine safety and health.

### **Fatal 4 hazards**

The 'Fatal 4 hazards' form the basis of the inspectorate's safety and health focus for mineral mines and quarries. These hazards feature predominantly in almost all fatalities, high potential incidents and serious accidents in mineral mines and quarries.

The 'Fatal 4 hazards' are:

1. falls
2. collisions
3. uncontrolled release of pressure
4. entanglement.

While the inspectorate pays equal concern to each of the four hazards, in 2016–17, particular attention was paid to reducing the incidences of falls. Specific industry guidance material was developed and inspectors followed a structured inspection guide that addressed the fall hazards from four perspectives—fall of people, fall of equipment, fall of material and rockfalls.

In 2016–17, the inspectorate conducted 119 fall inspections on mines across Queensland. As part of the campaign to reduce falls, the inspectorate began development of a guidance note for falls to assist industry in better identifying and managing fall hazards and risks. The guidance note is expected to be published in 2017–18.

In 2017–18, the inspectorate will focus on collision hazards—the development of documentation to support this campaign has commenced.



Mines inspector conducting routine mine inspection at Bromelton Quarry—September 2016

## Mine risk profiles to include health

In addition to the 'Fatal 4 hazards', the inspectorate began work to expand the mine risk profiles for mineral mines and quarries to include health hazards. Once complete, it will enable inspections to be scheduled based on either their safety risk profile or health risk profile, or a combination of both.

This will enable better monitoring of the systems and controls in place at mineral mines and quarries for the management of health hazards such as respirable crystalline silica.

## Big 10 projects

The 'Big 10 projects' form the basis of the inspectorate's safety and health focus for coal mines. The project areas were identified in 2015–16 by analysing data from industry to classify the types of hazards that caused the majority of safety and health incidents in coal mines.

The 'Big 10 projects' are:

1. health strategy
2. respirable dust
3. management structure
4. vehicle interaction
5. equipment fire
6. strata management
7. cable management
8. explosive risk zone coordination and control
9. contractor management
10. tyre, wheel and rim management.

A range of projects have been implemented over the past two years to proactively address these hazards. Projects undertaken in 2016–17 are detailed below.

## Health strategy

The former Health Improvement and Awareness Committee was re-formed as the Occupational Health Mining Advisory Committee. The new committee transitionally reports to the Commissioner for Mine Safety and Health and the Executive Director of Mine Safety and Health, and has a renewed focus on providing expert advice on current and emerging

occupational health issues (such as the impact of drugs and alcohol, fatigue, mental health and thermal stress); developing resources and information to assist industry in addressing these matters; and providing input into guidance materials on occupational health issues for the mining industry.

Work to reform the committee began in early 2016–17 with a review chaired by Dr Tony Parker from the Queensland University of Technology. The findings of the review were delivered in December 2016 and the decision to re-form the committee was made in February 2017.

## Respirable dust

A significant achievement in this area has been the development of a respirable dust monitoring database to capture dust reporting data from the coal mining sector.

The database was established in 2016 and now holds all data from 1 January 2000 to 30 June 2017 for underground coal mines, and respirable dust data from 1 January 2017 to 30 June 2017 for open-cut coal mines.

The respirable dust monitoring database enables quality control statistics to be performed at work group, mine and operator levels.

All sites that were required to report dust sampling did so for quarter 3 of 2016–17. However, four sites from two operators that were required to report failed to meet all of their reporting obligations in quarter 4 of 2016–17. The department immediately issued safety and health directives to these mines in August 2017 and all four sites took action to address the identified deficiencies in their processes.

## Management structure

The inspectorate previously developed a guidance note to assist coal mine site senior executives to develop and implement an effective management structure to enable the implementation of an effective safety and health management system.

In 2016–17, work was started to develop the guidance note into a recognised standard. As part of the development process, the inspectorate consulted with the Queensland Resources Council and CSMHAC to ensure industry input.

Work on the recognised standard is expected to be completed in 2017–18.

## Vehicle interaction

In 2016–17, the inspectorate began development of a recognised standard for mine road safety design and construction.

A consultation group consisting of industry, union and government representatives was convened to provide feedback and input into the development of the standard.

The recognised standard is expected to be published in 2017–18.

## Equipment fire

Fixed plant and mobile equipment fires at coal mines continue to represent a significant proportion of high potential incidents reported to the inspectorate.

In November 2016, the inspectorate issued safety bulletin 158, *Fixed plant and mobile equipment fires on surface coal mines*. The safety bulletin provides an analysis of surface coal mine fire high potential incidents and recommends strategies for reducing fixed plant and mobile equipment fires.

## Strata management

The inspectorate developed a structured inspection plan for coal mines that is prioritised according to the risk related to strata management at the site.

Inspections have shown that most coal mines have a detailed principal hazard management plan in place. The inspectorate works closely with mine operators to ensure compliance.

## Cable management

In 2016–17, electrical and mines inspectors paid particular attention to ensuring compliance with trailing cable management guidelines in their regular mines inspections. To ensure industry had an appropriate understanding of the regulations, the inspectorate presented at the July 2016 mine managers' forum, highlighting the relevant issues in relation to trailing cable management.

In addition, the inspectorate—through its electrical inspectors—participated in the development of the Australian Standards draft handbook *DR SA/SNZ HB 146:2016: Management of electrical cable in mines and quarries*. The draft handbook was published in December 2016 for public

comment, and in June 2017, electrical inspectors attended the Australian Standards public comment review meeting. The inspectorate is now awaiting final publication of the handbook.

## Explosive risk zone coordination and control

In 2016–17, the inspectorate ran a series of six forums for explosive risk zone coordinators—four at the regional centres of Moranbah and Emerald and two in Mackay and Rockhampton.

At the forums, mines inspectors discussed the findings of their inspections at underground coal mines and disseminated technical information regarding electrical, mechanical and mining engineering. A practical exercise on mine ventilation principles was also included.

The forums also included discussion about legislative requirements for explosive risk zone coordination and control to ensure the obligation holders were aware of their responsibilities.

In addition, two forums for underground mine managers were held in Moranbah and Emerald. These again included discussions with mine inspectors about the findings of their inspections at underground coal mines. The inspectorate explicitly communicated expectations regarding 'manage and control' matters.

## Contractor management

In 2016–17, the inspectorate paid particular attention to the management of contractors in the coal mining industry. In recent years, there has been a rise in the number and proportion of contractors employed in coal mines, and data shows that contract employees are more likely to be involved in an incident. In the last 10 years, 72 per cent of fatalities in coal mines and 46 per cent of fatalities in mineral mines and quarries involved contractors.

In order to raise awareness of issues relating to contractor management and to ensure compliance with regulations, the inspectorate carried out a structured program of inspections at coal mines in relation to contractor management and undertook a program of stakeholder and industry engagement.

As part of the stakeholder and industry engagement activities, the inspectorate gave presentations at:

- explosive risk zone controller forums
- underground mine managers forums
- site senior executives forum
- the 2016 Queensland Mining Industry Safety and Health Conference.

Inspectors also engaged with individual sites at the request of mine management and with major contractor and labour hire organisations.

As a result, the inspectorate has drafted a guidance note for the management of contractors, which is expected to be published in 2017–18.

## Tyre, wheel and rim management

As a result of recommendations from the Coroners Court of Queensland relating to a number of incidents involving equipment tyres, wheels and rims—including a fatal accident at the Dawson Mine (South) near Moura in 2015—the inspectorate conducted a progressive audit of tyre, wheel and rim practices at coal mines throughout Queensland.

The inspectorate coordinated the development and publishing of *Recognised standard 13: Tyre, wheel and rim management*, which came into effect on 1 January 2017, and issued safety alert 334, *Earthmover tyre and rims*, to highlight the risks with tyres, wheels and rims and provide recommendations to improve safety.

The recognised standard was developed in consultation with coal industry representatives via CSMHAC. The inspectorate has continued to engage with industry to promote adoption and implementation of the recognised standard.

## Coal workers' pneumoconiosis

The Queensland Government has implemented significant reforms in the management of coal workers' pneumoconiosis since the initial cases were confirmed in 2015. Most importantly, action is being taken to:

- prevent disease by reducing dust exposure
- ensure disease is detected early and reported
- ensure there is a safety net for those mine workers affected.

The department has taken action to support these measures by implementing regulatory reforms, strengthening monitoring requirements, and educating and informing industry and workers about coal workers' pneumoconiosis initiatives.

Coal workers' pneumoconiosis is a coal mine dust lung disease caused by cumulative, long-term inhalation of very fine airborne coal dust. The disease may take several years to develop—commonly 10 years or more. Coal mine dust lung diseases also include emphysema, chronic obstructive pulmonary disease, diffuse dust-related fibrosis and lung function impairment.

Coal workers' pneumoconiosis is preventable through the proper implementation of dust monitoring and control measures, but it is not reversible. There is no specific treatment for coal workers' pneumoconiosis aside from management of the symptoms and removal from ongoing exposure to respirable coal dust.

Recently released dust monitoring data (see figures 2, 3, 4 and 5) shows that the strong action taken by the government and industry to reduce the risk has had a beneficial effect on dust levels and exceedances.

## Reducing dust exposure

The Queensland Mines Inspectorate has implemented a number of regulatory changes to reduce coal mine workers' dust exposure.

All coal mines are required to regularly monitor respirable dust and report the results to the Chief Inspector of Coal Mines. In addition, mines are required to report if a personal respirable dust concentration exceeds the prescribed occupational exposure limit. If a single exceedance is recorded, the mine must review the dust control measures and implement safety and health management system changes to ensure dust levels are managed within prescribed levels. A re-sample is required within two weeks to check the effectiveness of the revised measures.

In addition, two new recognised standards were developed that affect how coal dust in mines is monitored and controlled:

- *Recognised standard 14: Monitoring respirable dust in coal mines*
- *Recognised standard 15: Underground respirable dust control.*

Recognised standard 14 provides minimum requirements to be included in a coal mine's safety and health management system for monitoring, preparing records and reporting concentrations of respirable dust levels. The standard specifies that all samples collected for the purpose of exposure assessment must be collected in accordance with Australian Standard AS2985—2009, *Workplace atmospheres—method for sampling and gravimetric determination of respirable dust*.

To ensure that dust samples are collected in accordance with the recognised standard, CMSHAC established a recognised competency for any person sampling coal dust in a coal mine. From 1 July 2017, only people who hold the specified competency under the Coal Mining Safety and Health Regulation 2017 may conduct respirable dust sampling at a Queensland coal mine.

To enable coal mine workers to develop the appropriate competency, Simtars (Safety in Mines Testing and Research Station) developed an accredited training course for individuals performing respirable dust monitoring at coal mines. The training course is delivered by experts in dust sampling over two days at the Redbank training facility. Participants develop the skills and knowledge required to assist with monitoring a range of physical agents and conditions relevant to work health and safety. As at 30 June 2017, more than 105 people successfully achieved competency. Additional training is scheduled in 2017–18.

