The Senate

Select Committee on Health

Fifth interim report

Black Lung: "It has buggered my life"

April 2016

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Table of Contents

Terms of Reference

That a select committee, to be known as the Select Committee on Health, be established to inquire into and report on health policy, administration and expenditure, with particular reference to:

a. the impact of reduced Commonwealth funding for hospital and other health services provided by state and territory governments, in particular, the impact on elective surgery and emergency department waiting times, hospital bed numbers, other hospital related care and cost shifting;
b. the impact of additional costs on access to affordable healthcare and the sustainability of Medicare;
c. the impact of reduced Commonwealth funding for health promotion, prevention and early intervention;
d. the interaction between elements of the health system, including between aged care and health care;
e. improvements in the provision of health services, including Indigenous health and rural health;
f. the better integration and coordination of Medicare services, including access to general practice, specialist medical practitioners, pharmaceuticals, optometry, diagnostic, dental and allied health services;
g. health workforce planning; and
h. any related matters.

Acronyms and abbreviations

AHPRA	Australian Health Practitioner Regulation Agency
ANAO	Australian National Audit Office
BHP	BHP Billiton Ltd
CAT Scan	Computerized Axial Tomography Scan
CDCP	Centres for Disease Control and Prevention (US)
CEO	Chief Executive Officer
CFMEU	Construction, Forestry, Mining and Energy Union
CMDLD	Coal Mine Dust Lung Disease
CMSH	Commissioner for Mine Safety and Health (Queensland)
COAG	Council of Australian Governments
College of Radiologists	Royal Australian and New Zealand College of Radiologists
CWP	Coal Workers' Pneumoconiosis
CWHS	Coal Workers' Health Scheme (Queensland-based scheme)
CXR	Chest x-rays
DNRM	Department of Natural Resources and Mines (Queensland) (also QDRNM)
FAQ	Frequently Asked Questions
FOI	Freedom of Information
GDP	Gross Domestic Product
GP	General Practice
GPs	General Practitioners
ILO	International Labor Organisation
NGOs	Non-Government Organisations
NIOSH	National Institute for Occupational Safety and Health
NMA	Nominated Medical Adivsors
NMSF	National Mining Safety Framework (Commonwealth)
OECD	Organisation for Economic Co-operation and Development
PAPR	Positive Air Powered Respirators

PET Scan	Positron Emission Tomography Scan
PMF	Progressive Massive Fibrosis
PPE	Personal Protective Equipment
SWA	Safe Work Australia
Thoracic Society	Thoracic Society of Australia and New Zealand
WHS	Workplace Health and Safety

Executive Summary

Black lung in whatever form is totally preventable.[1]

Dr Brian Plush, Particulate Matter Scientist, University of Wollongong

The number 1 thing is to mitigate and control the dust before the disease even starts.[2]

Professor Robert Cohen, Consultant, Queensland Department of Natural Resources and Mines

I said to my wife that if I had found out then that I was going to be like this I would have got out of the mine straight away. It has buggered my life.[3]

Mr Percy Verrall, former coal miner, diagnosed with Coal Workers' Pneumoconiosis in 2015

The Select Committee on Health's high level of activity has allowed it to be responsive to important health policy issues as they arise. The committee has undertaken the current inquiry for very compelling reasons. The resurgence of a fatal employment-related disease in Australia has drawn the Committee's focus, leading to the obvious question, how could such a disease have re-emerged in Australia? The disease, variously known as black lung, coal miner's lung or Coal Workers' Pneumoconiosis (CWP) is a cruel and insidious disease which can lie dormant in an individual for many years and which will inevitably result in that person's early death. CWP is one of many mining related lung diseases, but one which is peculiar to the mining of coal. A key driver of the committee's examination of CWP's re-emergence has been to promote prevention and early intervention for those at risk.

Media outlets across Australia responded with alarm to the Queensland Commissioner for Mine Safety and Health's (CMSH) report published in May 2015 that confirmed the first case of CWP in thirty years. That alarm was heightened by the confirmation of five other cases between October 2015 and February 2016 and a further two in April 2016. That eight coal miners had been diagnosed with CWP sent shock waves through the mining community in Queensland and throughout Australia. The

1 Dr Brian Plush, Particulate Matter Scientist, University of Wollongong, *Committee Hansard*, 23 March 2016, p. 41.

2 Professor Robert Cohen, Consultant, Queensland Department of Natural Resources and Mines, *Committee Hansard*, 8 March 2016, p. 38.

3 Mr Percy Verrall, former coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 7.

Queensland Government's swift action following the report was to review the existing screening system (the Sim review), to monitor of dust levels in all Queensland coal mines, to improve the data handling of coal miner's health information, to review the regulation of mine safety standards relating to safe coal dust levels and to put the matter before the National Council of Mining Ministers.

The committee commends the Queensland Government for its response to the re-emergence of CWP and its endeavours to institute reform to a regulatory system which has long had problems. The Queensland Coal Mine Safety and Health Act commenced in 1999 and was last amended in December 2014. The regulations associated with this Act were made in 2001 and was last updated in September 2015. The committee acknowledges the Queensland Government's ongoing efforts in reform of the Queensland coal mining regulatory system.

Industry stakeholder reactions to the re-emergence of CWP was myriad but consistent in their aim to eradicate the disease; the Construction Forestry Mining and Engineering Union (CFMEU) (which brought the CMSH report to the attention of the media) resolved to provide support to its Queensland district and urged action by the Queensland government to address the safety and monitoring of coal workers; affected coal mining companies ramped up certain safety measures and introduced more stringent assessment of workers chest x-rays; the Royal Australian and New Zealand College of Radiologists compiled a list of radiologists able to diagnose CWP.

While such reaction to the re-emergence CWP is commendable, the evidence provided to the Committee from medical professionals, academics and the mining industry that CWP is a totally preventable disease begs the question, how is it that this totally preventable disease has remerged in Australia now? What has been happening for the period that CWP has been latent in the affected miners? The evidence provided in answers to the Committee's questions and in stakeholder submissions reveals a litany of regulator failure and regulatory capture, industry indifference and incompetence, inconsistent risk mitigation and patchy and sometimes compromised health monitoring throughout Australia. The sum of all these failing parts has left Australian coal workers vulnerable to CWP and therefore vulnerable to early death. Failure to address these failures will inevitably lead to more cases of CWP in this country.

The Committee is therefore of the view that immediate, short-term and longer-term prevention and early intervention actions by the coal mining industry, by state and territory regulators and health providers, by industrial advocates and by the medical profession must be taken if CWP is to be eradicated in Australia for all time. The Committee's recommendations, listed in Chapter 4 go to this aim, and centre on the prevention and early intervention actions aimed firstly and most importantly, at minimising coal miners' current exposure to the hazard of coal dust, secondly at

mitigating the creation of coal dust through engineering solutions, consistent, mandatory and regular monitoring of the levels of coal dust and the on-going provision of financial and medical support for CWP affected miners.

In undertaking this inquiry, the Committee has aimed to give a Commonwealth perspective on the response to the re-emergence of CWP. The Committee believes that this issue is not one based in Queensland alone, as miners will often move between jurisdictions; and that without national best practice standards of dust control and monitoring; and that without a national emphasis on prevention and early intervention, there will be more tragic cases of CWP in Australia. The committee feels that it is important that the eradication of CWP be seen as a national issue, not just a Queensland issue.

Finally, the Committee wishes to take the opportunity to thank Mr Percy Verrall and Mr Keith Stoddart and their families for their courage and advocacy. The Committee recognises these families' commitment to telling their story and raising awareness of these important issues, in order to prevent others from becoming victims of CWP.

The Committee also wishes to thank Mr Ian Hiscock and Mr Chris Carter for their strength in coming forward to tell of their experiences in Queensland coal mines.

The re-emergence of CWP in Australia in coal miners such as Mr Verrall and Mr Stoddart is deeply concerning. The Committee has been horrified that a disease thought to be eradicated in Australia for over 30 years has re-emerged.

While the Committee acknowledges that mining production in Australia creates considerable export earnings, it is coal workers who currently bear the brunt of the risk from the hazardous bi-product of its production. Those who are literally at the coal face will be handed a death sentence in the form of incurable CWP if the Committee's recommendations are not fully and immediately acted upon. Now is the time for action to protect these hard-working Australians.

To this end the Committee believes that all stakeholders must work together to support Australian coal workers who have contracted CWP and to halt further incidence of CWP in Australia.

Recommendations

National Coal Dust Monitoring Group

Recommendation 1

4.12 The committee recommends that the Commonwealth Government establish a National Coal Dust Monitoring Group comprised of representatives from mining companies, state governments, technical experts and industry stakeholders such as mining unions, and that it urgently undertake an analysis as to the cause of the serious and widespread breaches of dust mitigation measures in the industry. Following the analysis, the National Coal Dust Monitoring Group should develop and implement a work program for effective coal dust mitigation measures aimed at the immediate reduction of coal mine workers' exposure to harmful levels of coal dust.

4.13 The committee recommends that Safe Work Australia reviews current coal dust exposure levels and the current Australian and international academic and industry literature on the safest possible workable threshold for exposure to coal dust, with a view to developing a best practice national maximum exposure level. Safe Work Australia should report its findings to the National Coal Dust Monitoring Group, including whether the exposure level should be measured as a dust load of milligrams per tonne of coal cut, as distinct from time weighted averages for exposure.

4.14 The committee recommends that all Australian States and Territories adopt the national standard for coal dust exposure. The standard would then be subject to regular review by the National Coal Dust Monitoring Group, with the review being based on dust reading and disease data provided by the mine regulators in Australian jurisdictions.

4.15 The committee also recommends that in the short-term, coal mining companies adopt the lowest Australian level (2.5 mg/m^3) for coal dust exposure until a national standard has been agreed upon and implemented with a more rigorous, independent testing regime instigated as soon as practical in Queensland.

4.16 The committee recommends that until the national standard has been developed and adopted, state governments advise mining companies that coal workers should be withdrawn from areas subject to unsafe dust levels without penalty. In addition, the Queensland government and the Department of Natural Resources and Mines should instigate a process of formal warnings followed by naming in a public register for non-compliant companies, along with additional sanctions for non-compliance.

4.17 The committee recommends that mining companies operating in Queensland, in consultation with the Queensland Government, technical experts and industry stakeholders, urgently employ more effective coal dust mitigation measures to immediately reduce coal mine workers' current exposure to coal dust.

Coal dust monitoring in Queensland

Recommendation 2

4.31 In light of emerging problems identified in the mining industry the committee is concerned that safety standards in all jurisdictions may not be providing a safe working environment for mine workers. The committee therefore recommends that the state governments identify best practice dust monitoring devices or similar best practice technology to be used in all Australian coal mines. The Queensland government should review the protections provided under the Coal Services New South Wales model and identify which aspects should be applied to any new legislative regime in Queensland.

4.32 The committee also recommends that the state governments require that dust monitoring be undertaken in a consistent and methodical way, which monitors dust levels in all relevant parts of the mine during both maintenance and production times.

4.33 The committee also recommends that state governments increase public transparency and accountability around dust monitoring. Dust monitoring data should be made publically available as a means of increasing accountability and restoring coal mine workers' confidence in the regulatory system.

Database of coal dust suppression techniques

Recommendation 3

4.34 The committee recommends that the proposed National Coal Dust Monitoring Group in consultation with mining companies, state governments, technical experts and industry stakeholders, and with the support of Safe Work Australia, create and manage a database of best practice dust suppression techniques and management of dust sampling data. This would enable coal mining companies to continuously improve their safe work practices and provide increased protection for coal miners.

4.35 The committee recommends that the establishment of the database, and its day to day running costs, be funded by the state government and the coal mining industry.

4.36 The committee recommends legislation requiring mining companies' input on, and compliance with the database must be instigated at both federal and state government levels.

4.37 The committee recommends that the National Coal Dust Monitoring Group, and state based bodies, also facilitate cross-jurisdiction information sharing about coal dust mitigation measures.

Best practice dust control forum

Recommendation 4

4.40 The committee recommends that, in addition to the National Coal Dust Monitoring Group, the Queensland Government, in consultation with mining companies, technical experts, unions, and industry stakeholders, form a standing dust committee or similar forum, in the near to medium term, to achieve best practice dust control in Queensland coal mines and to address the concerns raised about the current mitigation and monitoring issues.

Fund for former coal mine workers

Recommendation 5

4.54 The committee recommends that the mining industry, through its representative bodies, must create an industry-wide fund to provide compensation for coal mine workers who contract CWP. The fund's aims should include identification of, and communications with former mine workers who may require CWP screening and compensation for travel, medical, and other costs associated with undergoing CWP screening and diagnosis. Workers' access to compensation from this fund should not be time-limited in any way.

4.55 The committee also recommends that state governments provide a means for former and current miners to seek assistance which is independent of their employers and Nominated Medical Advisors such as a hotline or helpdesk, to be funded by the industry and independently administered by an organisation such as the Lung Foundation Australia.

Queensland Government's review of regulations

Recommendation 6

4.68 The committee recommends that the Queensland Government gives the highest priority to its review of coal dust regulations as part of its five point action plan. To achieve this the committee recommends that the Queensland

Government take note of the concerns expressed by the committee in relation to the mine Directives, particularly the enforcement of these Directives and the need for the information contained within the Directives and rates of compliance to be able to be audited and reported on. Directives issued by government departments should use standardised language and have a rigorous process for auditing, compliance, and data collection.

Regulatory capture

Recommendation 7

4.72 The committee recommends that the Queensland Government direct relevant officials to undertake independent, high level, training on avoiding regulatory capture.

4.73 The committee recommends that in developing this training the Queensland Government have regard to the Better Practice Guides developed by the Australian National Audit Office in relation to regulatory capture.

Nominated Medical Advisors

Recommendation 8

4.78 The committee recommends that in the short term the Queensland Government mitigate the risk of regulatory capture of the Nominated Medical Advisors by making the role an independent statutory position, selected through a rigorous process conducted by Queensland Health in consultation with the Department of Natural Resources and Mines and specialists groups such as the Thoracic Society and the Lung Foundation.

Chapter 1

Introduction

1.1 On 25 June 2014, the Senate established the Senate Select Committee on Health.[1] The final reporting date for the committee is 20 June 2016. The committee's resolution allows the committee to make interim reports such as this one.

Public hearings

1.2 The committee has completed 50 public hearings to date. A list of hearings which focused on Coal Workers' Pneumoconiosis (CWP) is at Appendix 1.[2]

1.3 Through its extensive program of public hearings, the committee has taken evidence from many health experts, practitioners, consumers and communities. The public hearing program has also enabled the committee to engage the wider Australian community, including those in rural and regional areas which may not normally be able to directly engage with the parliamentary process.

1.4 The committee's high level of activity allows it to be responsive to issues in health as they arise. An example of this is the committee's inquiry into the proposed privatisation of Australian Hearing (Third Interim Report). In this fifth interim report, the committee again examines a specific health issue: the re-emergence of CWP, or black lung, in Australia. To examine this issue, the committee held two full day hearings and one part day hearing:

- 7 March 2016, Brisbane;
- 8 March 2016, Mackay; and
- 23 March 2016, Campbelltown (this hearing looked at both hospital funding and CWP).

Submissions

1.5 The committee has received 204 submissions since the beginning of its inquiry. In relation to the re-emergence of Coal Workers' Pneumoconiosis, the committee has received ten submissions. The committee also received 172 emails in support of the Construction, Forestry, Mining and Energy Union's (CFMEU) 'Dust to Dust: Make Black Lung History' campaign. A list of submissions relating to the re-emergence of CWP is at Appendix 2.[3]

1.6 The committee's terms of reference are wide-ranging. It is the committee's intention to explore various issues in depth over the course of its inquiry.

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1 *Journals of the Senate*, 25 June 2014, pp 996–998.

2 Public hearing details can also be accessed via the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Public_Hearings.

3 The submissions received by the committee can be accessed via the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Submissions.