Recognised standard 15 provides guidance to site senior executives on the measures that must be undertaken to meet safety and health obligations when developing a safety and health management system for the control of respirable dust in an underground mine.

### **Real-time personal dust monitoring**

The current practice for personal respirable dust monitoring in Queensland and New South Wales coal mines has been in place for more than two decades. Mass gravimetric sampling is used to capture the respirable dust fraction in the breathing zone of the coal mine worker, allowing a physical dust sample to be captured and analysed. It is the only sampling type recognised under the relevant Australian Standard.

A significant drawback of the current monitoring device is the lag time between the sample being captured and the results becoming known following analysis in an accredited laboratory. It can take up to two weeks for results to be received by the mine.

An alternative to the current monitoring system is the use of real-time dust monitoring devices, which enable coal mine workers and mine operators to take immediate action should their dust exposure exceed regulated limits. The coal mining industry in the United States has adopted a particular type of real-time personal dust monitor. While this particular device has been approved for use in the United States, the technology does not meet electrical intrinsic safety requirements for use in Queensland mines.

In 2016–17, Simtars worked with device manufacturers to review and test devices for intrinsic safety. The department is pursuing alternatives to this specific device through the Advance Queensland Small Business Innovation Research program.

### **Early detection and reporting of disease**

On 1 January 2017, changes were made to the Coal Mining Safety and Health Regulation 2001<sup>3</sup> to ensure that any cases of coal workers' pneumoconiosis were detected early.

All Queensland coal mine workers now receive a health assessment upon entry to the industry, at least every five years while employed in the industry, and on a voluntary basis at retirement. A chest X-ray is also required at least every 5 years for underground coal mine workers and every 10 years for above-ground coal mine workers.

Coal workers' pneumoconiosis and other coal mine dust lung diseases are now reportable diseases to the Queensland Mines Inspectorate.

### **Monash University Centre for Occupational and Environmental Health review**

Central to the Queensland Government's reforms relating to coal workers' pneumoconiosis is the independent review commissioned by the government on the respiratory component of the Coal Mine Workers' Health Scheme. The review was undertaken by the Monash University Centre for Occupational and Environmental Health, in collaboration with the University of Illinois at Chicago. The review made 18 recommendations to improve the health scheme.

The Queensland Government supports all 18 recommendations of the Monash review. In addressing the

<sup>3</sup> This Regulation was replaced by the Coal Mining Safety and Health Regulation 2017 on 1 September 2017.

review, the department approached each recommendation as an individual project and released consultation papers to all mining industry stakeholders, CSMHAC and medical professionals to ensure the best solutions were developed and implemented.

By 30 June 2017, the department had fully implemented seven of the Monash review recommendations and made significant progress on the remainder, which were on target for implementation in 2017–18 (an up-to-date progress report is available in 'Appendix 1: Queensland Government actions to deliver Monash review recommendations'). This was achieved with the support of government, industry, unions and medical experts, as well as CSMHAC.

The department worked with Dr Robert Cohen at the University of Illinois at Chicago and doctors at the Wesley Hospital to develop X-ray imaging standards and quality guidelines. In addition, a respiratory physician from the Wesley Hospital provided guidance and advice on the development of registration criteria for doctors and spirometry providers.

Of the chest X-rays taken in 2017, Dr Cohen's team assessed that:

- 89.2 per cent met International Labour Organization (ILO) quality grading 1–2 (acceptable)
- 10.7 per cent were rated grade 3 (acceptable with a technical defect)
- 0.08 per cent were rated grade 4 (unacceptable—need to be retaken).

As a result, all X-rays are now required to be assessed in Australia by radiologists registered for coal workers' pneumoconiosis screening with the Royal Australian and New Zealand College of Radiologists, and assessed against the X-ray imaging guidelines developed by the Wesley Hospital and Dr Cohen. In addition, a register of X-ray imaging clinics for coal mine worker assessment has been developed to ensure imaging clinics meet certain criteria and are subject to regular audits.

As at 30 June 2017, more than 11 000 chest X-rays had been sent to the United States for assessment by National Institute for Occupational Safety and Health approved B-readers. This represents nearly one-third of the Queensland coal mining workforce participating in the screening process in 2016–17. This is an interim measure until an Australian-based dual reading program by B-reader qualified radiologists is launched later in 2017.

The department introduced a register of qualified and experienced doctors, spirometry practitioners and X-ray imaging clinics in June 2017. To be on the register, doctors must meet stringent qualifications and standards and be subject to rigorous accreditation and regular audit. In a positive step, major coal mining companies have agreed to voluntarily transition to using these registered providers ahead of any regulatory change.

The department is also developing new standards for lung function testing and the taking of chest X-rays, and is engaging providers to implement training, accreditation and auditing of doctors and medical providers. The Thoracic Society of Australia and New Zealand has developed standards for taking, interpreting and training in spirometry, and X-ray imaging standards have been developed in consultation with Dr Cohen, Queensland Health and one of Australia's first B-reader qualified radiologists. Tenders were released for a doctor training program and an accreditation entity to assess providers for registrations. In addition, an extensive independent third party audit program has been designed by external consultants to ensure the requisite checks and balances are in place to give assurance to coal mine workers and prevent repeating mistakes of the past.

A group of medical experts, with support from Queensland Health and Dr Cohen, have voluntarily formed the Coal Mine Dust Lung Disease Collaborative Group. The group has recommended a clinical pathway to Queensland Health for follow-up, investigation and referral of coal mine workers. The clinical pathway has been endorsed by the Queensland Chief Health Officer, the Royal Australasian College of Physicians and its Australasian Faculty of Occupational and Environmental Medicine.

The records backlog identified by the Monash review has been cleared, with all respiratory health information entered into the health assessment database. As a result, an electronic baseline of data is now available, upon which respiratory health surveillance for coal mine workers can be performed. Queensland Health's eHealth system is also being leveraged to deliver a new electronic management system for coal mine worker records, with the first phase to be delivered by the end of 2017. This system will permit doctors to access a worker's previous health assessment data and allow workers to directly access their own health records. It will also facilitate robust health surveillance.

Monash University has also been engaged to thoroughly assess the current health assessment form to make sure the right information is being collected to ensure a quality health surveillance scheme for coal mine workers now and into the future.

## Safety net for affected coal mine workers

Effective from 1 January 2017, retiring coal mine workers can now access a medical examination when exiting the industry.

On 14 June 2017, the government introduced a Bill into Parliament—the Workers’ Compensation and Rehabilitation (Coal Workers’ Pneumoconiosis) and Other Legislation Bill 2017—that included amendments to existing legislation to implement recommendations from the Coal Workers’ Pneumoconiosis Workers’ Compensation Stakeholder Reference Group, including:

- the option of a medical examination for retired or former coal mine workers who have left the industry prior to 1 January 2017 and are concerned they may have a coal mine dust lung disease
- ensuring a coal mine worker with pneumoconiosis who experiences disease progression can re-open their claim and access further benefits under the workers compensation scheme
- the introduction of an additional lump sum compensation entitlement for coal mine workers with pneumoconiosis.

The Bill was passed by the Queensland Parliament on 23 August 2017.

## Small mines

Since 2008, the Queensland Mines Inspectorate has run a program targeted at improving the safety and health performance of small mines (including quarries). A small mine is considered to be a mine that employs 10 workers or fewer.

Small mines—particularly opal and gemstone operations—present a number of specific challenges for the inspectorate. Issues such as location and remoteness of the mines, the seasonality of the operations and the economic and administrative limitations of the operators make regulating small mines a difficult challenge for inspectors.

The remote locations of many small mines makes it difficult for inspectors to access sites to carry out inspections and other activities. This remoteness is compounded by the fact that most small mines are seasonal operations that are run by one or two people, and the operators might only work the mine on an irregular basis. Many of the operators may not

even work the site each season, meaning many mines may not be operational at all during the year.

The extremely small scale and general economic uncertainty that most operators work under also means that they often do not have a capacity to keep detailed administrative records or provide notifications to the inspectorate when they are operating or if there are incidents at mines. As a result, there are very few reported incidents from small mines—usually only when there is a serious accident or a fatality.

Despite these challenges, the inspectorate has implemented a number of strategies to improve the safety and health of operators and employees of small mines.

In 2016–17, the inspectorate delivered 14 workshops to operators of small mines at a number of regional towns and cities throughout Queensland on:

- small mine safety and health management systems
- electrical awareness for quarrying managers and supervisors
- safe drilling and blasting in small mines and quarries
- effective risk management and incident investigation.

In addition, the inspectorate, in partnership with the Institute of Quarrying Australia, has developed and published the following field books for use at small mines:

- *Working safely with electricity*
- *Guarding of conveyors*
- *Traffic management: a guide for your safety*
- *Safe drilling and blasting for small mines*
- *Slope stability.*

These field books provide practical guidance to the operators of small mines to manage safety and health in their workplace and are regularly promoted to workers and operators. They are available from the Institute of Quarrying Australia website at [www.quarry.com.au](http://www.quarry.com.au).



## Management of respirable crystalline silica

Silicosis is an occupational lung disease caused by inhalation of respirable crystalline silica dust and is a type of pneumoconiosis.

Crystalline silica is a component of many types of mineralised and quarried rock extracted at Queensland mineral mines and quarries.

The Mining and Quarrying Safety and Health Regulation 2017 requires the application of a risk management process to all hazards, including respirable crystalline silica dust. Site senior executives at mineral mines and quarries are required to have control measures in place to ensure mine workers' exposure to respirable crystalline silica dust does not exceed the occupational exposure limits established under Queensland legislation and is as low as reasonably achievable.

### Occupational exposure limits for respirable crystalline silica

The current regulated occupational exposure limit for respirable crystalline silica in Queensland mineral mines and quarries is 0.1 mg/m<sup>3</sup> (time-weighted average over an eight-hour shift). This level represents a statutory maximum upper limit and is consistent with Safe Work Australia's workplace exposure standards for airborne contaminants. The standard in Queensland is the same as the regulated

limit in New South Wales and Western Australia, as well as in the European Union and the United States (Table 9).

On 9 July 2017, the department participated in a workshop run by MSHAC to explore the impact and effect of changes to the occupational exposure limits for respirable crystalline silica. The results of this workshop can be seen in 'Appendix 2: Respirable crystalline silica workshop findings'.

### Reporting obligations for respirable crystalline silica

Historically, mineral mines and quarries in Queensland did not have to report incidences of silicosis disease in mine workers. As a result, the number of cases of silicosis could only be cautiously inferred from workers compensation data.

This is because the data used to estimate silicosis cases may not include every incidence of the disease due to:

- not every incidence having been diagnosed
- not every incidence having a workers compensation claim lodged
- the diagnosis of incidences being confounded by workers who have compounding issues such as exposure to asbestos or a history of smoking.

On 1 January 2017, the Mining and Quarrying Safety and Health Regulation 2001<sup>4</sup> was amended to include silicosis as a notifiable disease to the Queensland Mines Inspectorate.

<sup>4</sup> This Regulation was replaced by the Mining and Quarrying Safety and Health Regulation 2017 on 1 September 2017.

**Table 9:** Respirable crystalline silica occupational exposure limits in Australian and overseas jurisdictions

JURISDICTION	OCCUPATIONAL EXPOSURE LIMIT (MG/M <sup>3</sup> )
Queensland (all work places including coal mines, mineral mines and quarries)	0.1
New South Wales (all work places including coal mines, mineral mines and quarries)	0.1
Western Australia (all mines and mineral processing sites)	0.1
Safe Work Australia (standard regulation)	0.1
Australian Institute of Occupational Hygienists	0.1
European Union	0.1
National Institute for Occupational Safety and Health	0.05

## Guideline for management of respirable crystalline silica

In 2016–17, the Queensland Mines Inspectorate worked with industry to develop a new guideline to address the lack of standardisation in health surveillance in mineral mines and quarries in relation to respirable crystalline silica. The Queensland guideline *QGLo2: Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries* was published in August 2017.

This guideline prescribes the medical assessment requirements for health surveillance, minimum sample numbers and periodic exposure monitoring to quantify worker exposure, and directs mines to investigate and eliminate overexposure to respirable crystalline silica and minimise exceedances.

Under the guideline, the inspectorate now receives notification of every respirable crystalline silica exceedance (an exposure monitoring result greater than the adjusted occupational exposure limit) at a mineral mine or quarry by exception, rather than receiving all exposure monitoring results that are below the occupational exposure limit.

The guideline requires the site senior executive to investigate every exceedance—the investigation must be documented and identify the cause of the exceedance, and control measures implemented or taken to prevent any recurrence. The site senior executive is also required to apply effective control measures to ensure that workers are not overexposed until engineering control measures are implemented and proven to be effective—for example, by using respiratory protective equipment.

This guideline addresses relevant recommendations from the Monash review and includes feedback and advice from MSHAC.

The guideline requires additional controls to be implemented if the upper confidence limit is above the occupational exposure limit ( $UCL > OEL$ ). In practise, this will drive the mean exposure for a work group to less than 50 per cent of the occupational exposure limit—that is less than  $0.05 \text{ mg/m}^3$ .

## Queensland Mines Inspectorate compliance activities for respirable crystalline silica

In 2016–17, the Queensland Mines Inspectorate developed a structured inspection guide and used this to assess the management of respirable crystalline silica dust monitoring and health surveillance at all mineral mines, quarries and sandstone mines. Inspections were prioritised based on individual mine and quarry dust-related risk profiles.

A recent survey of the industry showed:

- 90 per cent of workers work at a site that has a management plan for dust or respirable crystalline silica
- 93 per cent of workers have had their respirable crystalline silica exposure character monitored
- 5416 respirable crystalline silica samples—from 227 mines participating in the survey—were collected by industry in the last 5 years, of which 94 per cent were at or below the regulated limit
- 91 per cent of workers undergo periodic health surveillance.

For the period 1 January 2000 to 30 June 2017, the inspectorate issued 189 directives and 735 substandard conditions or practice notices concerning issues with dust in mineral mines and quarries. During this period, 14 mine sites had operations suspended for dust-related issues.

## Inclusion of respirable crystalline silica in the dust database

Currently, the inspectorate does not include respirable crystalline silica in the dust database. This is primarily due to inconsistencies in similar exposure group naming and assignment, and the large number of discrete operations in the mining and quarrying industry, many with fewer than five workers.

Data collected from 35 mineral mine and quarry operations included more than 500 similar exposure groups. It has been estimated that across the sector there are more than 1000 similar exposure groups. In comparison, coal mines have far less diversity in the type and scale of operations and have an established set of similar exposure groups for use in monitoring and reporting personal respirable dust. In order to

include respirable crystalline silica in the dust database and comparatively evaluate the performance across individual mines and quarries, a consistent naming system for similar exposure groups in mineral mines and quarries must be developed.

The large number and diversity of mining and quarrying operations and the frequency at which they operate also complicates the inclusion of respirable crystalline silica in the database. As of July 2017, there were 1609 mineral mines and quarries in Queensland. This includes 943 that operate infrequently. Of the 666 mines and quarries that are in regular operation, 500 (70 per cent) had 5 or fewer workers.

Mines inspectors have also noted that some operations, particularly the smaller ones, often lack computer literacy, making consistent data collection difficult.

In order to include respirable crystalline silica in the dust database, a significant change management process is required to assist hundreds of individual sites to comply with the reporting process and would require a significant transitional period.

## Real-time monitoring for respirable crystalline silica

All respirable crystalline silica samples currently require laboratory analysis. As a result, while real-time monitoring is available to measure total airborne particulate levels, there is currently no available technology for real-time respirable crystalline silica monitoring.

Real-time dust monitors are currently only used to quantify relative dust levels in situations such as testing a control measure or conducting an activity to educate workers or change behaviour to reduce dust exposure.

## Management of exposure to lead

In August 2016, Safe Work Australia proposed an amendment to work health and safety standard regulations to lower blood lead removal levels (PbB) and maximum permissible airborne concentrations of lead (PbA) to better protect workers exposed to lead at the workplace, including in the mining and refining industries.

In a decision regulation impact statement, Safe Work Australia considered three options. As a result of its analysis,

Safe Work Australia recommended a reduction in target levels for PbB to 20 µg/dL, removal levels to 30 µg/dL for females not of reproductive capacity and males, and removal levels to 10 µg/dL for females of reproductive capacity.

The Coalition of Australian Governments Workplace Relations Ministerial Committee chose to accept this option and to retain PbA target levels at 0.15 mg/m<sup>3</sup>, with an option to review airborne lead levels if future evidence suggested it was warranted.

## Lead workshop

In order to comprehensively assess the evidence and the impacts of the proposed amendments and provide informed advice to the department and Minister, MSHAC held a lead workshop on 24 February 2017. The workshop was attended by 24 stakeholders, including epidemiologists, occupational hygienists, toxicologists, mine operators, worker representatives, the Chief Inspector of Mines (Mineral Mines and Quarries) and the Commissioner for Mine Safety and Health.

The workshop considered whether there was evidence to indicate that the risk of exposure to lead burden required a reduction in PbB and PbA levels to that proposed by Safe Work Australia, and to evaluate current industry compliance with current and proposed levels.

The workshop found that, on the available epidemiological and toxicological evidence, the existing lead exposure limits and monitoring regime in Queensland did not adequately protect workers from exposure to inorganic lead. However, an examination of the evidence showed that Queensland lead mines and refineries had already implemented lower removal levels based on internal corporate risk assessments and were already generally compliant with the Safe Work Australia proposed occupational blood lead removal limits.

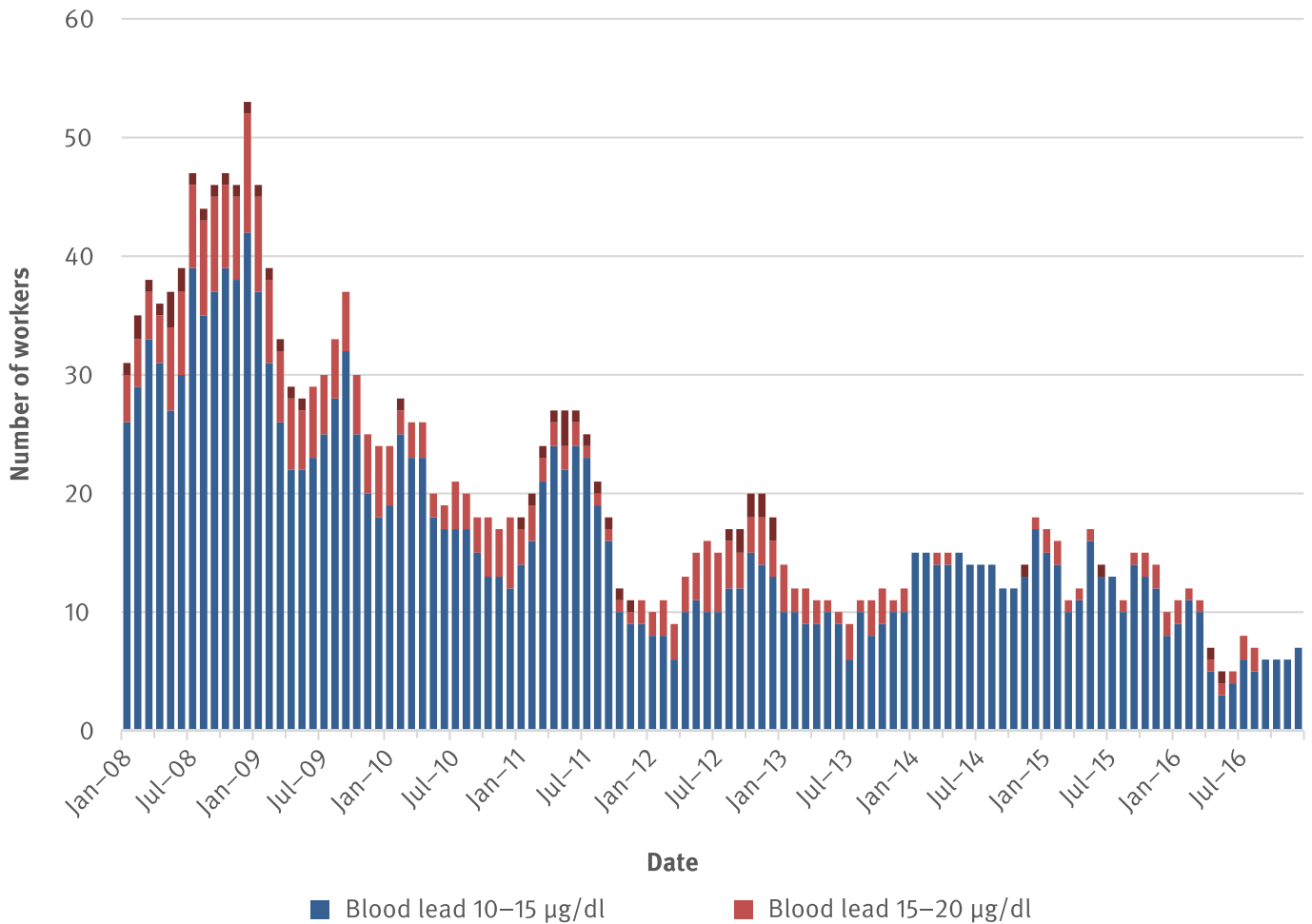
As a result of this precautionary approach, industry has been achieving a reduction in PbB levels over time (figures 6 and 7 overleaf) and is now generally achieving PbB removal levels lower than would be required within existing PbA occupational exposure limits (0.15 mg/m<sup>3</sup>).