1.7 Additional information, tabled documents, correspondence and answers to questions on notice received by the committee to date and related Coal Workers' Pneumoconiosis are listed at Appendix 3.[4]

Structure of this report

1.8 This is the fifth interim report of the Senate Select Committee on Health. Summaries of the committee's previous interim reports are detailed in Appendix 4.[5] This report focuses on the re-emergence of Coal Workers' Pneumoconiosis in Australia. While seemingly very specific in focus, this issue is important in the wider area of public health. The issue highlights not only the clear relationship between regulation and public health priorities but also the need for properly funded public health infrastructure which can respond to the re-emergence of a disease thought eradicated in Australia. In addition to this introductory chapter, the report includes three chapters:

- background–the re-emergence of coal workers' pneumoconiosis in Australia and the independent review being undertaken in Queensland (Chapter 2);
- the issues raised in the committee's inquiry, through submissions and evidence in public hearings (Chapter 3); and
- discussion of the committee's conclusions and recommendations (Chapter 4).

Notes on references

1.9 References to submissions in this report are to individual submissions received by the committee and published on the committee's website. References to the committee Hansards are to the proof transcripts.[6]

Acknowledgements

1.10 The committee thanks all those who participated in the public hearings regarding the re-emergence of coal workers' pneumoconiosis. In particular the committee wishes to thank Mr Percy Verrall and his wife Mrs Daphne Verrall, and Mr Keith Stoddart and his wife Mrs Danielle Stoddart who shared their experiences of being diagnosed with coal workers' pneumoconiosis. The committee sincerely appreciates that these witnesses shared their time and experiences with the committee, despite their ill health.

1.11 The committee also wishes to thank Mr Ian Hiscock and Mr Chris Carter who shared their experiences of being coal miners. Their evidence helped the committee understand the reality of working in the coal mines of Queensland.

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4 The submissions received by the committee can be accessed via the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Additional_Documents.

5 The previous four interim reports tabled by the Senate Select Committee on Health can be accessed via the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health

6 Committee Hansards can be accessed via the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Public_Hearings.

1.12 The committee also thanks all those who emailed as part of the CFMEU's 'Dust to Dust: Make Black Lung History' campaign and showed their support for the sufferers of coal workers' pneumoconiosis and for those working to improve conditions in Australian coal mines for workers.

Mr Percy Verrall, who spoke to the committee at its Brisbane hearing on 7 March 2016, holds up an x-ray of his lungs showing the development of CWP.[7]

7 Photo sourced from the 'Dust to Dust – Make Black Lung History' CFMEU campaign website: http://dusttodust.org.au/

Chapter 2
Background

Introduction

2.1 Both Mr Percy Verrall and Mr Keith Stoddart, who worked extensively in Queensland coal mines told the committee that they have experienced considerable difficulty in getting a diagnosis and later treatment, for their increasingly disabling respiratory problems. Mr Verrall told the committee:

> I have been unwell for a good while. About 2002 is when I started going into hospital. They said, 'You have pneumonia.' I said, 'No.' They had the camera go down into my lungs in 2005 and that is when they said, 'You have black lungs.' They did not tell me, then; they told me much later. I started getting the bleeding then. The first time I bled they rushed me to Ipswich Hospital. I had five of those sick bags, there was that much blood. My brother was sitting there and he was taking them and dropping them into the yellow bin and giving me another one each time. I was not coughing it up, it was like a running hose. I was in hospital, there, for a while with that.[1]

2.2 Mr Stoddart, who has had to take leave from his employment as a miner to seek a diagnosis, told the committee:

> I got a pain through my right lung. I went to see a local GP in Bundaberg. He sent me for an X-ray and wanted a CAT scan. I said, 'I've got to go back to work.' I went back to work for a week and I got the CAT scan up at Emerald. It came back with fibrotic scarring. I said to the doctor up here, 'What could cause that?' and he said, 'Coaldust could cause that. You've got to go and see a thoracic specialist.' I went down to Bundaberg to see a thoracic specialist. I had another CAT scan that showed nodules as well, and emphysema, because I was a smoker for a long time. There was emphysema as well as this other stuff that this doctor did not really understand. He thought the nodules might be cancer. He said that it is not typical of cancer. He wanted to send me down for a biopsy on my right lung. He sent me to another specialist down in Brisbane.
>
> On my way to Brisbane, I had a sharp pain in my left lung. By the time I got to Brisbane, I was struggling to breathe and in a lot of pain. I had to do a PET scan before I could see this other doctor and get this biopsy done. The PET scan showed activities in both lungs. He did a biopsy on my left lung. The next day, when he said, 'There's no cancer,' I said to him, 'What about the right lung?' He said, 'You can't do the both lungs at once, because there is chance they will collapse. If they both collapse, you'd be in trouble.' He did the biopsy on my left lung. I said, 'No cancer—did you look for anything else?' He said, 'No,' I said, 'Okay.'[2]

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1 Mr Percy Verrall, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 3.

2 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 2.

2.3 The difficulties experienced by coal miners like Mr Verrall and Mr Stoddart in being diagnosed and subsequently treated, prompted the committee to seek expert advice about the causes and progress of CWP and about how it has been diagnosed internationally and in Australia to date. The committee also sought information about the steps taken to date by mining companies to mitigate CWP, about the current regulatory controls to prevent further cases of CWP in Australia and about the Queensland Government's response to the recent reported cases of CWP in that state.

Coal Workers' Pneumoconiosis

2.4 The United States Centres for Disease Control and Prevention (CDCP), quoted by the CFMEU in its submission, explains that pneumoconioses are a group of lung diseases 'caused by inhalation of certain dusts and the lung tissue's reaction to the dust.'[3] The CDCP notes that the principal cause of the pneumoconioses is work-place exposure to dust.[4]

2.5 Figures 1 and 2 below show the effect of coal dust in the lungs In Figure 1, the coal dust appears in the lung as nodules in the initial stages of CWP.

2.6 Figure 2 shows the continuation of CWP into Progressive Massive Fibrosis (PMF), in which large masses of fibrosis lead to:

- severe shortness of breath;
- moderate to severe airway obstruction;
- severe deterioration in quality of life; and
- associated heart problems.

2.7 Sufferers of PMF can also be vulnerable to other respiratory problems, and as a result have a shortened life expectancy. PMF is incurable.[5]

3 Centers for Disease Control and Prevention (CDCP), *Pneumoconioses: New Information on respiratory diseases in coal miners*, 21 August 2012, www.cdc.gov/niosh/topics/pneumoconioses/ (accessed 13 April 2016).

4 CDCP, *Pneumoconioses: New Information on respiratory diseases in coal miners*, 21 August 2012.

5 CFMEU, *Submission 199*, pp. 10-11.

Figure 1—specimen of a lung with CWP nodules[6]

6 CFMEU, *Submission 199*, p. 10.

Figure 2—specimen of a lung with Progressive Massive Fibrosis[7]

2.8 The CDCP explains that the primary pnemoconioses are asbestosis, silicosis, and coal workers' pneumoconiosis. Each is caused by a type of dust, respectively: asbestos fibres, silica dust, and coal mine dust. Other forms of pneumoconiosis can be caused by dusts such as aluminium, antimony, barium, graphite, iron, kaolin, mica, and talc. The common factor to all types of pneumoconiosis, according to the CDCP,

7 CFMEU, *Submission 199*, p. 10.

is that in general these diseases take years to develop and are caused by 'entirely man-made' conditions which 'can be avoided through appropriate dust control'.[8]

2.9 CWP is also known as 'pneumoconiosis', 'black lung', and 'coal miner's lung'. Throughout submissions and evidence received at the committee's hearings, these terms were used interchangeably. For clarity, the committee's report will refer to CWP throughout.

2.10 The Thoracic Society of Australia and New Zealand (Thoracic Society) gave a similar definition of CWP to the CDCP in its joint submission with Lung Foundation Australia. Further the submission noted the difficulties in diagnosing CWP:

> Pneumoconiosis is a deemed disease by Safe Work Australia. However, because it has a long latency period, often not presenting with symptoms until many years after the worker has retired, the relationship between the development of lung disease and its association with work may not be identified. The risk of developing CWP is directly related to the magnitude and duration of exposure to coal mine dust.[9]

2.11 The CFMEU submission recognised that the development of CWP is slow and only occurs after long exposure to coal dust, noting that the disease can be difficult to diagnose in the initial stages. Once it progresses, CWP is fatal and there is no cure:

> CWP manifests firstly as simple CWP that may produce a cough and sputum. It can be asymptomatic – ie. No obvious symptoms. It appears in the lungs as small (1-5mm) round nodules that appear as “opacities” on x-rays. In a minority of cases there is calcification within the nodules.
>
> Continuing exposure can progress to complicated CWP often known as Progressive Massive Fibrosis (PMF) – large masses of dense fibrosis causing severe shortness of breathe [sic], moderate to severe airway obstruction and consequently severe deterioration in quality of life. There are associated heart problems and it often contributes to early death.[10]

2.12 The Thoracic Society and Lung Foundation Australia explained that while prolonged exposure to, and increased levels of coal dust will exacerbate CWP, and will lead to the possible development of PMF, such progression can be slowed or even prevented with early detection. It is therefore vital that regular and rigorous screening measures are put in place, particularly at mines where coal dust levels have risen.[11]

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8 CDCP, *Pneumoconioses: New Information on respiratory diseases in coal miners*, 21 August 2012.

9 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, *Submission 194*, p. 2.

10 CFMEU, *Submission 199*, pp 9–11.

11 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, *Submission 194*, p. 3.

Coal mining and CWP

2.13 The CFMEU's submission highlights the history of coal mining and its deadly corollary, CWP:

> …the industry from its inception was extremely hazardous both in terms of catastrophic risks and longer term health impacts. Until relatively recently it was considered virtually inevitable that coal communities would be blighted – that workers and their families would be poorly paid, work in arduous and dangerous conditions, and they and their families would live in highly polluted and degraded environments. Coal dust is intrinsic to the hazards of coal mining – coal dust contributes to catastrophic risks through its flammability and explosive potential along with the methane gas that is also intrinsic to coal mining.[12]

2.14 The Thoracic Society's submission demonstrated that pneumoconiosis-related fatalities are still intrinsically linked to mining today:

> In 2013, pneumoconiosis resulted in 260,000 deaths globally. Of these deaths, 46,000 were due to silicosis, 24,000 due to asbestosis and 25,000 due to CWP. Most of these cases occurred in the setting of poor occupational hygiene and limited systems for dust control.[13]

2.15 The Thoracic Society noted that such is the scale of the problem; the World Health Organisation has set down a target of eliminating pneumoconiosis by 2030.[14]

2.16 The impacts of coal dust exposure are known to the mining industry. In their 2011 research paper 'Dust Controls and Monitoring Practices on Australian Longwalls' (the paper), Dr Ting X Ren, Dr Brian Plush, and Dr Najdat I Aziz of the University of Wollongong, noted that:

> Fugitive dust on longwalls has always been an issue of concern for production, safety and the health of workers in the underground coal mining industry globally. Longwall personnel can be exposed to harmful dust from multiple dust generation sources. With the increase in production created from the advancement in longwall equipment, dust loads have also increased and this has resulted in an increase in exposure levels to personnel.[15]

2.17 The modern coal mining industry has recognised the impacts of coal dust exposure on the health of coal mine workers. In Australia, two main practices—mitigation of coal dust levels and protective measures for workers—are employed to

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12 CFMEU, *Submission 199*, p. 7.

13 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, *Submission 194*, pp 1–2.

14 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, *Submission 194*, p. 2.

15 Dr Ting Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1417.

protect coal workers from exposure to coal dust. These are discussed later in this chapter.

History of CWP in Australia

2.18 Coal mining was established in Australia by the 1830s.[16] Australia is currently the fifth largest producer of coal in the world with 2012-13 coal production at 527 million tonnes.[17] The majority of Australian coal is mined in Queensland and NSW, although there are other locally significant black coal mines in Western Australia, South Australia, and Tasmania. Brown coal is mined in Victoria.[18] The coal industry in Australia provides direct employment for approximately 54 900 people.[19]

2.19 CWP has been a part of the coal mining industry in Australia from its inception.[20] But as improvements were made in mining machinery and processes, and better protection was available for miners, incidents of CWP reduced. Government regulation mandating screening and setting limits for the level of coal dust contributed to what was thought to be the eradication of CWP in Australia in the 1980s.[21]

2.20 Until the first case in recent history of CWP was reported in May 2015, Australia had been hailed as having completely eradicated CWP. In other coal mining countries like the UK and US, cases of CWP have remained stubbornly prevalent The CFMEU submission notes that around the world, CWP is still a major risk for coal miners:

> In most parts of the global coal industry the disease has continued to exist despite the development of mine management systems that reduce the risk. The United Kingdom records that between 1998 and 2004 some 570,000(!) compensation claims were made for lung disease from coal mining… In the United States, the incidence of CWP among underground coal miners was 11.2% in 1970–74, and 2% during 1995–99. A study by the Center for Disease Control using 2010-11 records for open-cut miners found 2% had CWP.[22]

16 Minerals Council of Australia, *Characteristics of the Australian Coal Industry*, website, www.minerals.org.au/resources/coal/characteristics_of_the_australian_coal_industry (accessed 13 April 2016)

17 Minerals Council of Australia, *Coal: figures*, website, www.minerals.org.au/resources/coal/figures (accessed 13 April 2016)

18 Geoscience Australia, Australian Government, *Coal: Fact Sheet*, website, www.australianminesatlas.gov.au/education/fact_sheets/coal.html (accessed 13 April 2016)

19 Minerals Council of Australia, *Coal: figures*, website, www.minerals.org.au/resources/coal/figures (accessed 13 April 2016)

20 CFMEU, *Submission 199*, p. 7.

21 CFMEU, *Submission 199*, p. 8.

22 CFMEU, *Submission 199*, p. 8.

2.21 Regulation on the level of coal dust exposure varies from state to state. There is no national body or legislation which determines maximum dust exposure levels, so each state has different regulated levels of coal dust exposure.[23]

2.22 Evidence gathered by the committee shows that there are contrasting approaches to deal with the problem of workers being exposed to coal dust. In some cases the focus is on measures to prevent workers inhaling the dust by way of Personal Protective Equipment (PPE) such as face masks. In other cases the focus is on mitigating the dust levels, for example by using water sprays and/or ventilation to minimise workers' exposure to consistently high levels of coal dust. These alternative approaches are highlighted below in the discussion of the Queensland and NSW regulatory schemes.

Re-emergence of CWP in Australia

2.23 The re-emergence of CWP was reported in the 2014-15 Annual Performance Report of the Commissioner for Mine Safety and Health, Queensland Mines Inspectorate, in May 2015:

> The first case of coal workers' pneumoconiosis in a Queensland coal miner in 30 years was reported this year.[24]

2.24 Between October 2015 and February 2016 a further five cases of CWP were reported in Queensland. In April 2016, two further cases were diagnosed at Vale Australia's Carborough Downs mine and Anglo American Coal's Grasstree mine, bringing the total to eight cases.[25] Queensland Health and the Queensland Department of Natural Resources and Mines (DNRM) joint submission of March 2016 puts the number of cases officially confirmed at six.[26]

2.25 Anecdotal evidence suggests that there may be CWP cases in other states, including NSW, however no confirmation could be found for these cases.[27]

2.26 The sudden re-emergence of CWP prompted the Queensland Government to conduct a review into the Coal Workers' Health Scheme (CWHS) to ascertain if better measures need to be taken to diagnose CWP. In a media release on 14 January 2016, the Minister for Natural Resources and Mines, Dr Anthony Lynham MP, (Minister Lynham) explained:

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23 Senate Community Affairs References Committee, *Impacts on health of air quality in Australia*, 16 August 2013, p. 42.