The workshop identified that in January 2017, there were 21 Queensland workers that exceeded the proposed Safe Work Australia PbB exclusion level—7 females of reproductive capacity (Figure 6) and 14 females not of reproductive capacity and males (Figure 7).

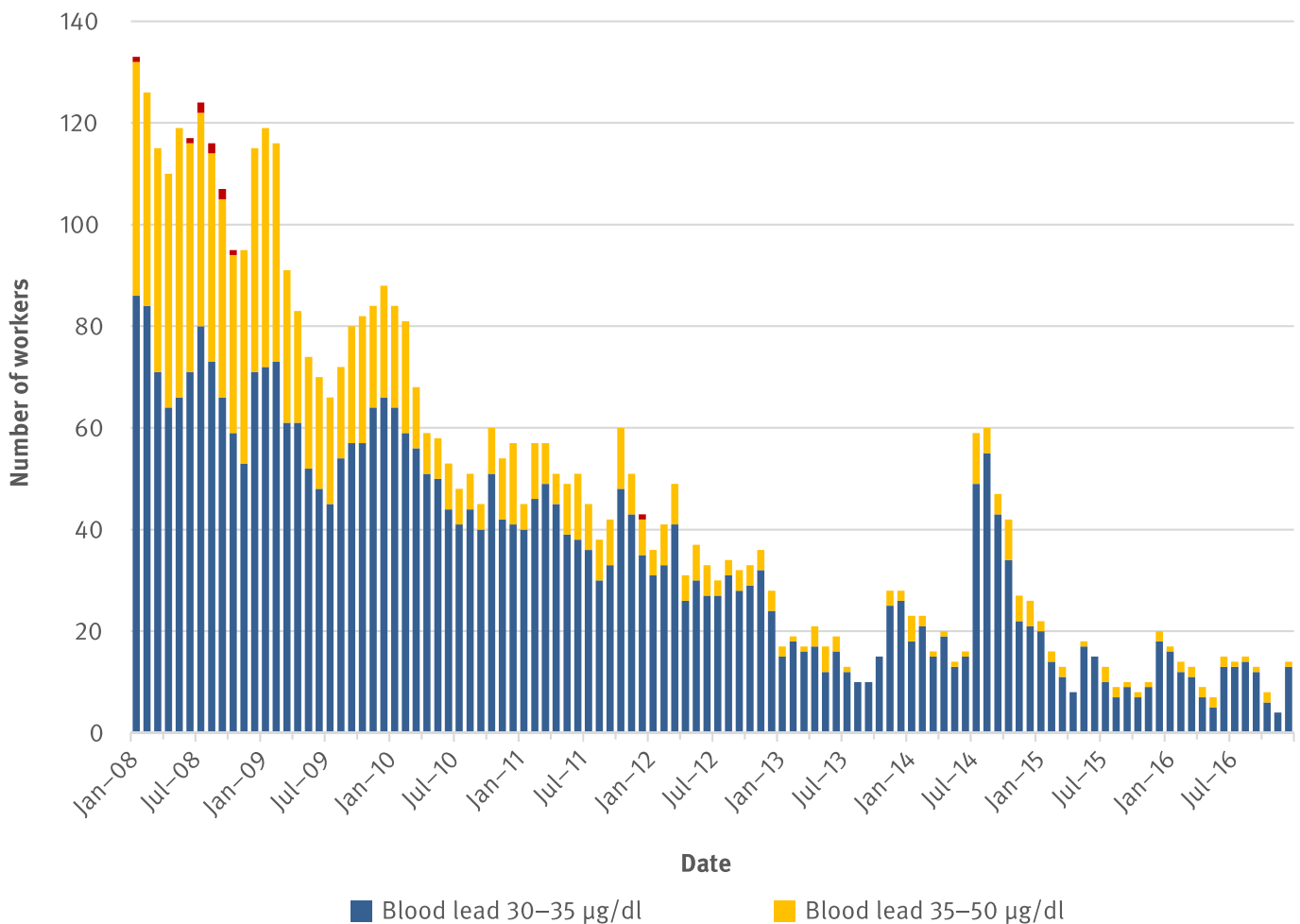
Based on the evidence for the need to reduce PbB, the workshop recommended that the Mining and Quarrying Safety and Health Regulation 2017 be amended to start the transitional period of two years at the soonest possible opportunity and that Queensland adopt the Safe Work Australia recommended option of:

- a reduction in PbB target levels to 20 µg/dL and removal levels to 30 µg/dL for females not of reproductive capacity and males
- a reduction in PbB removal levels to 10 µg/d for females of reproductive capacity
- retention of PbA target levels of 0.15 mg/m<sup>3</sup>.

The workshop also noted that PbB does not have a linear relationship to PbA and does not require a corresponding reduction in the PbA occupational exposure limit to achieve the proposed PbB target.



**Figure 6:** Blood lead results for females of reproductive capacity (mine survey January 2017)



**Figure 7:** Blood lead results for females not of reproductive capacity and males (mine survey January 2017)

## Mines rescue

All Queensland underground coal mines must run annual simulations to test their readiness for emergencies. In addition to their own exercises, each year one mine hosts a level 1 emergency exercise. These exercises have been held annually since 1998 and are monitored by assessors from the Queensland, New South Wales and international coal mining communities.

In 2016–17, in addition to the annual coal mine level 1 exercise, the Queensland Mines Inspectorate ran a pilot level 1 exercise in an underground mineral mine. This was a new initiative for the mines inspectorate and the first time a level 1 exercise has been held at a mineral mine in Queensland.

The level 1 coal mine exercise was held at Grasstree Mine near Tieri in Central Queensland and the level 1 mineral mine exercise was held at George Fisher Mine near Mount Isa.

## Coal mine level 1 exercise

The coal mine level 1 exercise was held at the Grasstree underground coal mine at 8 am on Sunday 13 November 2016. Grasstree is a longwall coal mine with three continuous miner development faces located approximately 26 kilometres east of Tieri, which is 250 kilometres south-west of Mackay.

The exercise was designed to test:

- the mine's emergency response system, particularly the ability to form an incident management team on a weekend

- self-escape/aided escape and inseam response as required, including the changeover of self-contained self-rescuers and the use of changeover bays
- mobilisation of the Queensland Mines Rescue Service, including deployment underground, and establishing a fresh air base
- how installed systems and procedures were managed to locate missing personnel
- off-site communications response on a weekend for incident respondents, including Queensland Mines Rescue Service, the inspectorate, Simtars and mine corporate communications.

In total, 19 assessors took part with representatives from industry, unions, government and mines rescue bodies. The exercise was generally considered a success, with some notable areas for improvement.

A full report of the exercise can be found on the Department of Natural Resources and Mines website at [www.dnrm.qld.gov.au](http://www.dnrm.qld.gov.au).

The report was published to allow all mine sites and other agencies to review the recommendations and use them to improve their emergency response systems.

## Mineral mine level 1 exercise

The mineral mine level 1 exercise was held at the George Fisher underground mine between 10 am and 2 pm on Tuesday 30 August 2016. George Fisher Mine is an underground lead–zinc mine located 20 kilometres north of Mount Isa in North Queensland.

While level 1 exercises have been held in coal mines every year since 1998, the exercise in George Fisher Mine was the first level 1 exercise to be held in a mineral mine in Queensland. The proposal to run the pilot was made during a meeting with all underground mine managers in March 2016.

The exercise was designed to test:

- the ability of personnel to don and wear a self-contained self-rescuer and walk to the nearest emergency refuge bay wearing smoke goggles
- activation of some emergency refuge bays to stand alone (no mine services)
- the capability of a crib room emergency refuge bay to keep out contaminants
- the mine's evacuation processes and ability to account for personnel
- activation of the L72 winder for insertion of mines rescue to an area below a simulated fire
- the emergency management team response.

As the exercise was a pilot, it was not designed to test outside agency responses and was a site response check only.

In total, 14 assessors took part with representatives from industry, unions, government and mines rescue bodies. The exercise was generally considered a success, with some notable areas for improvement.

A full report of the exercise can be found on the Department of Natural Resources and Mines website at [www.dnrm.qld.gov.au](http://www.dnrm.qld.gov.au).

The report was published to allow all mine sites and other agencies to review the recommendations and use them to improve their emergency response systems.

The George Fisher Mine has advised that it has implemented many of the recommendations from the exercise, including:

- implementing a new emergency control room, incorporating recommendations such as a breakout area for communication and duty card review
- rectifying many of the skip man-riding issues identified
- updating maintenance schedule tasks to reflect the issues identified
- reviewing change management processes
- ongoing education of staff in the use of self-contained self-rescuers in an emergency.

The recommendations have allowed greater preparedness at George Fisher Mine, lifted standards and ensured the mine is better prepared in the case of a serious emergency.

On 21 December 2016, the inspectorate held an industry forum at Ernest Henry Mine to examine the pilot exercise. The forum was attended by representatives of the main surface and underground operations. Presentations were given on the level 1 exercise and discussions held on opportunities to enhance mine site capabilities and mutual aid.

It is intended to hold a level 1 exercise at another mineral mine in 2018.



Mineral mine level 1 emergency exercise, 2016—George Fisher Mine near Mount Isa



Mineral mine level 1 emergency exercise, 2016—George Fisher Mine near Mount Isa

## Mine Safety and Health performance accountability framework

In 2016–17, Mine Safety and Health developed a performance accountability framework to assess the performance of the coal mining, mineral mines and quarries, petroleum and gas, and explosives inspectorates when carrying out their functions.

The framework was modelled on the Australian Government Regulator Performance Framework and consists of six outcomes-based key performance indicators covering:

1. reducing the regulatory burden
2. communication
3. risk-based and proportionate approaches
4. efficient and coordinated monitoring
5. transparency
6. continuous improvement.

Performance is assessed using activity-based evidence.

The objective of the framework is to improve the way that Mine Safety and Health performs as a regulator and to ensure a more accountable and transparent regulatory system through public reporting of performance activities. The framework will also assist the Queensland Mines Inspectorate to identify opportunities for improvement and better target resources.

Under the framework, the performance of the inspectorate will be self-assessed annually against the key performance indicators. Assessment may also include stakeholder consultation through surveys and other means. The first reporting period will be from 1 July 2017 to 30 June 2018 and the first report will be published after this period is complete.

The *Mine safety and health performance accountability framework* was published in July 2017 on the Business Queensland website at [www.business.qld.gov.au](http://www.business.qld.gov.au).

## Implementation of recommendations from the Coroners Court of Queensland

All high potential incidents in mines resulting in death are referred to the Coroners Court of Queensland to consider whether an inquiry is required under the *Coroners Act 2003*.

In the period 1 January 2004 to 30 June 2017, the Coroners Court of Queensland held 11 inquests into mining-related deaths. In total, 84 recommendations were made in 9 of those inquests regarding improvements that should be made to improve the safety and health of mine workers.

In 2016–17, the Commissioner for Mine Safety and Health requested an update from the Queensland Mines Inspectorate on the progress that had been made in addressing those recommendations.

### Recommendations addressed in 2016–17

The inspectorate addressed two outstanding recommendations in 2016–17.

#### Inquest into the death of Jason George Elliott Blee in 2007

On 10 September 2009, Coroner Annette Hennessy delivered her findings into the death of Jason George Elliott Blee in 2007.

In her report, the Coroner recommended:

*That the Standards Review Committee formed as a subcommittee reporting to the Coal Mining Safety and Health Advisory Council thoroughly review the “place change” system of mining with a view to establishing best practice guidelines to be recommended to the Advisory Council for consideration of developing a Recognised Standard for promulgation to the Minister. The Standard should include the guidelines and seek to ensure that risk assessments are conducted to the highest possible standard to ensure the lowest level of risk.*



In response, the inspectorate developed *Recognised standard 12: Place change operations in underground coal mines*, which was supported by CSMHAC and approved for release by the Minister for Natural Resources and Mines in December 2016.

### Inquest into the death of Wayne MacDonald in 2010

On 9 September 2014, Coroner David O'Connell delivered his findings into the death of Wayne MacDonald in 2010.

In his report, the Coroner recommended:

*That an Australian standard for up to 24 inch diameter truck tyres be investigated, created, and, if considered appropriate, implemented into law by regulation within a period of two years, and if no Australian standard is created within two years then a recognised standard under part five of the Coal Mining Safety and Health Act 1999 be implemented within one year.*

In response, the inspectorate contacted Standards Australia regarding reconstituting the AS/NZS 2230:1999 *New pneumatic tyres for light trucks and trucks/buses* committee. However, as there was no support from a significant stakeholder group, Standards Australia were unable to continue. As a result, the inspectorate developed *Recognised standard 13: Tyre, wheel and rim management*, which was supported by CSMHAC and approved for release by the Minister for Natural Resources and Mines in December 2016 and came into effect on 1 January 2017.

## Recommendations outstanding at 30 June 2017

As at 30 June 2017, the inspectorate reported that two recommendations from two inquests were still to be finalised (see Table 10 below).

**Table 10:** Outstanding recommendations from coronial inquests

INQUEST	DATE OF FINDINGS	RECOMMENDATION	CURRENT STATUS
Inquest into the death of Shane William Davis in 2005	21 March 2007	That consideration be given to amending section 44(6) of the <i>Coal Mining Safety and Health Act 1999</i> to require that manufacturers and suppliers inform the regulator, as well as their customers, in the event they become aware of the hazardous aspect of, or defect in, the equipment that the supplier has supplied to a coal mine.	Work to progress the recommendation carried out in 2016–17  Legislative amendments included as part of the Mine Legislation (Resources Safety) Amendment Bill 2017  Expected to be completed in 2017–18
Inquest into the death of Jason George Elliott Blee in 2007	10 September 2009	That the coal mining industry adopt a system (whether through a central database or otherwise) whereby a coal mine worker, on departure from an operation, is provided with a full copy of their competencies, tickets and authorisations achieved whilst employed on that site. Further, that those documents be required to be placed on the record at subsequent operations the worker might be employed at in order to provide a ready cross-reference of previous experience. The department should consider legislative amendments or other requirements being issued for this system to be implemented across the industry.	Work to progress the recommendation carried out in 2016–17  Legislative amendments included as part of the Mine Legislation (Resources Safety) Amendment Bill 2017  Expected to be completed in 2017–18

## Stakeholder engagement

The Queensland regulatory model gives equal voice to government, mine operators and mine workers in the regulation of mine safety and health.

The Queensland Mines Inspectorate regularly engages with operators and workers via formal and informal means to ensure that each group is able to provide feedback and have input into the decision-making process. The inspectorate also proactively engages with industry to ensure that changes to regulations are adequately communicated.

In 2016–17, inspectors presented at a variety of industry events, including at the Queensland Mining Industry Mine Safety and Health Conference.

The inspectorate also hosted and attended a range of industry forums, meetings and workshops, including with:

- Queensland Resources Council
- small mine operator associations
- ventilation officers
- mechanical engineers
- electrical engineers
- underground mine managers
- disaster management coordinators
- drill and blast operators
- Moura No 2 (1994) task group 4
- unions.

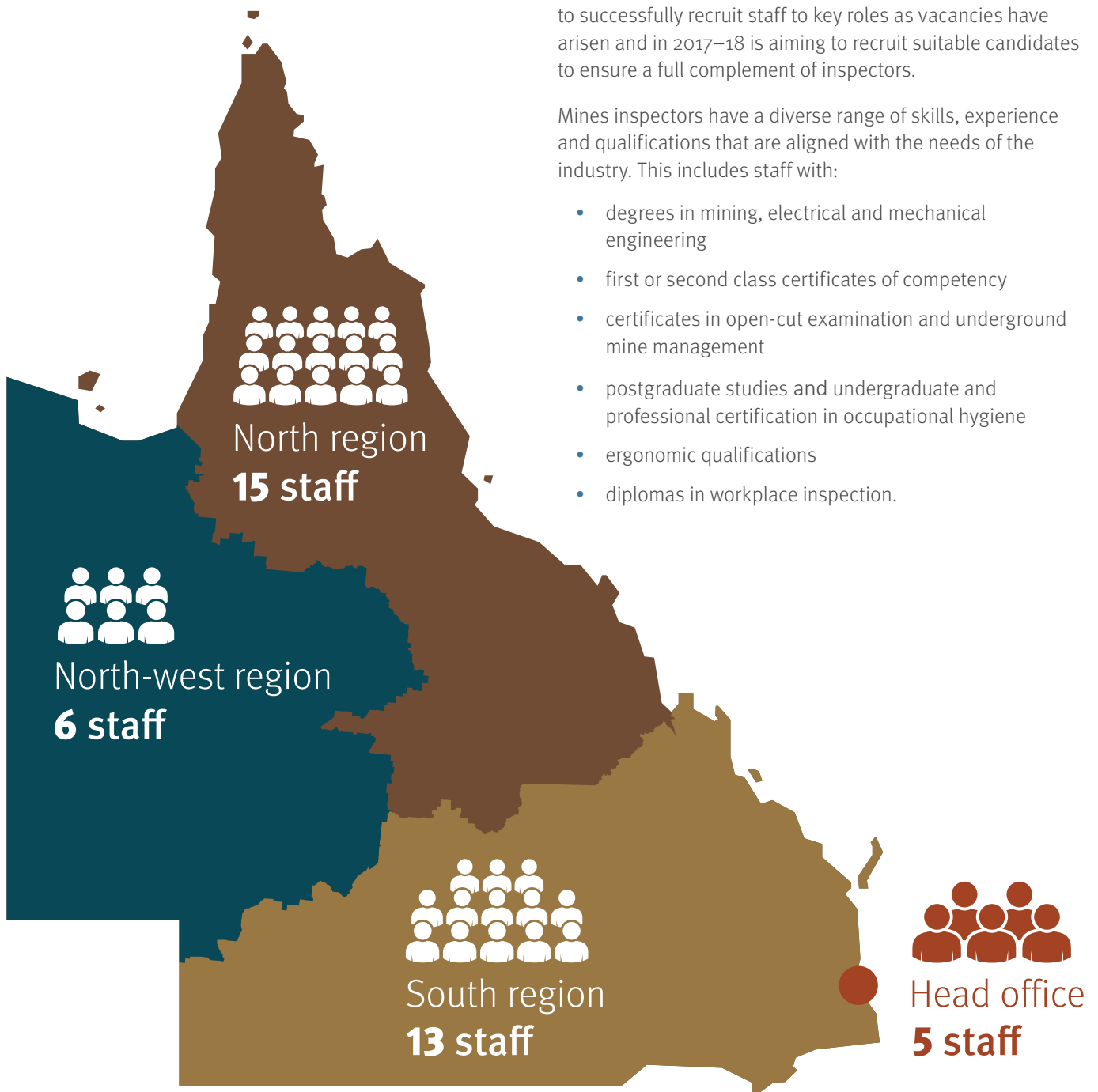


Mines inspector conducting routine mine inspection at Bromelton Quarry—September 2016

# PEOPLE

## Resourcing

As at 30 June 2017, the Queensland Mines Inspectorate had 39 mines inspectors located in four regions. Inspectors are positioned close to mining and quarrying operations.



In 2016–17, the inspectorate maintained a stable operating environment with low staff turnover. However, there were periods in the year when leadership roles in the coal area were filled as acting positions. In addition, due to natural attrition, the number of inspectors was at times below the full capacity of 45 inspectors. The inspectorate has continued to successfully recruit staff to key roles as vacancies have arisen and in 2017–18 is aiming to recruit suitable candidates to ensure a full complement of inspectors.

Mines inspectors have a diverse range of skills, experience and qualifications that are aligned with the needs of the industry. This includes staff with:

- degrees in mining, electrical and mechanical engineering
- first or second class certificates of competency
- certificates in open-cut examination and underground mine management
- postgraduate studies and undergraduate and professional certification in occupational hygiene
- ergonomic qualifications
- diplomas in workplace inspection.

**Figure 8:** Location of mines inspectors in Queensland

The re-emergence of coal workers' pneumoconiosis in 2015 placed additional demands on the inspectorate. This challenge was quickly addressed with the establishment of a dedicated coal workers' pneumoconiosis project team.

In 2016–17, the inspectorate continually assessed the required skills of inspectors and consequently appointed three occupational hygiene officers to support the ongoing work in coal mines and mineral mines and quarries. In addition, the inspectorate recruited an inspector highly experienced in mine ventilation.

## Future resourcing challenges

While the inspectorate is adequately resourced to deliver its compliance program, it is important to note that mining is a dynamic industry—new hazards emerge due to advancing technologies and changes in the operational environment. As a result, it is important for the inspectorate to continuously assess whether it has the required mix of skills among its inspectors, and resourcing needs to be flexible enough to adapt to these changing conditions while maintaining ongoing compliance and enforcement functions.

The inspectorate is staffed by highly experienced, well-trained and competent industry professionals. One of the main future resourcing issues is that the inspectorate draws its workforce from the same limited talent pool as industry—the inspectorate, in fact, competes for the same resources. Therefore, as new mines come into operation, there is a risk of losing highly qualified inspectors to industry.

## Workforce skills development

An ongoing program of continuous professional development is undertaken to ensure inspectors develop and maintain their skills and understand the issues facing the industry.

In 2016–17, more than 40 different training courses were delivered to inspectors covering legislation, governance and the technical aspects of undertaking their role as a regulator.