24 Commissioner for Mine Safety and Health, Queensland Mines Inspectorate, *Annual Performance Report 2014-15*, pp. 3–4.

25 Joshua Robertson, 'Black lung disease: more cases emerge among Queensland coal workers', *The Guardian*, 9 April 2016, www.theguardian.com/australia-news/2016/apr/09/black-lung-disease-more-cases-emerge-among-queensland-coal-workers (accessed 13 April 2016)

26 Queensland Government, *Supplementary Submission 69.3*, p. 2.

27 Joanne McCarthy, Newcastle Herald, 'Hunter respiratory expert leads call for action on preventable, debilitating condition in miners', 31 March 2016, http://www.theherald.com.au/story/3821187/black-lung-disease-warning-poll/

> We have confirmed five cases of coal miner's pneumoconiosis in Queensland and I have asked for Queensland Health data on any other possible cases. There's still research to be done on the medical and workplace records, but I suspect there are more cases to come. I am determined to get on top of this issue to protect workers now and into the future and to be open and transparent as we progress.[28]

2.27 Minister Lynham, announced an 'action plan' in response to the re-emergence of CWP. The action plan has five points:

1. **A review to improve the existing screening system**, in which coal mine workers have chest x-rays when they start work, then at least every five years until retirement. The review is being conducted by Professor Malcolm Sim from Monash University. Professor Sim's interim report was provided to the Queensland Government in March 2016, and published on 8 April. His detailed final report will be handed down by the middle of 2016.
2. **Taking action on coal mines exceeding regulated limits on dust levels**. Minister Lynham's media release noted that 'Coal inspectors are working closely with all of Queensland's 12 operating underground coal mines, including those with coal dust issues related to longwall mining techniques.' Further, 'of Queensland's 12 operating underground coal mines, only one is exceeding dust limits now. Eight mines over the past 12 months have been directed to either improve monitoring or bring respirable dust levels back into compliance. Directives will remain in place until mines inspectors are satisfied that mines can stay within the regulated level.'[29]
3. **Improving how information is collected and used to ensure cases are not missed.**
4. **Investigating regulatory changes as part of the mine safety legislation review already underway.** The Minister's media release explained that the updating of legislation 'will include a focus [on] what changes are required to ensure underground coal dust is kept at safe levels.' At the committee's public hearing, Mr James Purtill, Director-General, DNRM, told the committee that work is continuing on the detail of the regulatory changes and the DNRM aims to have amendments for the Queensland Government to consider later in 2016.[30]

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28 The Hon Dr Anthony Lynham MP, Minister for Natural Resources and Mines, Queensland Government media release, 'Action plan revealed on coal miners' health issue', Media release, 14 January 2016.

29 The Hon Dr Anthony Lynham MP, Minister for Natural Resources and Mines, Queensland Government media release, 'Action plan revealed on coal miners' health issue', Media release, 14 January 2016.

30 Mr James Purtill, Director-General, Queensland Department of Natural Resources and Mines, *Committee Hansard*, 7 March 2016, p. 80.

5. **Placing the issue on the agenda for the National Council of Mining Ministers**. Minister Lynham noted that he had written to the Minister for Resources, Energy and Northern Australia, Mr Josh Frydenberg MP as head of the Council.[31]

2.28 The Queensland Government and the coal mining company Vale Australia, engaged United States radiology expert Professor Robert Cohen to examine current coal miners' x-rays to improve current screening arrangements for CWP. An examination of former miners' x-rays was also part of Professor Sim's review for the Queensland Government.

2.29 With examination of x-rays moving to the US, and new cases of CWP being diagnosed, confidence in the CWHS screening process declined significantly.[32] This also led to criticism of the training Australia radiologists had received in diagnosing CWP, as the US B-Readers[33] were reporting to International Labor Organisation (ILO) standards; a reporting standard not widely used in Australia.[34]

2.30 The Royal Australian and New Zealand College of Radiologists (College of Radiologists), responding to criticisms that too few Australian radiologists had the necessary training to diagnose CWP,[35] published a list of 36 'clinical radiologists who are available to report on chest x-rays to screen Australian miners for CWP, in line with the ILO Classification.'[36] This list was published on 4 March 2016.[37]

2.31 The College of Radiologists detailed the history and methodology for ILO reporting and its current advice to members about ILO reporting on CWP cases:

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31 The Hon Dr Anthony Lynham MP, Minister for Natural Resources and Mines, Queensland Government media release, 'Action plan revealed on coal miners' health issue', Media release, 14 January 2016.

32 Matt Peacock, 'Black lung: Queensland underground coal mines warned to reduce dust levels below safety standards', *ABC News Online*, 30 December 2015, www.abc.net.au/news/2015-12-23/black-lung-warning-for-queensland-coal-mines/7051490

33 The US Centers for Disease Control and Prevention define a B Reader as a physician 'with a valid U.S. state medical license who demonstrate proficiency in the classification of chest radiographs for pneumoconioses using the International Labour Office (ILO) Classification System.' Examinations for B Readers are provided by the National Institute for Occupational Safety and Health (NIOSH). Centres for Disease Control and Prevention, *The National Institute for Occupational Safety and Health (NIOSH)*, website: www.cdc.gov/niosh/topics/chestradiography/breader-info.html

34 Royal Australian and New Zealand College of Radiologists, *Submission 196*, p. 2.

35 Tony Moore, ' Radiologists offer urgent specialist help as Qld black lung cases swell to five', *Brisbane Times*, 11 January 2016, www.brisbanetimes.com.au/queensland/radiologists-offer-urgent-specialist-help-as-qld-black-lung-cases-swell-to-five-20160111-gm3a9b.html

36 Royal Australian and New Zealand College of Radiologists, *Coal Workers Pneumoconiosis – Register of Clinical Radiologists for CWP Screening*, website, www.ranzcr.edu.au/register-of-clinical-radiologists-for-cwp-screening

37 Royal Australian and New Zealand College of Radiologists, *Coal Workers Pneumoconiosis – Register of Clinical Radiologists for CWP Screening*, website, www.ranzcr.edu.au/register-of-clinical-radiologists-for-cwp-screening

> The International Labour Organization (ILO) Classification of Radiographs on Pneumoconioses which was created in the 1980s has not been widely used recently to classify radiographs for CWP in Australia. Clinical radiologists have instead used standard reporting templates for diagnostic imaging when reporting on CWP, which was appropriate given that CWP had not been seen in Australia for the last twenty years.
>
> This ILO classification works by using the standard set of radiographs as a point of reference that allows for consistent reporting of pneumoconiosis and other interstitial lung diseases. The patient's radiographs are classified after they are compared with the standard radiographs using a step-by-step method to describe the lesions. The results obtained are then recorded in a systematic fashion.
>
> RANZCR has advised our members that clinical radiologists should only report on screening chest radiographs for CWP if they:
>
> - have experience in reporting screening radiographs for pneumoconiosis,
> - are familiar with the ILO Classification and willing to report using the Classification, and
> - have sufficient caseload of referrals to maintain their competence in this area.[38]

Mitigation of coal dust levels

2.32 Professor Malcolm Sim from Monash University is leading the review team examining the CWHS, as part of the five point action plan announced by the Queensland Government. In Professor Sim's interim report, released on 8 April 2016, he explains that mitigation of coal dust levels begins with setting exposure limits, which he says are:

> …measured as mean air concentrations over 8 hours (i.e. an 8-hour time weighted average (TWA)). If the shift is normally 12 hours for 5 days (i.e. longer than 40 hour per week) the mean exposure must be compared to a proportionally reduced limit (e.g. 8/12). This is because for coal dust and silica, increased risk is associated with cumulative exposure rather than exposure intensity.[39]

2.33 Professor Sim's report explains that coal dust exposure limits are set so as to limit the risk of workers developing CWP:

> In 1986, a NIOSH-commissioned [National Institute for Occupational Safety and Health] study carried out in the UK, showed that for coal with a carbon content of 86.2% and exposure at 2 mg/m^3, the 40-year risks were 1.15% for PMF and 7.75% for CWP; for coal with a carbon content of 83%

38 Royal Australian and New Zealand College of Radiologists, *Submission 196*, p. 2.

39 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, p. 19.

> and exposure at 2 mg/m^3, the risks were 0.71% for PMF [Progressive Massive Fibrosis] and 6.49% for CWP; and for coal with a carbon content of 83% and exposure at 1 mg/m^3 the risk was 3.4% for CWP. These risks were estimated based on CXRs [chest x-rays] taken during employment and are calculated for a 58 year-old miner. The study did not examine risks after retirement.
>
> A CWP prevalence study of US bituminous coal miners estimated likely exposure based on measured data extrapolated to earlier years. Prevalence of CWP category 1+ (small opacities) was related to cumulative dust exposure; for individuals with <30 mg-year/m^3 prevalence was <5%, but prevalence was 30% for the group with exposure >110 mg-year/m^3. On the basis of these data, miners of lignite and sub bituminous coal who work for 40 years at 2 mg/m^3 were predicted to have a 1.4% risk of having PMF on retirement and 14% were predicted to get CWP ILO category 1+. Miners of harder bituminous coal were expected to have higher risks, with over 20% predicted to get CWP category 1+.[40]

2.34 At a limit of up to 3 mg/m^3 Professor Sim noted that Australia and New Zealand have 'the highest value listed for respirable dust'.[41]

2.35 Disturbingly, Professor Sim found that:

> These data suggest that 30 years of exposure at the current Australian occupational exposure limit of 3 mg/m^3 respirable dust would be likely to result in 15–25% prevalence of CWP depending on the hardness of the bituminous coal.[42]

2.36 The Queensland Resources Council, a peak industry association which represents commercial developers in Queensland's minerals and energy resources sector, writing on behalf of its member companies stated that:

> The industry invests significant effort across a range of professional disciplines to proactively manage the respirable coal dust exposure of its workers. Workers do not simply work unprotected and exposed in dusty environments underground. There are a range of controls beyond the regulated exposure standard that further mitigate their exposure to dust. Regulation alone does not work.[43]

2.37 The Queensland Resources Council's submission listed a number of techniques used in the mining industry to control dust:

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40 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, pp. 19-20.

41 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, p. 21.

42 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, p. 20.

43 Queensland Resources Council, *Submission 195*, p. 3.

- Prevention and Control – Minimizing the production of dust by mining machines
- Dilution – Use of adequate ventilation
- Suppression – Use of water sprays and other techniques e.g. enclosure of dust sources
- Changing the operator's position – Use of remote control operation of certain machinery
- Personnel Protection – Use of dust respirators[44]

2.38 The Queensland Resources Council's submission stated in relation to this list of controls that:

> Every one of these controls reduces the risk of dust exposure and would be present/practised in underground mines as detailed in their approved safety and health management systems. It is in the interests of the industry and its workers that it continues to strive to achieve improvements in these control measures.[45]

2.39 That coal dust exposure, an inevitable part of coal mining, causes CWP, was not disputed by any witnesses. However, evidence taken by the committee during its public hearings contradicted the Queensland Resources Council's submission in terms of the extent to which mining companies were working to mitigate dust levels in mines.

Protective measures for workers

2.40 Mining company Vale Australia submitted that it had taken 'proactive measures' to mitigate dust levels at its Carborough Downs mine, 'including application of additional engineering solutions, system improvements, [and] operational modifications', following the reporting of CWP cases.[46]

2.41 Other measures taken by Vale Australia included:

- review of employees' x-rays by Dr Robert Cohen in the United States;
- communication with workers, including briefings and an address by Dr Cohen;
- dust monitoring including increased frequency of monitoring, real time monitoring and analysis of operator positioning; and
- continued focus on the PPE including education on the correct use of PPE, implementing a clean shaven policy, face fit testing, and mandated Positive

44 Queensland Resources Council, *Submission 195*, p. 3.

45 Queensland Resources Council, *Submission 195*, p. 4.

46 Vale Australia, *Submission 200*, p. 3.

Air Powered Respirators (PAPR) for employees at high risk of dust exposure.[47]

2.42 The distribution of PPE by coal mining companies, particularly disposable face masks, was discussed at the committee's hearings. The evidence put before the committee showed a major contradiction between the views of the mining companies and the experiences of the coal mine workers as to the availability and efficacy of face masks. This issue is discussed further in Chapter 3.

Screening for CWP

2.43 The Queensland CWHS is said to protect 'the health of Queensland coal mine workers [in that state] by ensuring they undergo periodic health assessments.'[48] The CWHS is established by the Coal Mining Safety and Health Regulation 2001.[49]

2.44 Under the CWHS, pre-employment health assessments are mandatory for potential mine workers and are periodically required by the employer's Nominated Medical Adviser (NMA). There is a minimum requirement that they must be conducted at least once every five years.[50]

2.45 NMAs are pivotal in the CWHS and are required to:

- conduct the health assessments required for mine workers;[51]
- order chest x-rays–the NMAs must provide all relevant information about the worker and their exposure to coal dust to radiologists;[52]
- provide copies of the assessment to the relevant parties (workers, DNRM), and to the worker's employer;[53] and
- store health assessment data, x-rays, and x-ray reports.[54]

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47 Vale Australia, *Submission 200*, pp 3–4.

48 Queensland Government, *Coal Mine Workers' Health Scheme*, 16 December 2015, www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical (accessed 13 April 2016).

49 Queensland Government, *Coal Mine Workers' Health Scheme*, 16 December 2015.

50 Queensland Government, *Frequency of health assessment*, 11 February 2016, www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/assessment-frequency (accessed 18 April 2016).

51 Queensland Government, *How the health assessment works*, 18 September 2015, www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/how-health-assessment-works (accessed 18 April 2016).

52 Queensland Government, *Nominated medical advisers*, 8 April 2016, www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/nominated-medical-advisers (accessed 18 April 2016).

53 Queensland Government, *How the health assessment works*, 18 September 2015.

54 Queensland Government, *How the health assessment works*, 18 September 2015.

2.46 If an employer receives notice that the level of risk to a miner's health has increased, a copy of the notice must be provided to the NMA so that the worker's exposure can be monitored.[55]

2.47 Importantly, NMAs are appointed and renumerated by mining companies. The DNRM has no role in the appointment of NMAs. There is no specific training required for NMAs other than current registration with the Australian Health Practitioner Registration Agency (AHPRA) as a medical practitioner.[56]

2.48 Other than setting down some screening requirements, the CWHS places the onus on mining companies to make provision for miners' health. The current Queensland Government review of the CWHS (the Sim review, discussed above and in Chapter 3) has identified a number of problems with the CWHS, including the fact that results of screening are not communicated to workers.

2.49 The committee heard concerns that the coal miners' x-rays taken under the CWHS had not actually been examined by radiologists. This issue is discussed further in Chapter 3.

Queensland regulation

2.50 Aspects of Queensland mine safety and health are regulated under the following acts:

- *Mining and Quarrying Safety and Health Act 1999* (Qld) (with the Mining and Quarrying Safety and Health Regulation 2001); and
- *Coal Mining Safety and Health Act 1999* (Qld) (with the Coal Mining Safety and Health Regulation 2001).

2.51 The Coal Mining Safety and Health Regulation 2001 (Qld) provides that:

> (1) A coal mine's safety and health management system must provide ways of ensuring—
>
> (a) each coal mine worker's exposure to respirable dust at the mine is kept to an acceptable level; and
>
> (b) the worker does not breathe an atmosphere at the mine containing respirable dust exceeding an average concentration, calculated under AS 2985, equivalent to the following for an 8-hour period—
>
> (i) for coal dust—3mg/m^3 air;
>
> (ii) for free silica—0.1mg/m^3 air.[57]

2.52 The Coal Mining Safety and Health Regulation 2001 (Qld) also provides for the CWHS as outlined above.

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55 Queensland Government, *Frequency of health assessment*, 11 February 2016.

56 Queensland Government, *Nominated Medical Advisers*, 8 April 2016.

57 Coal Mining Safety and Health Regulation 2001 (Qld), s 89.

2.53 A mine's compliance with the regulations is monitored by Mines Inspectors, which is a part of the DNRM. The Commissioner for Mine Safety and Health (also a part of the DNRM) monitors mine health and safety and reports to the Minister and Parliament on these issues. Monitoring of mining industry compliance can include a 'review of the dust monitoring data and visual inspection of the work areas at the mine'.[58]

2.54 If mines are non-compliant with regulations on dust levels, the Mines Inspectors can issue a legal Directive to a mine operator. Continued non-compliance can result in penalties such as suspension of production.[59] The committee comments on the operation and issuing of these Directives in Chapter 3.

NSW regulation

2.55 Unlike the Queensland regulatory scheme, the NSW regulatory scheme is managed by an entity separate to the NSW Government. The *Coal Industry Act 2001* (NSW) creates the entity, NSW Coal Services which is jointly owned by the NSW Minerals Council and the CFMEU.

2.56 NSW Coal Services has a number of statutory functions under the *Coal Industry Act 2001* (NSW). These include:

- providing occupational health and rehabilitation services for workers engaged in the coal industry, including providing preventative medical services, monitoring workers' health and investigating related health matters;
- collecting, collating and disseminating accident and other statistics relating to the health and safety of workers engaged in the coal industry;
- referring matters relating to the safety of workers engaged in the coal industry, as it thinks fit, to the regulator within the meaning of the *Work Health and Safety (Mines) Act 2013* (NSW);
- reporting to the Minister as it thinks fit, or when requested by the Minister, on matters related to the health or welfare of workers engaged in the coal industry, or on any other matter arising out of its functions;
- monitoring, promoting and specifying adequate training standards relating to health and safety for workers engaged in the coal industry; and
- monitoring dust in coal mines.[60]

58 Queensland Department of Natural Resources and Mines, 'Dust management in Queensland coal mines – facts', factsheet, p. 1.

59 Queensland Department of Natural Resources and Mines, 'Dust management in Queensland coal mines – facts', factsheet, p. 1.

60 NSW Coal Services, *Submission 198*, pp. 2-3.

2.57 NSW Coal Services is part of a 'collaborative model' which includes industry, the NSW Government, employers and mine operators, unions, and mine workers. The emphasis of the model is on prevention of injury and disease.[61] Various business units of NSW Coal Services carry out the statutory functions.

2.58 NSW Coal Services is independent of industry and this allows it to rigorously monitor coal dust levels, as Ms Lucy Flemming, CEO of NSW Coal Services explained:

> The dust requirements in New South Wales are pursuant to the regulation which prescribes monitoring requirements for respirable dust, including specific locations and frequencies of that dust monitoring. It is actually very highly regulated. That regulation also directs us to be independent of the mine and we must be licensed by the New South Wales Department of Industry, Division of Resources and Energy. If we do measure any dust exceedences, there must be resampling and corrective action taken.
>
> To help us do all of that there are two government gazetted orders which are both administered by Coal Services. They are order 40, which is the longwall dust abatement approval that we must approve plans for dust abatement on longwall, and order 42, which is the mandatory monitoring and prescribed exposure limits. An important thing to note specifically in order 42 and dust monitoring that per the New South Wales health and safety mines regulation 2014—a fairly new regulation—mineworkers are sampled regularly. Order 42 requires that all of the crews in each separate work area of the mine identify any systemic issues that may result from mining practices in a particular work team. So every panel on every shift over a period is monitored. What happens with those results? They are sent to the mine operator, they are sent to the Inspector of Coal Mines and they are also sent to the industry safety and health representative.
>
> If there is a failed result, the mine manager informs that person who was sampled, so the actual miner where this has occurred, and there is an obligation under the New South Wales Work Health and Safety (Mines) Reg 2014 to conduct a review and take corrective action. The whole crew is resampled and we look for any systemic issues that may be occurring and recommend corrective actions—again, working collaboratively with the mines management team to rectify any issues.[62]

2.59 A further mechanism to ensure review of dust sampling is the Standing Dust Committee:

> This is a subcommittee of the Coal Services board. It meets bimonthly and maintains an overview of the results of the dust sampling program. All relevant industry participants sit around the table. The industry representatives that we have on this table include the department and the inspectorate, the industry safety and health representative, health services

61 NSW Coal Services, *Submission 198*, p. 4.

62 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 9.

> experienced staff, the employer and operator representatives and a couple of independent industry experts and workers.[63]

2.60 Ms Flemming told the committee that the proof of the success of the NSW Coal Services model has been in its reduction of injuries:

> …a reduction in injuries that have been reported of over 75 per cent in that period, which is a large reduction. Back in 2001-02, probably one in four people were injured, and in an underground mine, that was more like one in three. Now we have less than six per cent; currently it is just on 5.5 per cent. Fewer than six people per hundred over that period, which to us is a great example of that model actually working and delivering a safe workplace and healthy workforce for the coal mining industry.[64]

2.61 The Coal Services Occupational Hygiene business unit conducts dust monitoring:

> The Coal Services Occupational Hygiene team include a broad and multi-discipline skill set incorporating hygienist, specialist laboratory technician and coal industry experienced inspectors. In Coal Service's view, being an effective licenced provider requires more than simply applying personal dust monitors…The Coal Services inspectors are typically experienced in underground and mining practitioners…Our inspectors travel underground with the mining crew to conduct the dust monitoring, observe operational practices, audit control measures and provide on the spot guidance and education to the underground miners literally "at the coal face".[65]

2.62 The CS Health business unit provides health services, including x-rays and chest screening. The CS Health screening program includes a pre-employment medical, a regular (three yearly) medical, and chest x-rays every six years for miners with a history of possible hazardous dust exposure. All x-rays are reviewed by a radiologist and any abnormalities are referred to an appropriate medical professional for further investigation.[66]

Committee view

2.63 The committee's examination of issues which background the re-emergence of CWP has identified the following key issues:

- CWP has returned to Australia. There are currently eight confirmed cases, but that number is very likely to rise.
- The best way to prevent coal dust exposure which leads to CWP is in dispute. Some prioritise prevention of high coal dust levels, while others prioritise individual worker protection.

63 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 9.

64 Ms Lucy Flemming, CEO, NSW Coal Services, Committee Hansard, 8 March 2016, p. 9.

65 NSW Coal Services, *Submission 198*, pp 4–5.

66 NSW Coal Services, *Submission 198*, pp 7–8.

- Screening for CWP and other coal dust related conditions is also the subject of debate and approaches vary from state to state.
- Finally, whether Australia has the expertise, and the health infrastructure, to properly diagnose CWP and support those with the disease will be key to how mining states move forward.

2.64 The re-emergence of CWP in Australia after such a long period is deeply concerning. While mining production in Australia creates export earnings in the tens of billions of dollars, those who are literally at the coal face are given a death sentence in the form of incurable CWP. The committee believes that action now is essential if further cases of CWP are to be prevented in the future. The remainder of the report provides evidence and arguments to support this conclusion and recommends action which will help eradicate the spectre of CWP in Australia.

Chapter 3

Issues raised

Introduction

3.1 Since its inception the Senate Select Committee on Health has chosen to examine issues as they emerge. In previous reports this has included the committee's inquiry into the proposed privatisation of Australian Hearing (Third Interim Report) and examination of the proposed merger of the National Blood Authority and the Organ and Tissue Authority (First Interim Report).

3.2 While seemingly specific in focus, an examination of the re-emergence of CWP is also important in the wider area of public health. The issue dramatically highlights not only the clear relationship between regulation and public health priorities but also the need for properly funded public health infrastructure which can respond to the re-emergence of a disease long thought eradicated in Australia.

3.3 Chapter 2 reviewed the background to CWP, its recent re-emergence in Queensland coal mines and the mining regulatory landscape in Queensland and NSW. This chapter examines some of those issues in greater detail but in the current context of coal miners' exposure to coal dust, the screening processes, the diagnosis, and the treatment options for coal mine workers. Specifically this chapter examines current:

- coal dust level limits;
- screening process;
- regulatory capture;
- support for workers (current and former); and
- the role of the Commonwealth Government in regulating mine health and safety.

Coal dust level limits

3.4 As noted in Chapter 2, all witnesses and submitters agreed that exposure to coal dust causes CWP. Mr Percy Verrall, who has worked in Queensland coal mines his entire working life, and who was diagnosed with CWP in 2015 told the committee:

> When I was underground on the machines we used to have the dust flying over us, even though we had sprays on the miners. That did not stop the fine dust that was coming through, and that is what has done the damage to me—the fine dust, not the heavy dust you see.[1]

3.5 In their research paper for the University of Wollongong 'Dust controls and monitoring practices on Australian longwalls', Drs Plus, Ren, and Aziz wrote that there are multiple ways in which coal mine workers could be exposed to harmful levels of dust:

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1 Mr Percy Verrall, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 1.

> Fugitive dust on longwalls has always been an issue of concern for production, safety and the health of workers in the underground coal mining industry both in Australia and globally. Longwall personnel can be exposed to harmful respirable and inhalable dust from multiple dust generation sources including, but not limited to: intake entry, belt entry, stageloader/crusher, shearer, and shield advance. With the increase in production created from the advancement in longwall equipment, dust loads have also increased and this has resulted in an increase in exposure levels to personnel.[2]

3.6 As coal dust is an inevitable part of coal mining operations, two key questions arise: firstly, how to most effectively mitigate the levels of coal dust caused by mining operations and, secondly, how to best protect miners from being exposed to hazardous levels of coal dust.

3.7 This section looks at the issues of exposure to coal dust, mitigation of coal dust levels through engineering solutions, and the adequacy of protective equipment for coal mine workers. These issues were all contested by witnesses and submitters, with coal mine workers and the CFMEU arguing that protections were inadequate, and coal mine companies and the Queensland Resources Council maintaining that the industry is doing all that it can and all that is necessary to protect workers from exposure to coal dust.

Exposure to coal dust

3.8 Managing workers' exposure to coal dust in mining operations is assessed by monitoring the levels of coal dust generated by mining machinery. Drs Plush, Ren, and Aziz explained in their paper that statutory dust measurements for underground mines are made according to standards for inhalable size dust particles[3] and for more hazardous, respirable size dust particles.[4] In their view, measurement of dust levels in mines must therefore address both types of dust particles rigorously and regularly. Evidence before the committee indicated significant anomalies in the various testing

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2 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1417-1418.

3 Which can be inhaled and which may lodge in any part of the respiratory tract. See: Safe Work Australia, 'Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants', April 2012, http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/680/Guidance_Interpretation_Workplace_Exposure_Standards_Airborne_Contaminants%20.pdf

4 Which are so small they are able to lodge at the alveolar level of lung tissue. See: Safe Work Australia, 'Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants', April 2012, http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/680/Guidance_Interpretation_Workplace_Exposure_Standards_Airborne_Contaminants%20.pdf

regimes, resulting in unacceptably high levels of coal dust in some Queensland coal mines.[5]

3.9 Discussing dust monitoring, Drs Plush, Ren, and Aziz noted that the current methodology of dust sampling is generally 'carried out with cyclone separation and collection of the sized particles for weighing, generally over the period of a full shift.'[6] They explained that although this method can show a measurement for 'total dust exposure for the period sampled', it does have problems:

> …it does not always accurately reflect the source, quantity and timing of respirable dust entering the longwall from different sources, hence presents difficulties in determining the relative effectiveness of the different control technologies in use. Tests based on this methodology also have a number of limitations including limited information from the results and the large number of invalid samples due to over-exposure to dust levels.[7]

3.10 Monitoring of the acceptable dust levels is the critical component of controlling the exposure of workers to hazardous dust levels. However, methods for monitoring these levels vary between jurisdictions. Dr Plush gave evidence that the testing regime is not rigorous:

> During my research it became very obvious that there were significant limitations to the current testing regime in terms of quantifiable information in relation to dust production. Performing the statutory testing as per the Australian standards AS2985 only gives results relative to exposure levels. The results do not tell me the source of the coal dust or how much dust is actually in the air…It was these limitations that led me to design a new testing methodology that provided the amount of respirable dust that is produced as a dustload—the milligrams per tonne of coal cut, not of time weighted averages for exposure.[8]

3.11 State legislation, such as the Queensland Coal Mining Safety and Health Regulation 2001, mandate the acceptable coal dust levels and the regimes for dust sampling and compliance arrangements.

3.12 As noted in Chapter 2, dust monitoring in NSW is undertaken by NSW Coal Services as part of its statutory functions. However in Queensland, such monitoring is a responsibility of the mining companies themselves, with the Chief Commissioner

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5 See particularly evidence from Mr Ian Hiscock, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016 and Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016.

6 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1419.

7 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1419.

8 Dr Brian Plush, Particulate Matter Scientist, University of Wollongong, *Committee Hansard*, 23 March 2016, p. 40.

for Mines Safety and Health (the Commissioner) reporting on company's compliance with Queensland regulation to the Government.[9]

3.13 The CFMEU argued that dust monitoring in Queensland was not being done to appropriate standards. For example Mr Jason Hill, Safety and Health Representative CFMEU Queensland, told the committee that his experiences in Queensland mines supported the findings of the Commissioner's 2014-15 report[10] that dust levels had increased:

> I would say that from my recent visits to most of the underground coal mines late last year that it is not a priority of the mines. We had spoken about Grasstree before and that was the dirtiest mine that I have seen. The dust mitigation controls were an absolute disgrace. Before we left the mine we had a robust discussion to say that it was not going to continue until the dust mitigation controls that were on site, which were supposed to be working at the time, were fixed. That did not come easy, it took some robust discussion to get that happening.[11]

3.14 Evidence from the CFMEU was supported by the first-hand experiences of the coal mine workers who spoke to the committee. Mr Chris Carter, a currently employed Queensland coal miner, described his experience of dust monitoring in the Grasstree Coal Mine in Queensland:

> CHAIR: ...How long have you been at Grasstree?
>
> Mr Carter: I have been there for 4½ years.
>
> CHAIR: How has the dust monitoring gone on in that period of time, and what do you notice about recent changes?
>
> Mr Carter: I would say that for 3½ years there was little to no dust monitoring done where I worked. In that period of time I may have been asked to wear a dust monitor twice.
>
> CHAIR: In the space of four years?
>
> Mr Carter: In four years, yes. After that date there was more dust monitoring, but the dust monitoring was generally done on maintenance days. We were told that they were able to work out the amounts of dust due to time-weighted averages.
>
> CHAIR: Let me be clear about this: we just heard from the New South Wales monitoring board, and they said that personal monitors are worn—I am pretty sure they said it was every worker; 'every panel, every shift' is

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9 Department of Natural Resources and Mines, Queensland Government, *Commissioner for Mine Safety and Health: Functions*, website, last reviewed 20 May 2015, www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/legislation-standards-guidelines/commissioner-functions

10 Commissioner for Mine Safety and Health, *Queensland Mines Inspectorate Annual Performance Report 2014-15*, p. 3.

11 Mr Jason Hill, Safety and Health Representative, CFMEU Queensland, *Committee Hansard*, 7 March 2016, p. 44.

> what I wrote down... I stand to be corrected, but you are saying that not only do you not wear a monitor that can be measured in real time on every shift; the days on which you wear a monitor—or you have worn a monitor—are days in which maintenance is occurring, which means that there is no coal being mined at that point in time?
>
> Mr Carter: That is correct. The frequency that I would have worn a dust monitor, even in the last six months, would only be once a month on a Thursday when I would be on afternoon shifts—and that Thursday would be a maintenance day.
>
> CHAIR: That is very specific information. You are asked to wear your personal dust monitoring device on a Thursday afternoon when maintenance is scheduled?
>
> Mr Carter: Yes. But not every Thursday maintenance shift—only on selected ones. But I only work a Thursday maintenance shift on afternoon shift once a month.
>
> CHAIR: I am finding it a little hard to digest that information. I am not normally a cynic, Mr Carter, but it would seem to me that the dust monitoring is being constructed to happen at a time when it is least likely to show up dust.
>
> Mr Carter: That is correct.[12]

3.15 Of significant concern to the committee is a response from the Queensland DNRM regarding its knowledge of and access to coal dust monitoring data. The answer demonstrates that there is no regulatory requirement for coal companies to report excessive dust levels to the regulator. Furthermore the DNRM does not keep a log of excessive dust exposures. The response also shows that, following the identification of an exceedance of dust levels, mining companies only need to provide a minimum of three months of exposure data to demonstrate 'sustained compliance'. The response states:

> Under current legislation, there is no requirement to report exposure exceedances for dust or any contaminant to the chief inspector or any inspector. The obligation is on the mining company to monitor the dust, record the exposure and investigate exceedances and introduce controls.
>
> There is no such excess dust “log” kept. The department conducted a review of all coal dust exposure data from 2012 to October 2014 and then again from October 2014 to August 2015. From this review, those mines with systemic dust issues were identified and directives were issued for these mines to control the exposures and provide monitoring records to the department to demonstrate compliance.
>
> Once mines have demonstrated compliance they are required to continue to submit coal dust exposure data for at least another three months to demonstrate sustained compliance.[13]

12 Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 24.

3.16 The Mines Inspectorate in the DNRM responds to evidence of non-compliance by mining companies (following inspections or investigations) by issuing mines Directives. In the course of the committee's hearings, the committee sought evidence regarding how many Directives had been issued and copies of the Directives.