## Leadership realignment

In 2016–17, the inspectorate undertook a significant leadership realignment to free up resources and allow inspectors in regional offices to better manage their own affairs. Queensland was divided into north, south and north-west regions to better align the regions across coal mines and mineral mines and quarries.

As part of the restructure, the position of regional manager was removed—an inspector doing a largely administrative role—and the role of district inspector was changed to regional inspector.

The restructure will ensure that consistent standards and processes are applied across all mines and will provide clearer lines of reporting for inspectors.

## Regulatory capture

The operational independence of the inspectorate is of paramount importance. It is important that the inspectorate works to minimise any possibility, or even perception, of regulatory capture occurring—regulatory capture is when a regulatory agency advances the interests of particular groups in the industry rather than acting in the public interest.

The inspectorate mitigates the risk of regulatory capture by ensuring inspectors complete training to raise their awareness of regulatory capture and how it occurs, including training in code of conduct, complaints management, public sector ethics and ethical decision-making. Much of this training is conducted by the Queensland Ombudsman.

Strict internal regulation provides an additional barrier. For example, for a period of at least six months from their appointment, a new inspector will not be assigned to inspect or audit the mine at which they previously worked. In addition, inspectors are not dedicated to specific mines or regions. They inspect and audit mines based on the compliance area of interest and skill set of the inspector.

# COMMISSIONER'S ACTIVITIES

The Commissioner for Mine Safety and Health regularly engages with stakeholders at all levels of the mining industry, unions and government. Through these engagement activities, the Commissioner is able to hear first-hand the thoughts and concerns of all parties and get a more thorough understanding of the performance of the inspectorate. Feedback provided to the Commissioner shows that mines inspectors are generally considered to be competent, are well respected and perform their roles well.

In 2016–17, the Commissioner:

- met regularly with, and provided advice to, the Minister for Natural Resources and Mines
- met regularly with the Executive Director of Mine Safety and Health
- met regularly with Queensland Resources Council
- met regularly with mining-related unions
- attended and presented at the annual Queensland Mining Industry Health and Safety Conference
- attended the annual Quarrying Safety and Health Seminar
- met with various site senior executives and site safety and health representatives
- made 12 requests for information or investigation to the Executive Director of Mine Safety and Health.

## Advisory committee meetings

The Commissioner participated in 14 advisory committee meetings, including:

- 5 Coal Mining Safety and Health Advisory Committee meetings (chair)
- 5 Mining Safety and Health Advisory Committee meetings (chair)
- 4 Occupational Health Mining Advisory Committee meetings (member).

## Mine and quarry site visits

In 2016–17, the Commissioner undertook a program of mine and quarry site visits to:

- follow-up on remediation of directives issued by the inspectorate
- observe scheduled safety and health inspections
- observe a wide range of mining and quarrying activities
- help develop better relationships with industry and workers
- promote awareness of mine safety and health issues
- raise awareness of the role of the Commissioner for Mine Safety and Health.

Visiting mine and quarry sites enables the Commissioner to better understand the spectrum of mining activity taking place across Queensland and to speak directly to mine workers and operators about safety and health issues.

The Commissioner visited 14 mine sites and quarries and engaged with miners, union representatives, mine managers, district workers' representatives, inspectors and investigators at:

- Moranbah North coal mine—July 2016 (EK Healy Cup 2016)
- Moranbah (town)—September 2016 (Miners Memorial Day 2016)
- West Appin coal mine near Wollongong—September 2016 (New South Wales standing dust committee meeting)
- Kestrel coal mine near Emerald—October 2016 (54th Australian Underground Mines Rescue Competition)
- Caval Ridge coal mine—November 2016
- Glasshouse Mountains quarry—January 2017
- Nirvana quarry near Helidon—January 2017
- Mount Marrow quarry near Haigslea—January 2017
- Grasstree coal mine near Tieri—February 2017

- Sibelco sand mine on North Stradbroke Island—April 2017
- government explosives reserve at Helidon—May 2017 (power of explosives demonstration)
- Mount Isa Mines Copper Smelter—June 2017
- Mount Carlton gold mine—June 2017 (MSHAC site visit)
- Broadmeadow coal mine near Moranbah—June 2017.



The Commissioner visiting Sibelco sand mine—April 2017



Mount Carlton Gold Mine—June 2017



MSHAC visit to Mount Carlton Gold Mine—June 2017

## Presentations

In 2016–17, the Commissioner attended six industry conferences and events. The Commissioner presented at the:

- EK Healy Cup—July 2016
- Queensland Mining Industry Safety and Health Conference—August 2016
- mine rescue competition Emerald—October 2016
- Mining Safety and Health industry briefing—November 2016
- Queensland Public Service Women in Leadership—May 2017.

## Coal Mining Safety and Health Advisory Committee

CMSHAC is a tripartite group consisting of nine members representing industry, mineral mine and quarry workers and the inspectorate.

The Minister for Natural Resources and Mines appoints the members, taking into consideration their experience in the industry and demonstrated commitment to promoting safety and health standards.

Under the *Coal Mining Safety and Health Act 1999*, the primary function of CMSHAC is to give advice and make recommendations to the Minister about promoting and protecting the safety and health of mine workers.

The committee does this by:

- reviewing the effectiveness of the legislation (Act, Regulations and recognised standards)
- reviewing the effectiveness of the control of risk to any person from coal mining operations
- recognising, establishing and publishing
  - the competencies qualifying a person to perform tasks prescribed under a Regulation
  - the safety and health competencies required to perform the duties of a person under the Act.

## Review the effectiveness of legislation

In 2016–17, CMSHAC:

- initiated a review of the suite of coal mining safety and health legislation (Act, Regulations and recognised standards) in accordance with the Act—the review is in its early stages and is continuing in 2017–18
- analysed and provided advice regarding 25 amendments to the Act, which are under consideration to address a range of safety and health issues
- worked closely with the department to develop the Mining Safety and Health Legislation (Coal Workers' Pneumoconiosis and Other Matters) Amendments Regulation 2016 to address findings of the Monash review—the objectives of the Regulation are to
  - prescribe notifiable occupational diseases under the legislation
  - clarify coal mine worker health assessment requirements
  - introduce voluntary respiratory and chest X-ray examinations for retiring coal mine workers
  - strengthen respirable dust management requirements, including requiring mines to report single sample exceedance to the Queensland Mines Inspectorate
- established a subcommittee to provide advice to the department and Minister on the mandated remake of the Coal Mining Safety and Health Regulation 2001<sup>5</sup>
- worked closely with the department directly and through CMSHAC's recognised standards subcommittee on the development and/or updating of recognised standards for
  - underground electrical equipment and electrical installations (recognised standard 01)
  - place change mining operations in underground coal mines (recognised standard 12)
  - tyre, wheel and rim management (recognised standard 13)
  - monitoring respirable dust in coal mines (recognised standard 14)
  - underground respirable dust control (recognised standard 15).

<sup>5</sup> This Regulation was replaced by the Coal Mining Safety and Health Regulation 2017 on 1 September 2017.



## Review the effectiveness of control of risk to any person

CMSHAC provided independent advice to the Minister and department about the effectiveness of the control of risk to any person from coal mining operations, regarding:

- proposed initiatives to address the Monash review
- the creation of an independent dust review committee and its operation
- the development and management of a respirable dust database
- coal mining safety and health matters, including recognised standards, guidelines, safety alerts and bulletins, and other documentation.

## Recognising, establishing and publishing competencies

CMSHAC developed and implemented a new competency for people sampling dust at coal mines. All people conducting dust monitoring at coal mines must now have a recognised competency.

This competency is delivered by Simtars. CMSHAC worked with Simtars on the development of training modules to achieve the competency.

CMSHAC maintained the table of approved competencies published on the department's mine safety and health web page to reflect changes in individual competencies made by the Australian Skills Quality Authority.

CMSHAC developed and published updated competencies for:

- underground electrical engineering managers
- surface electrical engineering managers
- people analysing and evaluating light, wheeled mobile and heavy vehicle braking systems
- trainers and training assessors.

## Stakeholder engagement

CMSHAC consulted extensively with coal mining stakeholders, including:

- the department's Coal Workers' Pneumoconiosis unit regarding the strategies for implementing measures to address the findings of the Monash review
- Coal Services (New South Wales) regarding the management and monitoring of respirable coal dust, coal workers' pneumoconiosis, coal dust information and extension materials and awareness campaigns, respirable dust data collection, dust management committee and the administration of respirable dust contaminants and associated health insurance schemes
- mining industry senior stakeholders to understand the effectiveness of mine safety and health from a mine operator's perspective
- Safe Work Australia in relation to the respirable airborne contaminants workplace/occupational exposure standards review project and the impacts that may have on workplace exposure standards in Queensland
- Australian Skills Quality Authority in relation to the multitude of training programs being offered by registered training organisations, and concerns that some training is substandard and the impact that may have on the effectiveness of coal mine safety and health standards in Queensland
- Queensland's representatives on the National Drug Strategy (Queensland Health and Queensland Police Service), unions and mine operators to better understand the risk to people and coal mining operations from drugs and alcohol and the effectiveness of the Act, Regulations and recognised standards in controlling this risk
- the Occupational Health Mining Advisory Committee—previously Health Improvement and Awareness Committee—in regard to the role of that committee in supporting CMSHAC regarding coal mine worker health standards and issues
- Glencore and Anglo in relation to a risk assessment project on a real-time dust monitoring device to determine if it is safe for use in flammable environments.

## Mining Safety and Health Advisory Committee

MSHAC is a tripartite group consisting of nine members representing industry, mineral mine and quarry workers and the inspectorate.

The Minister for Natural Resources and Mines appoints the members, taking into consideration their experience in the industry and demonstrated commitment to promoting safety and health standards.

Under the *Mining and Quarrying Safety and Health Act 1999*, the primary function of MSHAC is to give advice and make recommendations to the Minister about promoting and protecting the safety and health of mine workers.

The committee does this by:

- reviewing the effectiveness of the legislation (Act, Regulations and guidelines)
- reviewing the effectiveness of the control of risk to any person from mining operations
- recognising, establishing and publishing
  - the competencies qualifying a person to perform stated tasks
  - the safety and health competencies required to perform the duties of a person under the Act.

### Review the effectiveness of legislation

In 2016–17, MSHAC:

- initiated a review of the suite of mining and quarrying safety and health legislation (Act, Regulations and recognised standards) in accordance with the Act—the review is in its early stages and is continuing in 2017–18
- provided advice regarding the proposed amendments to address a range of mineral mining and quarrying safety and health issues that the department identified from the historical regulatory impact statement and work that had been done since
- worked closely with the department to develop the Mining Safety and Health Legislation (Coal Workers' Pneumoconiosis and Other Matters) Amendments Regulation 2016 to address findings of the Monash

review—the objectives of the Regulation relevant to mineral mining and quarrying are to

- prescribe notifiable occupational diseases under the legislation
- strengthen respirable dust management requirements
- provided advice to the department and Minister on the mandated remake of the Mining and Quarrying Safety and Health Regulation 2001<sup>6</sup>
- worked closely with the department on the development of Queensland guideline *QGL02: Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries*
- worked closely with the department on the development of a guideline for tyres, wheels and rims in response to recommendations from the Coroners Court of Queensland
- held a workshop on blood lead levels and made preparations for a workshop on respirable crystalline silica to be held in July 2017.