3.17 The DNRM advised that it had issued 23 Directives relevant to coal dust monitoring and mitigation and provided these Directives to the committee on the condition of confidentiality.

3.18 The committee has agreed not to publish the information regarding the Directives, however the committee takes this opportunity to comment generally on the evidence it has received. In doing so the committee notes that the DNRM redacted information which would have identified the particular mines in each instance and in all but one case there is no information as to the circumstances giving rise to the issuing of those Directives.

3.19 The committee is very concerned by the contents of the Directives, particularly where mines appear to have taken considerable time to rectify dust level exceedances and/or implement dust controls. Of the 23 Directives provided to the committee:

- only nine Directives complied with the due date. The due dates were exceeded in the remaining 14 Directives;
- in those 14 Directives, the non-compliance periods ranged between 12 days to 12 months;
- five of the Directives relating to dust control and dust prevention were issued after the first reported cases of CWP, being 13 May 2015;
- one Directive issued to a mine which had no respirable dust monitoring took 12 days to comply with the requirement to implement a program.

3.20 The committee is very concerned about the fact that the Directives identify significant and on-going problems with dust prevention and/or dust control in Queensland mines.

3.21 The committee is also very concerned that these mines have not responded to the Directives in a timely manner. The committee notes that other than prosecution under subsection 174(2) of the *Coal Mining Safety and Health Act 1999* (QLD), there appears to be no other statutory consequence for not complying with a Directive within a 'reasonable time. Given that prosecution for non-compliance within a 'reasonable time' is likely to be rare event and a difficult case to prosecute, there is little incentive for on-time compliance by mining companies. Interim measures such as formal warning by the DNRM, followed by naming in a public register of non-compliance or a similar sliding scale model of non-compliance sanctions would

13 Answers to questions on notice, Queensland Department of Natural Resources and Mines, received 15 April 2016, p. 10.

be greater incentive for mining companies to comply with the Directives. The committee makes a recommendation in this regard in Chapter 4.

3.22 The committee also questions the means by which the DNRM is made aware of matters giving rise to the issuing of the Directives, such as how are matters reported to the DNRM, and are regular and irregular inspections undertaken?

3.23 There appears to be considerable variance in the language used to describe similar 'subjects', for example some Directives identify the subject as 'dust control', some as 'dust suppression', and others as 'dust prevention', and there is scant information on the face of the Directives to indicate the circumstances giving rise to its issuance. The committee considers that these deficiencies could lead to difficulties in auditing compliance or in collating data from the Directives as part of a future tracking, review or auditing process.

3.24 Vale Australia, a mining company which has coal mines in Queensland where cases of CWP have been reported, only addressed the issue of dust monitoring in the context of the steps it that had been undertaken since the third quarter of 2015, that is, since the first reported case of CWP in May 2015. Those steps were described as follows:

> Dust mitigation
>
> - Continued improvement of dust mitigation controls, including:
>   - Application of additional engineering solutions
>   - System improvements
>   - Operational modifications
>
> Dust monitoring
>
> - Enhanced our dust monitoring regime, including:
>   - Increased frequency of monitoring, over and above statutory requirements
>   - Addition of real time monitoring
>   - Incorporated an analysis of operator positioning[14]

3.25 The Queensland Resources Council's submission omitted any reference to dust monitoring. Anglo American Coal and BHP Billiton Ltd (BHP) were both invited to make submissions, however both declined to do so. BHP also declined to attend the committee's hearings.

3.26 During one of the committee's hearings, mining company representatives and the Queensland Resources Council provided limited details about dust monitoring. In fact, the Chief Executive Officer of the Queensland Resources Council, Mr Michael Roche, was unaware that the regulated level of dust exposure for Queensland miners was higher than that of NSW or the United States:

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14 Vale Australia, *Submission 200*, p. 3.

> Senator CAMERON: Yes, but the level of dust is higher. The level of dust that is allowable is higher in Queensland, isn't it?
>
> Mr Roche: Yes, and I must admit that came as a surprise to me. I am not sure of the background to that…[15]

3.27 Disturbingly, there was very limited awareness of the work of Drs Plush, Ren, and Aziz amongst mining company representatives and the Queensland Resources Council. However, Drs Plush, Ren, and Aziz noted at the time their research paper was published, that there had been some scrutiny of dust monitoring methodology in Australia:

> The reason for this scrutiny is that there has been a significant increase in Coal Workers' Pneumoconiosis (CWP) in the USA over the last few years despite recorded conformance to exposure level legislation, and the opinion by the underground coal mining industry in Australia that the current testing regime tells them very little about the actual operational production of dust on the longwall face in relation to where it is produced or how to prevent this dust entering the atmosphere.[16]

3.28 The CFMEU stated that the implementation of stronger compliance regimes and the monitoring of dust levels by an independent body are essential to solving the problem of miners' exposure to hazardous levels of coal dust in Queensland.[17]

3.29 The committee considers that the concerns about the methodology of dust monitoring, as voiced by Drs Plush, Ren, and Aziz, coupled with the propensity for mining companies to put self-interest above safety in the Queensland self-regulated model, has created the conditions in which CWP has returned to Australian coal mines.

3.30 Drs Plush, Ren, and Aziz argued for the establishment of an industry 'database of best practice dust suppression techniques used by longwalls for the industry to peruse and use along with the management of sampling data':

> Currently the industry invests a lot of money in the sampling conducted by the regulatory regime but receive very little useful information on how to mitigate airborne contaminants. With the volume of data collected the industry should have a fairly accurate picture and understanding of the underground longwall work environment to help refine installed controls and measure their dust knockdown efficiency, but currently only receive single sample information with details recorded for a 5 sample batch not individual samples.

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15 Mr Michael Roche, Chief Executive Officer, Queensland Resources Council, *Committee Hansard*, 7 March 2016, p. 57.

16 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1425.

17 CFMEU, *Submission 199*, p. 17.

3.31 While the industry itself provided little evidence to the committee about current dust monitoring methodologies, Drs Plush, Ren, and Aziz in their research found that:

> The industry feels it would be better to have information on individual pieces of plant & equipment, tasks and activities and on the practises of crews or individuals. The industry would also like to see a review which will document standards of approach in the areas of dust control efficiencies to capture a definitive benchmark which will allow for a more scientific approach to the management of airborne contaminants.[18]

3.32 In light of these views Drs Plush, Ren, and Aziz suggested a review of:

> …competency requirements for persons undertaking dust sampling be undertaken and that a review of the occupational exposure limit is covered and suggested legislative shift adjustment criteria is recommended specifically in the industry to better reflect the continual changes in the mining environment.[19]

3.33 The committee endorses the suggestions made by Drs Plush, Ren, and Aziz, and provides a recommendation to this end in Chapter 4.

Coal dust mitigation

3.34 As noted in Chapter 2, a number of engineering solutions are used to reduce the amounts of coal dust in mining operations. Drs Plush, Ren, and Aziz explained in their research paper that engineering controls, such as machines called scrubbers and mine ventilation, are often accompanied by administrative controls, which are implemented in mines through improved work practices:

> In general, two dust control approaches, namely administrative controls and engineering controls, are adopted for dust management by the industry. Administrative controls or 'work practices' are designed to minimise the exposure of individual workers by positioning them in the work area in such a way as to limit the time they are exposed to a particular dust source. Work practices can be effective in protecting some individuals only if followed properly and consistently, and if the environmental exposure remains constant and predictable. Unfortunately, this is not the characteristic of longwall mining in general.[20]

18 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1426.

19 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1426.

20 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1420.

An example of dust control in a longwall mine.[21]

3.35 The CFMEU noted that:

> The now (in)famous 2014-15 report of the Queensland Mines Inspectorate highlighted the increase of dust levels in mines, including that a large number of underground coal mines were routinely exceeding regulated dust levels.
>
> The report showed that a majority of underground mines were exceeding regulated dust levels. It also showed an overall trend of increasing dust levels.[22]

3.36 Drs Plush, Ren, and Aziz concluded that in terms of longwall mining, the ability to use advances in engineering to improve coal production have led to increased production of coal dust:

> Extensive studies have shown that high dust exposures on longwall mining operations are mainly due to:
>
> - Inadequate air volume and velocity;
> - Insufficient water quantity and pressure;

21 Image sourced from mining-technology.com, *Mining safely – innovative technologies to prevent mining accidents*, website: http://www.mining-technology.com/features/featuremining-safely-innovative-technologies-to-prevent-mining-accidents-4207131/featuremining-safely-innovative-technologies-to-prevent-mining-accidents-4207131-2.html

22 CFMEU, *Submission 199*, p. 17.

- Poorly designed external water spray systems;
- Lack of dust control at the stage loader and crusher;
- Dust generated during support movement; and
- Cutting sequences that position face workers downwind of the cutting machine.[23]

3.37 Coal miners like Mr Ian Hiscock and Mr Chris Carter, agreed that the issues identified by Drs Plush, Ren, and Aziz were the causes of increased dust levels.[24] Mr Carter, a currently employed Queensland coal miner, speaking to the committee in a private capacity, described the drive towards increased production as a major cause of dust creation:

> A lot of the problem with dust has come with production expectations as to how fast you can cut coal. The faster you cut, the more dust there is. It is a proven fact. When we slow production down we also limit the amount of dust. That is not just at the working face; that goes all the way out of the mines. I know that recently at Grasstree [coal mine] the shearer rates were slowed after black lung became evident to everyone. The comments made from the longwall face to the stockpile were that the dust was greatly reduced.[25]

Longwall mining at the Vale Australia Carborough Downs Mine, Queensland.[26]

3.38 Drs Plush, Ren, and Aziz concluded that this in turn, requires more effective dust control measures:

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23 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1420.

24 Mr Ian Hiscock, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016; Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016.

25 Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 23.

26 Image sourced from Vale Australia, Factsheet Carborough Downs Mine, p. 2.

> Australian longwall mining experience has indicated that the efficiency of some of the existing dust control methods reduces significantly in thick coal seams and under high production environments. As the current trend in the industry is to substantially increase the face production levels and to extract more thick coal seams, there is an urgent need for detailed investigation of various dust control options and development of appropriate dust management strategies.[27]

3.39 However, Mr Carter agreed with the assessment of Drs Plush, Ren, and Aziz:

> A lot of the problem with dust has come with production expectations as to how fast you can cut coal. The faster you cut, the more dust there is. It is a proven fact. When we slow production down we also limit the amount of dust. That is not just at the working face; that goes all the way out of the mines…[28]

3.40 The committee heard that there are alternatives to the Queensland system. For example, the NSW regulatory model places an emphasis on prevention of coal dust reaching the coal mine worker:

> Senator LAZARUS: …Do you have a recommendation on what Queensland mines should be doing to get the same levels as New South Wales?
>
> Ms Flemming: I believe that they should adopt a similar model to our collaborative model…With dust, it is about mitigating the risks. In any hierarchy of control, the first thing you do is try to limit that risk—which, in this case, is dust exposure—and then you work down to other controls, such as wearing an appropriate dust mask.[29]

3.41 Other individual dust controls, such as dust masks, are discussed in the following sections.

Adequacy of and access to protective equipment

3.42 Dust masks and other devices such as respirators for protecting workers from breathing in respirable coal dust comprise part of what is known in occupational health and safety terms as PPE. The Queensland Resources Council wrote in its submission that:

> Personal protective equipment [PPE] issued to miners extends their safety in dusty environments. Its availability and use is clearly stated in the Queensland regulation. Provision, training and use of PPE is a requirement and obligation…PPE [issued by Queensland Resource Council members] used will have been approved for use, the point being that workers are simply not exposed to dust through cheap throw-away basic dust masks of

27 Dr Ting X Ren, Dr Brian Plush and Dr Najdat I. Aziz, 'Dust controls and monitoring practices on Australian longwalls', *Procedia Engineering*, vol. 26, p. 1418.

28 Mr Chris Carter, coal mine worker, private capacity, *Committee Hansard*, 8 March 2016, p. 23.

29 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 13.

> the types which would be familiar to most people from non-industrial environments.[30]

3.43 Former miners Mr Hiscock and Mr Verrall both described how paper masks had been used in the mines during their working lifetime. Mr Hiscock told the committee:

> The long wall is 300 metres long, so you put on one of those paper dust masks and, at the end of that shear, you have to get another one, because they are chock-a-block full. They do have an Airstream helmet but, like at Carborough Downs, they changed the lighting system, Northern Light, and they were not compatible with the Airstream helmets. Therefore we only had the dust masks that we could use. Like Percy said, they constantly block up. When you are moving 120-kilogram flight baths, when you have maintenance issues, you try breathing and doing manual labour with these paper dust masks. It is not right.[31]

3.44 Mr Stoddart, another Queensland miner who has been diagnosed with CWP, told the committee:

> Mr Stoddart: …The most important part, I think, is the coaldust. It is just there all the time. I love the coalmining. It can be done safely, I am sure. When I first started in the mines there was no such thing as even a dust mask, let alone a helmet. Back in the early 1980s they brought in an air helmet, but it was big and clumsy. While I was cutting coal, I could wear it. It had filters at the back that sucked in all the dust and blew fresh air over your face. But back in those days there were no automatic things and we used to put up props. If you put a prop up on your shoulder, the helmet got knocked off, so I would take two helmets down. I would cut my coal, take my space helmet off and put my normal helmet on. But that fine dust was always in the air. The other masks they gave us—you would put them on but they were hard to breathe through.
>
> CHAIR: These are the little white paper masks?
>
> Mr Stoddart: Yes, they were little white paper masks. They are hot and they are hard to breathe through, so what I used to do, and what a lot of the miners do, is when we were cutting we would have them on but then as we got up to the bolt we would just pull them down so we could breathe a lot more normally.[32]

3.45 Mr Carter told the committee that while he has a full face 'electronic positive pressure mask' it has to be removed if he need to drink or communicate.[33] Mr Carter noted that it is not practical to keep the mask on for the entirety of a 12 hour shift:

> Mr Carter: We work 11 hours, 10 hours, nine hours and 12 hours. Between different crews it is different hours.

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30 Queensland Resources Council, *Submission 195*, p. 4.

31 Mr Ian Hiscock, retired mine worker, private capacity, *Committee Hansard*, 7 March, p. 2.

32 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 2.

33 Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 33.

> CHAIR: For the whole of one shift would you keep your mask on all of the time?
>
> Mr Carter: No.
>
> CHAIR: Why not?
>
> Mr Carter: It is just not practical to do it.
>
> CHAIR: Can you explain to me what is practical and what is actually happening there?
>
> Mr Carter: What would be practical would be to lower the dust levels and not require the last form of defence to keep people safe.[34]

3.46 Mr Hiscock raised concerns that access to PPE could be difficult for workers to access. He explained his experiences with vending machines dispensing masks:

> Mr Hiscock: For the coalmines I was working at it has only changed in the last couple of months since all this came about. They have totally changed the way we cut coal, but we were allowed to do it for such a long time. The coalmines now are talking about the PPE mask. They have put vending machines in the mines. With the longwall you would use 10 masks a shift if you cut 10 shears. You have to go to a vending machine now. Rather than taking boxes of masks down and putting them on the main gate with dust masks and all the rest of it, you have to go to a vending machine on the surface at the start of a shift and get out X amount of masks. They are not taken down, because the companies—I cannot speak for the companies and why they have done it.
>
> So then we get told how much all this is costing. When I went from being a permanent to a contractor, if the contractors did not fill up because they had to supply their own, no more did the mines supply it for the contractors. If they had not topped up to there, we would have to go to the permanents and say, 'Look, can you get us some PPE out?' because we could not get PPE out of the machines.
>
> Senator CAMERON: Given that there is this push for ever-increased productivity, do you think corners are being cut for increased productivity?
>
> Mr Hiscock: Of course they are. We had it rammed it down our throats that they were only getting X amount of dollars per tonne and we were not beating the budgets, so therefore it was a case of 'Cut as fast as you can, fellows.' That was just the way it was.[35]

Committee view

3.47 The committee notes that the submissions received from the Queensland Resources Council and Vale Australia barely mentioned dust monitoring and mitigation. Any issues mentioned, as in Vale Australia's submission, were in the context of work being undertaken since the recent reporting of cases of CWP in late

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34 Mr Chris Carter, coal miner, private capacity, *Committee Hansard*, 8 March 2016, pp. 34-35.

35 Mr Ian Hiscock, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 6.

2015.[36] As noted above, Anglo American Coal and BHP were both invited to make submissions and to appear at the committee's hearings. Anglo American Coal did agree to appear at a hearing but declined to make a submission. BHP declined to either make a submission or appear at a hearing.

3.48 The committee feels that these circumstances highlight the cavalier attitude of the mining companies and the Queensland Resources Council towards dust monitoring and mitigation. Their evidence also shows that they place a low priority on their statutory responsibility to provide satisfactory PPE and to ensure that workers wear PPE and remove themselves from hazards. The committee believes that this attitude has been encouraged by the light touch of Queensland's mining regulatory regime, with its focus on self-regulation and reporting and an absence of effective compliance and audit mechanisms. Chapter 4 includes the committee's recommendations on these issues.

Screening process

3.49 The CWHS, as outlined in Chapter 2, was the subject of much discussion at the hearings and in submissions.

3.50 A review of the CWHS is the first of the five actions in the Queensland Government's action plan in response to the re-emergence of CWP. [37] According to the submission of the Queensland departments (Queensland Health and the DNRM), the review will determine:

- the adequacy and effectiveness of the existing medical assessment regime
- the expertise required to effectively monitor for pneumoconiosis
- the availability of necessary expertise in Queensland
- a strategy to ensure current mine workers are effectively screened
- recommendations about the current scheme to ensure it is fit for purpose for the detection of occupational lung disease through X-ray, spirometry, respiratory symptoms and other relevant medical information.[38]

3.51 The review, conducted by Professor Malcolm Sim from Monash University and assisted by Professor Robert Cohen from the University of Illinois, Chicago, is supported by a reference group 'comprising representation from mine workers, mine operations, medical professionals and regulators.'[39] The submission of Queensland Health and the DNRM noted its scope and limitations:

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36 Vale Australia, *Submission 200*, p. 3.

37 The Hon Dr Anthony Lynham MP, Minister for Natural Resources and Mines, Queensland Government media release, 'Action plan revealed on coal miners' health issue', Media release, 14 January 2016.

38 Queensland Government, *Supplementary Submission 69.3*, p. 3.

39 Queensland Government, *Supplementary Submission 69.3*, p. 3.

> The reference group is not expected to provide advice on the control of respirable dust, or on regulated dust exposure limits and related issues. These important issues will continue to be addressed as a dedicated program of work for this initiative through the Coal Mining Safety and Health Advisory Committee which will be considering the findings of the review as part of the overall CWP response.[40]

3.52 This limit on the scope of the review was also criticised by the CFMEU.[41]

3.53 The head of the review team, Professor Sim described the matters giving rise to the review as follows:

> As of December 2015, five confirmed and two possible cases of pneumoconiosis in coal miners had been identified in Queensland in 2015 after no new cases had been reported in many years. None of these cases had been detected within the existing coal mine workers' health scheme and therefore it is imperative that the design and operation of the respiratory component of the medical assessments performed under the Coal Mine Workers' Health Scheme be reviewed.[42]

3.54 The Thoracic Society representative, Dr Ryan Hoy explained that for 30 years CWP was considered eradicated, but problems in the screening processes, meant it is likely that cases of CWP had gone undetected:

> I think that is very likely. Look at international data such as from the United States and the United Kingdom. With the screening program in the United States, the proportion of cases that are identified is around one to three per cent of workers. I think that demonstrates that in a different country with some differences in terms of their coal mining operations, these cases still do occur. I think it is likely that the cases have not been detected because of issues with the actual screening process, not that the cases were not actually occurring.[43]

3.55 Professor David Cliff, Independent Chair of the review's reference group, explained that a problem with the CWHS had been the conduct of the original assessments of x-rays:

> The issue with the diagnoses is due to the adequacy of the original assessments that were undertaken. So we are now in the process of re-evaluating the adequacy of those assessments. The situation may have existed for a number of years. It is important to recognise that the diagnosis is the end product of a long time of exposure, so we could be talking about people who have been working in the industry for 10, 20 or 30 years… The diagnosis relates to a range of severities from quite difficult to detect to very easy to detect in terms of the X-rays and the lung obscuration, and a

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40 Queensland Government, *Supplementary Submission 69.3*, p. 4.

41 CFMEU, *Submission 199*, pp. 14-15.

42 Professor Malcolm Sim, Monash University, *Submission 197*, p. 4.

43 Dr Ryan Hoy, Convenor, Occupational Lung Disease Special Interest Group, Thoracic Society of Australia and New Zealand, *Committee Hansard*, 7 March 2016, p. 12.

> lot of these questions that have come up recently are at the least-detectable end. That does not excuse them not being detected; they should be done by competent people. The situation has been lying latent for quite a while in terms of the adequacy of assessment.[44]

3.56 Professor Cliff's evidence was that the quality of previous assessments of x-rays conducted under the CWHS had been patchy:

> Prof. Cliff: I think it is fair to say that the standard of reading is variable. There has been a large number of radiologists and people taking X-rays for these medicals in recent years. There are something like 260 nominated medical advisers registered to undertake coal board medicals in Queensland and—
>
> CHAIR: That is just in Queensland?
>
> Prof. Cliff: Just in Queensland—there is a slightly different process in New South Wales. Similarly, they are dotted all over the state. They use X-ray facilities all over the state, some of which I have been advised are pretty average and some would be very good. There is no uniform standard at the moment or quality control criteria on that radiology, nor is there a minimum requirement on the nominated medical advisers, for example, to have occupational physician training or to be familiar with the coalmining industry.
>
> CHAIR: The real concern is a quality control issue in terms of variability within the sector?
>
> Prof. Cliff: There is a concern, yes, within the sector about the quality control and the rigour of the assessment. That is also, I suppose, exacerbated by the fact that, if you have very few cases of pneumoconiosis, then radiologists naturally will become unfamiliar with reading them. In America they have 1,000 cases a year, on average, so they are much more familiar with the cases. That does not, in my mind, excuse the quality control process, but we have erred on the side of not having too formal a process in Queensland.[45]

3.57 Part of the CWHS screening process is the role undertaken by the NMAs. As noted in Chapter 2, the NMAs manage the process of an employee's referral for x-ray, they are the holders of the medical records, and they are nominated and renumerated by the mining company. As Mr Michael Oswell, Head of Safety and Sustainability at Anglo American Coal told the committee:

> The x-rays go through a process. We do not have people racing off getting x-rays willy-nilly. There is a process that goes with it. The referral starts with the nominated medical adviser and the consultation with the employee. The nominated medical adviser refers the employee to have the x-rays conducted. The x-rays are read and the report goes back to the nominated

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44 Professor David Cliff, Independent Chair, Queensland Government Review Reference Group, *Committee Hansard*, 7 March 2016, p. 63.

45 Professor David Cliff, Independent Chair, Queensland Government Review Reference Group, *Committee Hansard*, 7 March 2016, p. 64.

> medical adviser. The report is given to the individual and the report comes back to us. That has been the process for many years. In my view, there would be no outstanding unread x-rays for our employees.[46]

3.58 Professor Sim told the committee that the review team had examined the process of the CWHS medical assessments as part of looking at the quality of the screening assessments:

> The way it is set up at the moment is that there is a nominated medical adviser. Each of the individual mines can add a doctor to the list. That doctor can be any doctor; it does not have to be anybody with any training in occupational medicine or who has any familiarity with mines or coal dust exposure or the respiratory diseases related to coal dust exposure. There are around 240 nominated medical advisers on the list in Queensland at the moment. We have done a breakdown of where those NMAs are located. Most of them are well away from the mines areas. There is a large group of them on the Gold Coast and in Brisbane and just north of Brisbane.[47]

3.59 Professor Sim further explained that the review team considered that the NMAs 'need to have some background in the area of how to undertake medical screening'. NMAs:

> …need to have some initial training and then some ongoing training and an audit of their performance as well, and that is something that has not been happening. It used to happen. They used to have a fairly small group of NMAs up until the boom in Queensland. There was a group of around 30 to 40 who did have initial training and ongoing sessions where they would get together and look at cases and have some ongoing audits of their performance. But, with the boom and the increase in the number of doctors who went onto the list, that fell away some years ago. We think that it is an important element of any medical screening program to have a smaller number of NMAs who are well trained and undergo ongoing clinical audit. That is certainly the way that our thinking is going at the moment in terms of recommending how this operates in the future. [48]

3.60 In Professor Sim's view, the main issue was that NMAs are not required to have specific experience of the mining industry and associated health conditions and are not required to be geographically close to the mines for which they work:

> I think the main problem here is that many of the nominated medical advisers are GPs who do not have any experience of working in this specific area. This needs to have doctors who are well trained in this area, who understand these conditions and their relationship to coal dust exposure and who are able to assess that appropriately. I just do not think

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46 Mr Michael Oswell, Head of Safety and Sustainability at Anglo American Coal, *Committee Hansard*, 7 March 2016, p. 36.

47 Professor Malcolm Sim, Director, Centre for Occupational and Environmental Health, Monash University, *Committee Hansard*, 7 March 2016, p. 72.

48 Professor Malcolm Sim, Director, Centre for Occupational and Environmental Health, Monash University, *Committee Hansard*, 7 March 2016, p. 72.

> that GPs, especially those well away from coalmines, have the background to be able to do that…I think it is the lack of training and awareness of the main purpose of this medical screening program that has been the main problem with those particular doctors.[49]

3.61 Professor Sim's interim report was provided to the Queensland Government on 31 March 2016 and released publicly on 8 April 2016. The interim report findings are similar to the evidence Professor Sim and his colleagues provided to the committee on 7 March 2016. The findings included:

- that the current focus of the CWHS is to assess general fitness for work, and there is no focus on medical screening for CWP or overall respiratory health;
- the review team identified significant deficiencies in the CWHS in relation to the confirmed cases of CWP; and
- NMAs do not receive formal training, nor are they required to have any experience of the mining sector and related illnesses.[50]

Committee view

3.62 The committee acknowledges the Queensland Government's response to the re-emergence of CWP and in particular commends the Queensland Government's review of the CWHS as a good initial step. The committee also supports the approach taken by Professor Sims, Professor Cohen, and their colleagues approach to the issue and their assessment of the flaws in the current CWHS assessment process. The review will, if its aims are achieved, assist in repairing coal mine workers' confidence in the CWHS.

3.63 However, the committee believes that the review should be part of a holistic response which prioritises on examining dust mitigation and monitoring as well as on personal protective measures for workers and screening. In this regard the NSW model is to be preferred over the Queensland model.

3.64 Further, the committee believes that there must be more done as part of the Queensland Government's review of the CWHS to ensure the independence and effectiveness of the NMAs. At the present time, the independence of the NMAs is called into question by their close association with and direct remuneration by the mining companies. Further, the committee notes Professor Sim's comments that the location and experience of the NMAs makes it difficult to ensure that NMAs have the capacity to thoroughly conduct medical assessments for coal mine workers. The following chapter includes the committee's recommendations on these issues.

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49 Professor Malcolm Sim, Director, Centre for Occupational and Environmental Health, Monash University Monash University, *Committee Hansard*, 7 March 2016, p. 74.

50 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, pp. 5-9.

Regulatory capture

3.65 Regulatory capture is the concept that regulators are subject to self-interest, or other forces, and influenced to select policies or make regulatory decisions which would not be supported by an informed public.[51] The Australian National Audit Office (ANAO) defines regulatory capture in its 'Better Practice Guide: Administering Regulation – Achieving the Right Balance':

> One of the risks associated with formal and ongoing engagement [between a regulator and a regulated entity] relates to the issue of regulatory capture. This occurs where an officer involved in administering a regulatory regime develops a relationship with the regulated entity or industry and represents their interests in advance of the interests of the regulator.[52]

3.66 The ANAO Better Practice Guide sets out ways to minimise regulatory capture, and notes that in some circumstances the risk of regulatory capture may outweigh the benefits of interactions between the regulator and the regulated entities.[53]

3.67 The committee noted throughout its hearings that the regulatory scheme in Queensland appears particularly vulnerable to regulatory capture by mine regulators and other officials. An example of this issue is the NMAs, whose position is effectively owed to the mining companies who nominate them.

Nominated Medical Advisors

3.68 The closeness of the NMAs to the mining companies was highlighted at the committee's hearing in Brisbane when Dr Edward Foley, NMA for the Vale Australia mining company's Carborough Downs Mine, appeared alongside Vale Australia representatives.

51 Daniel Carpenter and David A Moss, Harvard University, Cambridge University Press, 'Preventing Regulatory Capture – Special Interest Influence and How to Limit it', 2014, p. 75.

52 Australian National Audit Office, *Best Practice Guide: Administering Regulation – Achieving the Right Balance*, 10 June 2014, p. 17.

53 Australian National Audit Office, *Best Practice Guide: Administering Regulation – Achieving the Right Balance*, 10 June 2014, p. 17.

Nominated Medical Advisor Dr Edward Foley (far left) and Chief Medical Officer, Dr Rob McCartney (middle) appeared at the committee's hearing in Brisbane on 7 March 2016 alongside representatives from coal mining companies Vale Australia and Anglo American Coal.

3.69 However the NMAs also have a statutory responsibility under the CWHS to undertake coal mine workers' medical assessments. If NMAs are not fully independent of mining companies, it is possible, to paraphrase the ANAO, that they could develop a relationship with mining companies or the mining industry and represent those interests over interests of the regulator.

3.70 Best practice would dictate that a risk of this sort must be mitigated by a control measure, for example making the NMAs an independent position, selected through a rigorous process by Queensland Health in consultation with the DNRM.

3.71 This conclusion was not one which had occurred to Mr James Purtill, Director-General, Queensland DNRM. When asked about whether there were mechanisms for NMAs to avoid regulatory capture, Mr Purtill answered:

> Mr Purtill: I am not quite sure what regulatory pressure they would be under, but I cannot really speak for individual nominated medical advisers.
>
> Senator CAMERON: Are you serious?[54]

54 Mr James Purtill, Director-General, Queensland Department of Natural Resources and Mines, *Committee Hansard*, 7 March 2016, p. 76.

Department of Natural Resources and Mines

3.72 The committee also noted the risk of regulatory capture with regard to DNRM officials. The DNRM works closely with the mining companies, particularly the Mines Inspectorate and the Commissioner for Mines Safety and Health.

3.73 Mr Purtill told the committee on 7 March 2016 that all departmental officers were trained in code of conduct and lawful decision making:

> All of our regulatory staff go through specific training, depending on the authorisations that they are under, which will include elements of what I believe would be identifying regulatory capture, as with the code of conduct training. But as for a specific, if you like, training module that is termed 'regulatory capture' or similar, it is embodied in a broader range of training that we need for our authorised officers so that they make lawful decisions.[55]

3.74 Despite Mr Purtill being asked a question on notice about the specific regulatory capture training undertaken by DNRM staff, when Ms Rachel Cronin, Deputy-Director Minerals and Energy Resources, and Mr Russell Albury, Acting Chief Inspector of Coal Mines, spoke to the committee on 23 March, they were unable to provide specific details of regulatory capture training:

> Senator CAMERON: I would assume that you would be ready for this question, given I did ask the question previously. What training have you had on the issues surrounding regulatory capture?
>
> Mr Albury: I have had training since I have been in the government in relation to public servant ethics and appropriate behaviour, which includes capture, so I have an understanding of the topic and I know what my responsibilities are in relation to regulatory capture.
>
> Senator CAMERON: What training did you get in regulatory capture?
>
> Mr Albury: I am struggling. Public Service code of conduct competency or course.
>
> Senator CAMERON: But nothing specifically on regulatory capture; it was general in that Public Service course. Is that correct?
>
> Ms Cronin: If I may, Senator: all the staff in the public sector are reminded of their obligations to operate with integrity, that we are servants of the state and that we need to watch any conflicts of interest, and staff are asked to remove themselves from situations where there could be a perceived conflict.
>
> Senator CAMERON: But being reminded of your obligation is not specific training, is it?
>
> Ms Cronin: No, but we do undertake code of conduct training on a yearly basis—every staff member.

55 Mr James Purtill, Director-General, Queensland Department of Natural Resources and Mines, *Committee Hansard*, 7 March 2016, p. 79.