### Review the effectiveness of control of risk to any person

MSHAC provided independent advice to the Minister and department about the effectiveness of the control of risk to any person from mining and quarrying operations, regarding the:

- implications of the Monash review for mineral mining and quarrying
- proposed implementation of initiatives to address the risks of silicosis
- specific risk of blood lead levels from lead mining
- need for a respirable crystalline silica workshop.

MSHAC also worked with, or provided advice to, the department about:

- initiatives to address the recommendations of the Monash review
- the implementation of the global harmonisation scheme

<sup>6</sup> This Regulation was replaced by the Mining and Quarrying Safety and Health Regulation 2017 on 1 September 2017.

- a range of guidance notes, including
  - site safety and health representatives and site safety and health committees (QGN25)
  - electrical propulsion systems used in self-powered earth moving machinery (QGN26)
  - falls and fall prevention (draft)
  - exploration (draft)
  - surface tailings storage facilities (tailings dams) management (draft)
  - shaft construction (draft)
- three guidance notes relating to the global harmonisation scheme (awaiting changes to the Regulation before publishing)
  - classification and labelling of hazardous chemicals
  - safety data sheets hazardous chemicals
  - manifest quantities and placarding
- safety bulletins, including
  - managing rock fall hazards at development headings
  - supporting Telstra and other carrier communication networks
  - earthquake and seismic events.

## Recognising, establishing and publishing competencies

MSHAC has commenced a review of the adequacy of all mineral mining and quarry competencies. The review is initially focused on quarrying and will move onto large mineral mines. The review will examine competencies in other jurisdictions including Western Australia, New South Wales and South Africa.

MSHAC is also considering new competencies for:

- site senior executives and supervisors
- tailings storage facilities (which are delayed while MSHAC determines whether training in these competencies is available in Queensland).

## Stakeholder engagement

MSHAC consulted extensively with mining and quarrying stakeholders, including:

- the department regarding the development of a QDEX system for electronic lodgement of mine and quarry maps and plans
- Safe Work Australia in relation to the respirable airborne contaminants workplace/occupational exposure standards review project and the impacts that may have on workplace exposure standards
- Australian Skills Quality Authority in relation to the multitude of training programs being offered by registered training organisations, and concerns that some training is substandard and the impact that may have on the effectiveness of coal mine safety and health standards
- Queensland’s representatives on the National Drugs Strategy (Queensland Health and Queensland Police Service), unions and mine operators to better understand the risk to people and mining and quarrying operations from drugs and alcohol and the effectiveness of the Act, Regulations and recognised standards in controlling this risk
- the Occupational Health Mining Advisory Committee—previously Health Improvement and Awareness Committee—in regard to the role of that committee in supporting MSHAC regarding miner health standards and issues.

## Workshops

In February 2017, MSHAC held a workshop with members of unions, industry and the department to consider the impacts of proposed changes by Safe Work Australia to exposure limits for lead.

The workshop was attended by 24 stakeholders, including epidemiologists, occupational hygienists, toxicologists, mine operators, worker representatives, the Chief Inspector of Mines (Mineral Mines and Quarries) and the Commissioner for Mine Safety and Health.

The purpose of the workshop was to identify and provide advice to the Minister about:

- a baseline of current industry practice regarding blood lead levels
- blood lead and atmospheric lead levels that, on the best available evidence, manage the risk of consequences on mining workers.

The workshop found that, on the available epidemiological and toxicological evidence, the existing lead exposure limits and monitoring regime do not adequately protect workers from exposure to inorganic lead and advised the adoption of reduced limits as outlined by Safe Work Australia.

The workshop also identified that, not only were Queensland lead mines and refineries in compliance with existing blood lead occupational exposure limits, but had implemented lower removal levels based on internal corporate risk assessments and were generally compliant with the proposed Safe Work Australia occupational exposure limits as well.

MSHAC provided advice to the Minister to adopt the new reduced exposure limit outlined by Safe Work Australia at the soonest possible opportunity, with a two-year transitional period.

In addition, preparations were made for a workshop on 9 July 2017 to explore the epidemiological evidence, current compliance and potential impact of a change in occupational exposure limits for respirable crystalline silica.

The objective of the workshop was to identify and provide advice to the Minister about:

- a baseline of current industry practice regarding silica levels
- comparison of national and international jurisdictions
- concerns in errors with current sampling methods and real-time monitoring
- Queensland guideline *QGLo2: Guideline for management of respirable crystalline silica in Queensland mineral mines and quarries*.

The results of the respirable crystalline silica workshop are included in 'Appendix 2: Respirable crystalline silica workshop findings'.

## Occupational Health Mining Advisory Committee

The Occupational Health Mining Advisory Committee (OHMAC) is a tripartite group consisting of 12 members representing industry, coal mine and mineral mine and quarry workers, and the inspectorate. The committee transitionally reports to the Commissioner for Mine Safety and Health and the Executive Director of Mine Safety and Health. Members are appointed with consideration of their occupational health and technical skills and knowledge of mining health issues.

The primary function of OHMAC is to promote and protect the occupational health of mine workers. The committee does this by providing advice and making recommendations to industry about:

- issues related to occupational hygiene and occupational ergonomics
- complex multifactorial societal or community issues that have an impact on mine workers—for example, mental health, drug use and abuse, obesity, smoking and fatigue.

## Review and renaming of committee

OHMAC was previously named the Health Improvement and Awareness Committee. In 2016, a review of the committee chaired by Dr Tony Parker from the Queensland University of Technology resulted in a number of recommendations. The committee was renamed as OHMAC to better reflect the nature of the body and its role, and to bring the committee in line with the two other advisory committees.

## Priorities for 2017–18

For 2017–18, OHMAC has committed to exploring:

- respirable crystalline silica
- drugs strategy (illicit, prescription and over the counter)
- fatigue, including commuting
- thermal stress
- mental health.

After its reorganisation, OHMAC is now well placed to provide much needed advice about occupational hygiene. Recent issues such as coal workers' pneumoconiosis, respirable

crystalline silica and lead illustrate the need for occupational health and hygiene professionals to proactively inform the industry, worker representatives and government on occupational health issues. In 2017–18, OHMAC will aim to explore its identified priorities.

## **Mount Isa Lead Health Management Committee**

Over the years, concerns have been raised regarding childhood exposure to lead in Mount Isa. Subsequently, work has been done across the Queensland Government to ensure that exposure is minimised.

The Department of Health established the Mount Isa Lead Health Management Committee, a ministerial committee to address health risks for young children arising from environmental lead exposure—specifically young children aged 0–4 years and other residents of Mount Isa. The inaugural meeting of the committee was held at Mount Isa in October 2012.

This committee is comprised of senior state and local government representatives and elected community representatives. The committee reports to the Minister for Health and is chaired by the Chief Health Officer for Queensland, Dr Jeannette Young. The Commissioner for Mine Safety and Health represents the Department of Natural Resources and Mines on the committee.

The committee guides the Living with Lead Alliance in its work to improve lead health management practices in the Mount Isa community.

# APPENDIX 1: QUEENSLAND GOVERNMENT ACTIONS TO DELIVER MONASH REVIEW RECOMMENDATIONS

**Table A1:** Key Queensland Government actions to deliver Monash review recommendations as at 8 September 2017

RECOMMENDATION	ACTIONS DELIVERED OR IN PROGRESS
<p>1. The main purpose of the respiratory component of the scheme should explicitly focus on the early detection of coal mine dust lung disease (CMDLD) among current and former coal mine workers</p> <p>Information pack about CMDLD should be developed for workers</p>	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>Information is available online for current and former coal mine workers, as well as other stakeholders.</li> <li>To raise awareness of coal workers’ pneumoconiosis (CWP), the Department of Natural Resources and Mines (DNRM) provided material to mine sites for display and distribution to coal mine workers. This includes fact sheets with information about CWP, and posters and A5-sized postcards encouraging miners to talk to their GP about any health concerns.</li> <li>Materials were also distributed to professional medical peak bodies and key health industry stakeholders.</li> <li>Queensland Health facilitated the distribution of information about the disease to health professionals through its medical practitioner network.</li> <li>In June and July 2016, these efforts were supported by a bi-weekly advertising campaign in regional newspapers throughout Queensland’s coal mining regions.</li> <li>Engagement model ensures regular stakeholder consultation and updates on implementation of reforms to the respiratory component of the scheme are provided to unions, industry, medical professionals, the CMDLD Collaborative Group and the Coal Mining Safety and Health Advisory Committee.</li> <li>An online information portal for coal mine workers will be developed and is expected to be available later in 2017.</li> <li>Regulatory changes would ensure the focus of the respiratory component is maintained in the long term.</li> </ul>
<p>2. Develop clinical guidelines for follow-up investigation and specialist referral and incorporate into the scheme</p>	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>A clinical guideline has been developed by the CMDLD Collaborative Group, a voluntary group of medical experts. The guideline has been endorsed by Queensland Health.</li> </ul>

RECOMMENDATION	ACTIONS DELIVERED OR IN PROGRESS
3. Reporting of cases of CWP and CMDLD in current and former coal miners identified by the scheme	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>The Coal Mining Safety and Health Regulation 2001 was amended to require companies to notify DNRM of CWP and other CMDLDs.</li> <li>A memorandum of understanding was established between DNRM and the Office of Industrial Relations to ensure compensation claims for CMDLDs are reported to DNRM.</li> </ul>
4. Amend health assessment form to include separate respiratory section including all respiratory components (radiology report to ILO format and spirogram tracings and results)	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>The health assessment form was amended to include a separate respiratory section.</li> <li>Monash University undertook an additional review of the health assessment form to ensure it captures appropriate information for health surveillance.</li> </ul>
5. Amend form to include a comprehensive respiratory medical history and symptom questionnaire	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>The health assessment form has been amended to include a comprehensive respiratory medical history and symptom questionnaire.</li> </ul>
6. The criteria to determine workers 'at risk from dust exposure' should be based on past and current employment in underground coal mines and designated work categories in open-cut coal mines and coal handling and preparation plants	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>To remove any doubt about risk of exposure and minimum chest X-ray requirements, the Coal Mining Safety and Health Regulation 2001 was amended to: <ul style="list-style-type: none"> <li>require that all underground coal mine workers are X-rayed at least every 5 years and above-ground coal mine workers at least every 10 years</li> <li>require regular monitoring and quarterly reporting of respirable coal dust to DNRM to inform future exposure and screening requirements</li> <li>provide voluntary health assessments for retiring coal mine workers.</li> </ul> </li> </ul>
7. Establish small pool of approved doctors undertaking respiratory component of health assessments under scheme, taking into account geography and other workforce needs	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>A register of accredited doctors and medical providers, was published in July 2017.</li> <li>Accredited medical providers must meet minimum standards, developed by DNRM in consultation with medical experts.</li> <li>Queensland's major coal mining companies have agreed to voluntarily transition to using these registered providers ahead of any regulatory change.</li> </ul>
8. Establish mandatory formal doctor training program, including mine visits, prior to approval by DNRM, to ensure competence and experience to undertake respiratory health assessments under the scheme	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>DNRM is currently evaluating tenders for the development and delivery of a comprehensive training package for doctors in consultation with Coal Services (New South Wales).</li> </ul>