> Senator CAMERON: So we have an inspector of mines—I am just talking about the position, not the individual—who is the regulator for the industry. The industry is one of the most powerful industries in the country and the actual public servant who regulates that industry has had no specific training on regulatory capture. How does that work?
>
> CHAIR: Ms Cronin?
>
> Ms Cronin: Our staff are appropriately trained. I think it is well understood as to what conflicts of interest are and we manage that risk within our department and in our decision-making process.[56]

Chief Inspector of Mines

3.75 The light-touch regulatory model in Queensland also allows for close relationships between mine inspectors and the Chief Inspector of Mines, and the mining companies whose activities are being regulated. This situation has the potential to be fertile ground for regulatory capture, as demonstrated by the discussion with the Acting Chief Inspector of Mines at the committee's hearing.[57]

3.76 An alternative to the ineffective Queensland regulatory model is the model in NSW. The committee heard evidence from the CEO of NSW Coal Services regarding structural mechanisms in the NSW model which limit the risk of regulatory capture between the regulator and the regulated:

> Ms Flemming: Our model, of being owned by the employer group and the union group, with ministerial oversight, provides us with that. We need to do whatever the right thing is to do and we are not swayed by any of those parties. We deliver what the actual results or requirements are. So that is the beauty of having a model with all three parts to the puzzle—the union, the New South Wales Minerals Council representing the employers and the government oversight, as well.
>
> Senator CAMERON: The dust monitoring in Queensland is basically the responsibility of the individual mines. The individual mines have indicated that they subcontract that to outside experts. You do not have that problem in New South Wales—where the mine is paying the people who have oversight of the dust. That is not an issue there, is it?
>
> Ms Flemming: It is not an issue—no. We are obliged under order 40 and order 42 to carry out those services. When we are giving the dust results, they are just not going to the mine operator. As I presented earlier, they need to be shared with the industry inspectors, the CFMEU inspectors and, also, if a person has been in exceedance, the actual individual.

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56 Ms Rachel Cronin, Deputy Director-General, and Mr Russell Albury, Acting Chief Inspector Mines, Department of Natural Resources and Mines, Queensland Government, *Committee Hansard*, 23 March 2016, p. 49.

57 Ms Rachel Cronin, Deputy Director-General, and Mr Russell Albury, Acting Chief Inspector Mines, Department of Natural Resources and Mines, Queensland Government, *Committee Hansard*, 23 March 2016, pp. 54-55.

> Senator CAMERON: With the sharing of information through the collaborative model, if there was a problem in one mine site with a health and safety, or if there was some analysis done that a miner had a fault that could be a health and safety issue, you would spread that across industry in New South Wales?
>
> Ms Flemming: Yes. That is part of the Standing Dust Committee—those issues and emerging issues are discussed at that committee. Obviously, if there is any particular systemic issue, it would be alerted to all of the mines across the district.[58]

Committee view

3.77 The committee believes that the lack of awareness of the risk of regulatory capture by the most senior staff of the DNRM and the Acting Chief Inspector of Coal Mines is extremely problematic. Given the influence of the mining industry, particularly in Queensland, regulatory capture should be an issue of significant importance to the DNRM. The committee did not receive enough evidence to make a firm judgement on this matter, but expresses caution about that proximity and lack of oversight of these relationships.

3.78 The risk of regulatory capture of the NMAs is also particularly concerning given that they are the first point at which CWP would be detected. In the committee's view the risk of regulatory capture of the NMAs should be considered as important as the need for appropriate training and geographical proximity.

3.79 The committee is disappointed by the responses given by senior DNRM staff and the Acting Chief Inspector of Coal Mines at two of the committee's public hearings. While the committee hopes that Professor Sim's final report will deal with the issues of training and geographical location of NMAs, the committee strongly urges the DNRM and Queensland Health to conduct an independent risk assessment of the NMAs.

3.80 Further, the committee urges the DNRM to review its own policies and training on regulatory capture, with a view to identifying and managing the risks of regulatory capture, particularly in regards to the Mines Inspectorate within the DNRM. Chapter 4 includes the committee's recommendations on these issues.

Support for workers (current and former)

3.81 The committee found little evidence of support for current and former workers as well as workers diagnosed with CWP. While the Queensland Government's review of the CWHS provided a re-examination of x-rays,[59] and companies like Vale Australia have initiated their own reviews of current employees'

58 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 14.

59 The Hon Dr Anthony Lynham MP, Minister for Natural Resources and Mines, Queensland Government media release, 'Action plan revealed on coal miners' health issue', Media release, 14 January 2016.

x-rays,[60] there was no scheme for assisting former mine workers or those at other companies.

3.82 Mr Hiscock, a retired coal miner, appearing in a private capacity, told the committee of his experiences trying to get assistance to have his respiratory health assessed:

> …as an ex-coalmine worker…I found out about the black lung at the mines that I worked at. I contacted the mines and said, 'How do I go about getting tested?' and they wiped their hands of me. I am an ex union member—as in I am no longer a financial [member]—but, if it were not for the union. I rang the union as a last resort and said: 'Can you help me? I want to get tested for black lung. Three of my workers that I worked with have been diagnosed with black lung.' They are now taking care of my X-rays and having them tested… I will use an analogy. When a car gets a recall, they tell everybody about it; but since this black lung has turned up nobody has contacted ex-coalmine workers. I think the companies have a responsibility. I was at one company for 8½ years, and not one person told, 'There're cases of black lung at this mine; go and get yourself tested.' I have had to find this out for myself.
>
> Senator CAMERON: What mine was that?
>
> Mr Hiscock: Carborough Downs Coal, in the Bowen Basin.[61]

3.83 Even before CWP re-emerged in Australia, the CFMEU argued that there was no procedure which allowed for the monitoring of the health of former coal mine workers:

> There is no system in place for coal workers who have left the industry – to work in another industry, to retire or whatever – to be regularly monitored. It is known that CWP may take many years to manifest and is often asymptomatic in the early stages.
>
> The CFMEU understands that in the nuclear power industry in the United Kingdom, workers are monitored for the term of their natural life – once they have worked in the industry they are subject to lifetime monitoring.
>
> In Australia it is left up to individuals to seek further monitoring. This is thoroughly inadequate, especially in the context where radiologists do not have expertise in the diagnosis of CWP and, in the absence of obtaining a detailed work history, are unlikely to engage in the appropriate examination of X-rays or CT scans.[62]

3.84 The Thoracic Society, represented at the hearing by Dr Ryan Hoy and Associate Professor Deborah Yates, told the committee that they supported the idea of ongoing monitoring of workers' and former workers' health:

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60 Vale Australia, *Submission 200*, p. 3.

61 Mr Ian Hiscock, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 7.

62 CFMEU, *Submission 199*, pp. 15–16.

> I think that we would like that [ongoing monitoring after a worker leaves the mining industry] to happen. When we are talking about surveillance and a total scheme, that is what we intended. We would recommend the WHO guidelines, which recommend surveillance or at least keeping the data for 30 years after the last employment.[63]

3.85 The Thoracic Society's view was supported by the Royal Australian and New Zealand College of Radiologists (College of Radiologists). Dr Richard Slaughter, representing the Radiologists College told the committee that there was a need for ongoing monitoring to detect CWP:

> Yes, we have evidence that this disease is a progressive disease. So, just because you have stopped work that does not say that the disease is not going to progress. It does progress slowly, but it does progress.[64]

Mr Mark Nevin, Senior Executive Officer, and Dr Richard Slaughter, cardiovascular and thoracic radiologist, Royal Australian and New Zealand College of Radiologists appeared at the committee's hearing in Brisbane on 7 March 2016.

63 Associate Professor Deborah Yates, Convener, Occupational and Environmental Special Interest Group, Thoracic Society of Australia and New Zealand, *Committee Hansard*, 7 March 2016, p. 12.

64 Dr Richard Slaughter, cardiovascular and thoracic radiologist, representative, Royal Australian and New Zealand College of Radiologists, *Committee Hansard*, 7 March 2016, p. 23.

3.86 The NMAs who spoke to the committee along with representatives from Vale and Anglo American Coal, Dr Edward Foley and Dr Rob McCartney, all agreed that ongoing monitoring of coal mine workers' health should continue after the workers' employment finishes:

> Senator CAMERON: Okay. Finally, does anyone disagree with the need for ongoing monitoring? There is also the latency period—the period that people can make a workers compensation claim. Do you both agree that that should be extended?
>
> Dr McCartney: I think that is the main issue. People leave employment, and they have been exposed to hazards that can cause chronic disease or to carcinogenic hazards. To cease health surveillance at the point of ceasing employment does not make sense, and they definitely should be a followed up.[65]
>
> Senator McLUCAS: Just on that question of post-employment monitoring: how long, in the view of anyone on the panel, should that post-employment monitoring continue for?
>
> Dr Foley: Till death do us part.[66]

3.87 On the question of where responsibility and funding for ongoing monitoring should rest, a witness from the mining companies, Mr Andrew Vella, General Manager at the Vale Australia Carborough Downs Mine, told the committee that he thought some kind of industry-wide fund was required:

> Because of the transient nature of many coalmine workers, there needs to be an industry process where some fund is set up for all mine workers. As you said, I can have workers work at my mine at Carborough Downs or at Anglo; they can work at various mines. It cannot be up to one individual company to do that based on that. It needs to be an industry fund of some sort.[67]

3.88 Dr Foley, NMA for the Carborough Downs Mine, saw the issue as 'a very vexed question' and speculated that funding could come from either the mining industry or through Medicare.[68]

3.89 In the meantime, the re-emergence of CWP had caused current miners significant concern, particularly those in Queensland who were now questioning the efficacy of the CWHS. Mr Hiscock explained that since the reports of workers diagnosed with CWP, it had become clear to miners that the CWHS was not effective

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65 Dr Rob McCartney, Chief Medical Officer, Anglo American Coal, *Committee Hansard*, 7 March 2016, p. 37

66 Dr Edward Foley, Nominated Medical Advisor, Carborough Downs, Vale Australia, *Committee Hansard*, 7 March 2016, p. 37.

67 Mr Andrew Vella, General Manager, Carborough Downs Mine, Vale Australia, *Committee Hansard*, 7 March 2016, p. 37.

68 Dr Edward Foley, Nominated Medical Advisor, Carborough Downs, Vale Australia, *Committee Hansard*, 7 March 2016, p. 38.

in detecting the disease. Mr Hiscock told the committee that the miners he had spoken to had lost faith in the system:

> The boys that I spoke to have lost all faith in the Australian testing for black lung. They do not want them tested here in Australia. They say they have no faith in the system. It went to Dr Foley and over the years it has not been found. It is only thanks to the American class-B readers that now this has been brought to a head. Everybody now says, 'I want mine tested overseas,' because they have lost all faith. The guys are scared to speak up at the moment because of fear of being put on different crews or penalised, like where you go to day shift or you lose more money. So guys are ringing me now, going, 'Who do we turn to?'[69]

3.90 Professor Sim from Monash University, leading the review team examining the CWHS, also told the committee that he had seen a loss of confidence in the CWHS from coal miners:

> …there has been a loss of confidence in the medical screening program in Queensland. I have had emails from coalminers and their families expressing concern over the reliability of the information that they have been given in relation to their medicals. They are worried that they may have some respiratory disease related to their work as a coalminer which has not been detected as part of the medicals. I suppose we were keen to do this phase, focusing just on the medical, to try and improve the situation, give some confidence back to the scheme and give some reassurance to those workers that their medicals are going to be providing accurate health information back to them in the future.[70]

3.91 A particular concern for workers seeking assistance with screening and advice on how to get tested for CWP is that due to the disease not being seen in Australia for 30 years, few medical professionals have encountered it in practice. As explained in Chapter 2, CWP can mirror symptoms of other respiratory illnesses, and so can be difficult to diagnose.[71]

3.92 At the committee's hearing in Mackay, Queensland, Mr Stoddart, described a similarly difficult path to a diagnosis of CWP. Mr Stoddart had an x-ray and CAT scan in September 2015 after a pain in his right lung. From that first x-ray examination which was referred by his GP in Bundaberg, Mr Stoddart had a further CAT scan, a PET scan, multiple x-rays, two lung biopsies, and was seen by his specialists in Bundaberg, Brisbane, and Emerald. The biopsies showed coal dust on Mr Stoddart's lungs and the diagnosis of CWP was finally made.[72]

3.93 Mr Stoddart explained how he had received no contact from his employer, Anglo American Coal, regarding his diagnosis:

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69 Mr Ian Hiscock, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 7.

70 Professor Malcolm Sim, Director, Centre for Occupational and Environmental Health, Monash University Monash University, *Committee Hansard*, 7 March 2016, p. 70.

71 Thoracic Society and Lung Foundation Australia, *Submission 194*, p. 3.

72 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, pp 2–3.

> Senator CAMERON: Other than a phone call from the nominated medical adviser, you had no input from that medical adviser at all?
>
> Mr Stoddart: No.
>
> Senator CAMERON: Has he ever rung up to see how you are feeling?
>
> Mr Stoddart: No.
>
> Senator CAMERON: Do you remember when he rang you?
>
> Mr Stoddart: That was before Christmas.
>
> Senator CAMERON: You have heard nothing from Anglo's medical advisers since?
>
> Mr Stoddart: Not from their medical advisers, no.[73]

3.94 Mr Stoddart told the committee that to date he has paid the cost of his medical procedures and the cost of his travel to see specialists:

> Mr Stoddart: I have paid for all of this myself. All of my travelling, all of my CAT scans, PET scans, the specialists: it has all come out of my pocket. The union paid for Dr Edwards.
>
> Senator McLUCAS: Do you have any idea of the total cost that has come out of your pocket so far?
>
> Mr Stoddart: Thousands. Plus the travelling for six hours each way to Bundaberg and all the way down to Brisbane.
>
> Senator McLUCAS: It would be a lot of money, in my view.
>
> Mr Stoddart: Yes.
>
> Senator McLUCAS: Do you drive everywhere?
>
> Mr Stoddart: Yes.[74]

73 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 6.

74 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 3.

Mr Keith Stoddart and Mrs Danielle Stoddart appeared at the committee's hearing in Mackay on 8 March 2016.

3.95 Professor Cohen described the compensation program in the US:

> Prof Cohen: A miner has to qualify by not only having the disease, but having it of a severity such that they are totally disabled from coalmine employment. If they meet that criteria they are considered to have a totally disabling black lung disease and they are paid full medical benefits for life for any lung-related condition including medications, hospitalisations and lung transplantations. In addition, there are cash benefits—workers compensation benefits—payed to them based on their last salary. That benefit is paid for life. If they pass away, their surviving spouse and children also get a cash benefit. That money comes from that. It comes from the insurer for the coal operator if that operator is still in business. So the coal company is what is called the responsible operator—the last operator for whom the miner worked for at least one year. That company is responsible for paying those benefits. If that company is no longer in business—if it is out of business and no longer exists—there is a trust fund which is funded by a tax on coal that is paid by the industry for each tonne of coal that is mined. That trust fund pays that person if the company no longer exists.
>
> Senator CAMERON: So you would say that workers who do end up contracting this disease have significant support mechanisms?

> Prof. Cohen: They do. It is not an easy process to get this benefit but there is a very careful evaluation process that is fully funded by the government where each miner is entitled to a full medical evaluation. The company has the opportunity to manage the miner as well, and then those claims are adjudicated by the US Department of Labor's Division of Coal Mine Workers' Compensation. If they are ruled to have totally disabling black lung they are taken care of for the rest of their lives.[75]

Time-limits on compensation claims

3.96 Both Mr Verrall and Mr Stoddart are pursuing compensation claims on the grounds their illness has been caused by the coal dust present in their lungs. A factor affecting their claims will be the application of time limitations, which Mr Verrall, supported by his wife, told the committee had already set in for his case:

> Senator CAMERON: I am asking about compensation for your lungs.
>
> Mrs Verrall: We have a claim in now.
>
> Senator CAMERON: So the statute of limitations has not kicked in, has it?
>
> Mrs Verrall: Yes.
>
> Mr Verrall: Yes.
>
> Senator CAMERON: It has?
>
> Mrs Verrall: Yes. We only had six years from when he left [the coal mining industry] to claim, and the solicitors have found that he was diagnosed with it—we were not told—in 2002 or 2003, or around that time.
>
> Mr Verrall: And we were not told anything.[76]

75 Professor Robert Cohen, Consultant, Queensland Department of Natural Resources and Mines, *Committee Hansard*, 8 March 2016, p. 37.

76 Mr Percy Verrall, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 3.

Mr Ian Hiscock, Mr Percy Verrall, and Mrs Daphne Verrall appeared at the committee's hearing in Brisbane on 7 March 2016.

3.97 The CFMEU argued that the length of time for CWP to develop means that time limits to claims for compensation should be removed:

> There should be no time limits on the diagnosis of CWP or entitlement to workers' compensation resulting from it.
>
> It is already the case that some of the current cases of CWP are having their claim for workers' compensation rejected (or expect to have it rejected) because they are "out of time" to make a claim.
>
> Given that CWP is an incurable disease that may take many years to manifest, there is no good reason for there being time limits on the making of claims arising from a diagnosis of CWP.[77]

Committee view

3.98 The committee considers that in the absence of any formal scheme and any clear communication to miners and former miners, there are likely to be individuals who have CWP and are not, and who should be, receiving medical treatment.

3.99 Although there have been some attempts, including those made by Vale Australia, to alert current miners to the re-emergence of CWP, and while noting that

77 CFMEU, *Submission 199*, pp. 4-5.

work is underway to review the CWHS by the Sim review, this committee is disappointed that neither the Queensland government or coal mining companies in Queensland have made any attempts to encourage former miners to come forward and receive CWP screening.

3.100 The committee believes that providing access to appropriate screening and medical advice for both current and former miners should be a priority in any response to the re-emergence of CWP. Therefore the committee strongly urges the Queensland Government and the mining companies to be proactive in seeking out former mine workers who should be screened for CWP. Given the findings by the Thoracic Society that early detection can prevent workers from developing incurable and fatal PMF,[78] it is imperative that state governments and coal mining companies work collaboratively with the CFMEU to prevent this outcome.

Commonwealth Government action in mines health and safety

3.101 The committee is conscious that at present, screening processes, health schemes, and regulations around health and safety for coal miners differ from state to state. The comparison of the Queensland and NSW regulatory systems shows two quite different systems, which ultimately results in differential health outcomes for coal miners in those states.

3.102 The Thoracic Society and the Lung Foundation Australia reached a similar conclusion in their recommendations and propose the development of a nation-wide framework to protect workers from dust disease. At the committee's hearing, Dr Hoy, representing the Thoracic Society, explained this proposal further:

> We urge that…there is an undertaking for a national forum, with representation by physicians, workers, employers, the mining industry, trade unions and government agencies. A multidisciplinary forum would provide an opportunity to review the current state of knowledge regarding dust-induced pneumoconiosis, both nationally and internationally; review the adequacy of regulated exposure limits and associated control measures; structure a comprehensive, evidence-based worker-health policy which includes health surveillance strategies; and provide a means of training and certifying the competency of Australian specialists to be involved in surveillance programs and in the assessment and management of workers who potentially suffer from pneumoconiosis. The establishment of a national occupational dust disease advisory committee would periodically review the functioning of health practices and new evidence regarding occupational diseases in our country, and also oversee development of a national occupational lung disease strategy based on mandatory reporting.[79]

3.103 Dr Hoy also urged the committee to consider alongside a national forum that measures to protect workers from dangerous levels of coal dust exposure could be

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78 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, *Submission 194*, p. 3.

79 Dr Ryan Hoy, Convenor, Occupational Lung Disease Special Interest Group, Thoracic Society of Australia and New Zealand, *Committee Hansard*, 7 March 2016, p. 11.

expanded to include protection for workers against other types of hazardous dust, including silica:

> We urge that the committee consider the issues related to the protection of workers' respiratory health beyond the coal-mining sector in Queensland, and also consider other states and other pneumoconiosis, such as silicosis, as well as chronic bronchitis and emphysema, all of which occur with chronic exposure to coal dust.[80]

National Mine Safety Framework

3.104 An attempt to create a framework for a nationally consistent health and safety first began with the National Mine Safety Framework (NMSF), an initiative of the COAG Energy Council. Guided by the tripartite NMSF Steering Group from 2006 to 2013, which included workforce, industry, state and territory governments, and the federal government,[81] the NMSF consisted of seven strategies:

- Nationally consistent legislation
- Competency support
- Compliance support
- A nationally coordinated protocol on enforcement
- Consistent and reliable data collection and analysis
- Effective consultation mechanisms
- A collaborative approach to research.[82]

3.105 The NMSF Steering Group's recommendations on the implementation of the seven strategies were finalised in the National Mine Safety Framework Implementation Report, which was endorsed by COAG on 30 April 2009. The then Commonwealth Government committed $3.3 million over four years from 2009-10 to 2012-13 for the implementation of the NMSF.[83]

3.106 According to its website, Safe Work Australia worked with the NMSF to develop draft workplace health and safety mines regulations:

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80 Dr Ryan Hoy, Convenor, Occupational Lung Disease Special Interest Group, Thoracic Society of Australia and New Zealand, *Committee Hansard*, 7 March 2016, p. 11.

81 Department of Industry, Innovation and Science, Australian Government, *National Mine Safety Framework Steering Group*, website, www.industry.gov.au/resource/Mining/NationalMineSafetyFramework/Pages/NationalMineSafetyFrameworkSteeringGroup.aspx

82 Department of Industry, Innovation and Science, Australian Government, *National Mine Safety Framework*, website, www.industry.gov.au/resource/Mining/NationalMineSafetyFramework/Pages/default.aspx

83 Department of Industry, Innovation and Science, Australian Government, *National Mine Safety Framework*, website, www.industry.gov.au/resource/Mining/NationalMineSafetyFramework/Pages/default.aspx

> It was intended the model Mines Regulations would be included in the model WHS Regulations. However, when the draft model Mines Regulations were finalised, the necessary majority agreement of state and territory Ministers was not achieved. Therefore, the model Mines Regulations are not part of the model WHS Regulations.
>
> In September 2014, the draft model Mines Regulations were circulated to states and territories to consider them for implementation.[84]

3.107 In terms of progress since 2014, the Safe Work Australia notes that:

> South Australia and the Northern Territory have mining regulations based on the draft model Mines Regulations. NSW has mining regulations that include the draft model Mines Regulations and other additional requirements. Victoria, Queensland, Western Australia and Tasmania have retained their existing regulations for mine safety. The Australian Capital Territory regulates mine safety using the general provisions of their WHS legislation.[85]

3.108 The Safe Work Australia website provides a table outlining the workplace health and safety legislation used by each state and territory for regulating mining.[86] It should be noted that while NSW has based its legislation on the model regulations, Queensland maintains the Coal Mining Safety and Health Regulation 2001 which prescribes the CWHS and the current acceptable levels of respirable dust in Queensland.

3.109 Both Safe Work Australia and the Federal Department of Industry, Innovation and Science were invited to make a submission to the committee's inquiry. Safe Work Australia declined to make a submission, but has provided answers to written questions. The Department of Industry, Innovation and Science did not provide a submission.

Committee view

3.110 Although CWP cases have at this stage been confined to Queensland, it is entirely possible that cases will emerge in other Australian states. Therefore, the committee believes that without Commonwealth Government involvement, any response to the re-emergence of CWP will not be adequate.

3.111 The NMSF has been a valuable step towards developing national standards, but progress since 2014 has been limited as the level of engagement with the states has changed from the COAG Ministerial level to departmental officials. Under these circumstances there appears to be little prospect of the structural change which is

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84 Safe Work Australia, *Workplace Health and Safety Information: Mining*, website, www.safeworkaustralia.gov.au/sites/swa/whs-information/mining/pages/mining

85 Safe Work Australia, *Workplace Health and Safety Information: Mining*, website, www.safeworkaustralia.gov.au/sites/swa/whs-information/mining/pages/mining

86 Safe Work Australia, *Workplace Health and Safety Information: Mining*, website, www.safeworkaustralia.gov.au/sites/swa/whs-information/mining/pages/mining

needed to ensure that state regulations, particularly in Queensland, effectively protect workers' health and safety.

3.112 In terms of its overall conclusions, the committee believes that it is clear from the evidence that dust mitigation should share priority with protection of workers and health screening. The more coal dust mine workers are exposed to, the greater their chance of developing CWP. The longer that CWP goes undiagnosed, the greater the chance of it progressing to PMF. So it is clear that high quality dust controls and monitoring in the workplace, in tandem with best practice health monitoring outside the workplace, are essential to eradicating CWP in Australian coal workers.

3.113 In addition, the committee believes that all coal miners who contract CWP in Australian coal mines should have the benefit of free on-going, nationally consistent medical treatment.

3.114 The committee further believes that all coal miners who contract CWP in Australian coal miners should be able to lodge a claim for support without time-limit. In the event of the coal worker's death, families of those miners should be entitled to lodge the claim. The model for such a scheme could be based on the US model described by Professor Cohen. The committee makes recommendations on support and assistance for current and former coal miners in Chapter 4.

Chapter 4

Recommendations

4.1 The committee was pleased to receive many submissions with considered recommendations aimed at providing a comprehensive response to the re-emergence of CWP. The committee supports many of these recommendations, and in a number of cases, the committee has adopted the recommendations. This chapter provides a discussion of the committee's final recommendations, in light of the findings detailed in Chapter 3.

4.2 The committee's recommendations are grouped according to the importance and immediacy of the required actions:

- reduction in coal dust exposure and improved coal dust monitoring;
- more rigorous and regular medical screening for CWP; and
- more rigorous coal dust regulation.

4.3 The recommendations are grouped into immediate and medium-term actions. This reflects the committee's concern that immediate action can and must be taken to protect the health of coal mine workers in order halt the incidence of CWP.

Reduced coal dust exposure and improved coal dust monitoring

Immediate actions

4.4 CWP is a preventable disease. It is caused by exposure to hazardous levels of coal dust. For 30 years it has been thought that CWP was eradicated in Australia, but the eight cases diagnosed since mid-2015 have demonstrated that coal mine safety standards in Queensland, and possibly throughout Australia, are currently inadequate.

4.5 The committee believes that the health and safety of coal mine workers must be given the highest priority in any response to the re-emergence of CWP. The committee stresses the need for measures that immediately eliminate workers' exposure to harmful levels of coal dust.

4.6 The committee is concerned by evidence which demonstrates that coal miners' exposure to damaging levels of dust continues unabated, particularly where mining companies undertake longwall mining in order to increase productivity. The committee is also concerned that data on the incidence of mine workers' exposure to damaging levels of coal dust is unavailable because mines have failed to sufficiently monitor and report dust levels. The committee is equally concerned by mining companies’ ineffective dust control measures, and is greatly concerned by the ineffective regulation which has allowed these problems to continue without impediment.

4.7 As noted in Chapter 3, there is no nationally agreed or statutory coal dust exposure limit for coal mines. Without an upper national exposure limit for coal dust levels, any efforts to reduce coal dust or workers' exposure will be futile. Likewise without an acceptable industry standard for safe coal dust levels, any attempt to

mitigate the production of, and exposure to, coal dust will lack rigour, and will not afford adequate protection to coal workers across Australia. While there is no national body responsible for monitoring mine safety, Safe Work Australia has the capacity to develop an interim national standard. Such a national standard should then be incorporated into all mine safety legislation.

4.8 Until a national dust exposure standard has been agreed upon and implemented nationally, the currently harmful coal dust levels will continue to threaten the health of Australian coal miners. So, as the current Queensland Acting Chief Inspector of Mines, Mr Russell Albury, advised in his evidence to the committee, 'if a person is in an unsafe position then they have the right to and should withdraw from that position'.[1] The committee understands this to mean that if a Queensland coal worker becomes aware that the level of coal dust has reached or exceeded the Queensland regulated standard, they have the right to leave that area for a safe area, without any detriment to their pay or conditions.[2]

4.9 Lack of a national dust exposure level is indicative of the wider problem highlighted by the re-emergence of CWP; that is the lack of Commonwealth-led response to this issue. The committee believes that leadership by the Commonwealth Government is essential if Australia is to respond effectively to the re-emergence of CWP.

4.10 As discussed in Chapter 3, up until quite recently, the Commonwealth Government had actively participated in the development of health and safety standards for the mining sector through the NMSF. Implementation of the NMSF has been protracted and the Commonwealth Government's engagement with the states on implementing nationally consistent mine safety legislation eventually devolved from the COAG Ministerial level to departmental officials in 2013.

4.11 The committee considers that the re-emergence of CWP demands a strong response, and therefore recommends that the Commonwealth Government take the lead by establishing a National Coal Dust Monitoring Group.

Recommendation 1

4.12 The committee recommends that the Commonwealth Government establish a National Coal Dust Monitoring Group comprised of representatives from mining companies, state governments, technical experts and industry stakeholders such as mining unions, and that it urgently undertake an analysis as to the cause of the serious and widespread breaches of dust mitigation measures in the industry. Following the analysis, the National Coal Dust Monitoring Group should develop and implement a work program for effective coal dust mitigation measures aimed at the immediate reduction of coal mine workers' exposure to harmful levels of coal dust.

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1 Mr Russell Albury, Acting Chief Inspector of Mines, Queensland, *Committee Hansard*, 23 March 2016, p. 55.

2 See Mr Russell Albury, Acting Chief Inspector of Mines, Queensland, *Committee Hansard*, 23 March 2016, p. 55; and CFMEU, Submission 199.

4.13 The committee recommends that Safe Work Australia reviews current coal dust exposure levels and the current Australian and international academic and industry literature on the safest possible workable threshold for exposure to coal dust, with a view to developing a best practice national maximum exposure level. Safe Work Australia should report its findings to the National Coal Dust Monitoring Group, including whether the exposure level should be measured as a dust load of milligrams per tonne of coal cut, as distinct from time weighted averages for exposure.

4.14 The committee recommends that all Australian States and Territories adopt the national standard for coal dust exposure. The standard would then be subject to regular review by the National Coal Dust Monitoring Group, with the review being based on dust reading and disease data provided by the mine regulators in Australian jurisdictions.

4.15 The committee also recommends that in the short-term, coal mining companies adopt the lowest Australian level (2.5 mg/m^3) for coal dust exposure until a national standard has been agreed upon and implemented with a more rigorous, independent testing regime instigated as soon as practical in Queensland.

4.16 The committee recommends that until the national standard has been developed and adopted, state governments advise mining companies that coal workers should be withdrawn from areas subject to unsafe dust levels without penalty. In addition, the Queensland government and the Department of Natural Resources and Mines should instigate a process of formal warnings followed by naming in a public register for non-compliant companies, along with additional sanctions for non-compliance.

4.17 The committee recommends that mining companies operating in Queensland, in consultation with the Queensland Government, technical experts and industry stakeholders, urgently employ more effective coal dust mitigation measures to immediately reduce coal mine workers' current exposure to coal dust.

4.18 Evidence before the Committee makes clear that there is inconsistent and sometimes non-existent dust monitoring in Queensland coal mines. Without adequate coal dust monitoring systems, it is impossible to guarantee that workers are currently protected from exposure to hazardous levels of coal dust.

4.19 Evidence before the committee also indicates that the current Queensland regulatory system is ineffective in setting proper controls for dust monitoring because the mines operate in a largely self-regulated landscape as a result of previous government legislation. While the committee notes that changes to previous legislation can take time, immediate action must be taken by the Queensland Government to protect Queensland coal mine workers, and to require more thorough dust monitoring and control measures.

4.20 One of the issues highlighted by the CFMEU regarding dust monitoring was that the compliance and enforcement regime in Queensland is opaque. The CFMEU

advocated for improved transparency about mine safety including the identity of the mines inspected, dust testing results, and any compliance directions issued by the Chief Inspector of Coal Mines. This argument is supported by the committee's findings in Chapter 3 regarding the mine Directives issued by the Mines Inspectorate as part of its compliance regime.

4.21 University of Wollongong researchers Drs Plush, Aziz, and Ren argued in their 2011 research paper that the mining industry in Australia should have a database of best practice dust suppression techniques and management of dust sampling data.

4.22 The committee supports this suggestion, given that such a database would contribute towards ensuring the use of best practice techniques in coal mines