RECOMMENDATION	ACTIONS DELIVERED OR IN PROGRESS
<p>9. Establish approval process for doctors to undertake respiratory health assessments for the early detection of CMDLD under the scheme</p>	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>• A register of accredited doctors and medical providers was published in July 2017. Queensland’s major coal mining companies have agreed to voluntarily transition to using registered doctors ahead of regulatory change.</li> <li>• Minimum requirements have been developed with key medical specialists.</li> <li>• DNRM is currently evaluating tenders for the development and delivery of a comprehensive training package for doctors in consultation with Coal Services (New South Wales).</li> <li>• DNRM is currently evaluating tenders for an accreditation service provider who will vet doctors to undertake respiratory health assessments for the early detection of CMDLDs.</li> </ul>
<p>10. Determine and implement an alternative designation (rather than NMA) for doctors approved to undertake respiratory health assessments, which reflects specific responsibility for respiratory health assessments under the new scheme</p>	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>• A nominated medical adviser (NMA) consultation paper was distributed to stakeholders for comment—23 submissions were received, generally supportive of the register and training model for NMAs.</li> <li>• Changes to health assessments are being considered, including doctor designation.</li> </ul>
<p>11. Chest x-rays should be performed by appropriately trained staff to a suitable standard of quality and performed and interpreted according to the current ILO Classification by radiologists and other medical specialists classifying chest x-rays</p>	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>• All coal mine worker chest X-rays are being read to the International Labour Organization (ILO) classification by a radiologist on the Royal Australian and New Zealand College of Radiologists Register for CWP Screening.</li> <li>• Since 27 July 2016, chest X-rays have been subsequently sent to the University of Illinois in Chicago to be dual-read by National Institute for Occupational Safety and Health approved B-readers.</li> <li>• A consultation paper was distributed to targeted stakeholders for feedback on a proposal for the taking and reading of chest X-rays, and a refined position submitted to the Coal Mining Safety and Health Advisory Committee.</li> <li>• DNRM is evaluating tenders for a local provider to conduct dual-reading of all chest X-rays by radiologists trained in the ILO classification.</li> <li>• A core group of radiologists will be formed to ensure sufficient chest X-ray volume to maintain competency necessary for early identification.</li> <li>• A register of accredited imaging providers was published in July 2017.</li> <li>• Queensland’s major coal mining companies have agreed to voluntarily transition to using these registered providers ahead of regulatory change.</li> <li>• Guidelines for taking X-rays have been finalised in consultation with a CWP expert (Dr Robert Cohen at the University of Illinois), one of Australia’s first B-reader trained radiologists, Queensland Health and other radiologists.</li> </ul>



RECOMMENDATION	ACTIONS DELIVERED OR IN PROGRESS
12. Spirometry should be conducted by appropriately trained staff and performed and interpreted according to current ATS/ERS standards	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>• A consultation paper was distributed to targeted stakeholders for feedback on a proposal to improve spirometry testing, and a refined position was submitted to the Coal Mining Safety and Health Advisory Committee, supporting the accreditation of medical providers undertaking spirometry.</li> <li>• A register of accredited doctors and spirometry providers was published in July 2017.</li> <li>• Queensland’s major coal mining companies have agreed to voluntarily transition to using these registered providers ahead of regulatory change.</li> <li>• The Thoracic Society of Australia and New Zealand have developed spirometry taking, interpreting and training standards. These will be implemented by the end of 2017.</li> </ul>
13. Transition to an electronic system of data entry and storage and establish and audit process to include regular audit of collected medical information for quality control and feedback to doctors performing health assessments under the scheme	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>• A partnership was established with Queensland Health to design an electronic record management system.</li> <li>• An external provider has designed an audit program to audit the whole Coal Mine Workers’ Health Scheme.</li> </ul>
14. Amend scheme to require all coal mine workers ‘at risk from dust exposure’ to be registered in the DNRM database on entry to industry for ongoing medical surveillance	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>• Required information is detailed on the health assessment form.</li> <li>• The Coal Mining Safety and Health Regulation 2001 was amended to require that all underground coal mine workers are X-rayed at least every 5 years and above-ground coal mine workers at least every 10 years.</li> </ul>
15. DNRM to conduct ongoing individual and group surveillance of health data collected under the scheme, to detect early CMDLD, analyse trends, and disseminate to employers, unions and workers	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>• Monash University undertook an additional review of the health assessment form to ensure it captures appropriate information for health surveillance.</li> <li>• Guidance was sought from the New South Wales Chief Data Scientist on a best practice framework for individual and group health surveillance.</li> <li>• Monash University was engaged to undertake scoping study of health assessment database to identify surveillance research priorities.</li> <li>• All abnormal X-rays identified in the health assessment database are being reviewed.</li> <li>• A respirable dust database was developed to record dust monitoring results for comparison with health data information.</li> </ul>

RECOMMENDATION	ACTIONS DELIVERED OR IN PROGRESS
<p>16. Amend scheme to require coal mine workers to have exit respiratory health assessments and include retired and former coal mine workers in health surveillance</p>	<p><b>Delivery in progress</b></p> <ul style="list-style-type: none"> <li>• The Coal Mining Safety and Health Regulation 2001 was amended to provide voluntary exit health assessments for retiring coal mine workers.</li> <li>• Former coal mine workers can have their chest X-ray progressed through the dual-read process at no cost on referral from their GP to DNRM.</li> <li>• A memorandum of understanding was established between DNRM and the Office of Industrial Relations to ensure workers' compensation claims for CMDLDs are reported to DNRM that includes claims from retired and former workers.</li> <li>• The <i>Workers' Compensation and Rehabilitation (Coal Workers' Pneumoconiosis) and Other Legislation Amendment Act 2017</i> establishes a medical examination process for retired or former coal workers with a suspected CMDLD that left the industry prior to 1 January 2017.</li> <li>• Further changes to the Coal Mine Workers' Health Scheme are required to provide all retired and former coal mine workers with periodic health assessments into the future.</li> </ul>
<p>17. Establish an implementation group, including relevant stakeholders, to ensure recommendations are implemented in a timely manner</p>	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>• The Coal Mine Workers' Health Scheme project team is in place within DNRM.</li> <li>• Engagement model ensures regular stakeholder consultation and implementation updates are provided to unions, industry, medical professionals, the CMDLD Collaborative Group and the Coal Mining Safety and Health Advisory Committee.</li> </ul>
<p>18. There should be a further review of the revised scheme within 3 years to ensure that it is designed and performing according to best practice</p>	<p><b>Delivered</b></p> <ul style="list-style-type: none"> <li>• The Queensland Government has accepted all recommendations of the Monash Review, including a further review within three years.</li> <li>• An external provider was engaged to develop an audit program, including an audit to be completed within three years of the Coal Mine Workers' Health Scheme being revised.</li> </ul>

## APPENDIX 2: RESPIRABLE CRYSTALLINE SILICA WORKSHOP FINDINGS

---

The respirable crystalline silica workshop held by the Mining Safety and Health Advisory Committee explored the epidemiological evidence, current compliance and potential impact of a change in occupational exposure limits for respirable crystalline silica.

The workshop was held on 9 July 2017 and was attended by 26 stakeholders including:

- mining operators—operations managers, occupational hygienists and toxicologists from open-cut mines, underground mines, quarries and sandstone operations
- industry bodies—Cement Concrete and Aggregates Australia, Queensland Resources Council and the Institute of Quarrying Australia
- district workers' representatives/unions
- occupational hygienists from the Department of Natural Resources and Mines
- inspectors of mines (occupational hygiene) and the Chief Inspector of Mines (Mineral Mines and Quarries)
- Commissioner for Mine Safety and Health.

Prior to the workshop, 36 mineral mine and quarry operations provided respirable crystalline silica exposure monitoring results covering 5 years. The dataset of approximately 4500 exposure monitoring results covered a workforce of 8500 workers—62.5 per cent of mineral mine and quarry workers.

The workshop found that, in line with international occupational exposure limits and input from the Australian Institute of Occupational Hygienists, the current respirable crystalline silica levels should stay the same awaiting the results of the Safe Work Australia review of all 644 airborne contaminant occupational exposure limits.

The committee endorsed the findings of the workshop and provided advice to the Minister, noting the implications of reducing occupational exposure levels for silica. It also recommended that no changes be made to the respirable crystalline silica occupational exposure limits ahead of the findings of the Safe Work Australia review.

# ABBREVIATIONS AND DEFINITIONS

---

## Abbreviations

<b>CMDLD</b>	coal mine dust lung disease
<b>CMSHAC</b>	Coal Mining Safety and Health Advisory Committee
<b>CWP</b>	coal workers' pneumoconiosis
<b>DNRM</b>	Department of Natural Resources and Mines
<b>ILO</b>	International Labour Organization
<b>MSHAC</b>	Mining Safety and Health Advisory Committee
<b>NMA</b>	nominated medical adviser
<b>PbA</b>	airborne concentrations of lead
<b>PbB</b>	blood lead removal levels
<b>Simtars</b>	Safety in Mines Testing and Research Station

## Definitions

<b>Coal mine:</b>	Mine subject to the <i>Coal Mining Safety and Health Act 1999</i> and associated Regulation
<b>Serious accident:</b>	An accident at a mine that causes:  (a) the death of a person  or  (b) a person to be admitted to a hospital as an inpatient for treatment of the injury
<b>High potential incident:</b>	An event, or a series of events, that causes, or has the potential to cause, a significant adverse effect on the safety or health of a person
<b>Mineral mine:</b>	Mine subject to the <i>Mining and Quarrying Safety and Health Act 1999</i> and associated Regulation
<b>Quarry:</b>	Excavation of hard rock for use in construction (operations covered by the <i>Mining and Quarrying Safety and Health Act 1999</i> and associated regulation)
<b>Queensland Mines Inspectorate:</b>	Regulatory unit within Mine Safety and Health, Department of Natural Resources and Mines







---

---

[dnrm.qld.gov.au](http://dnrm.qld.gov.au)

---

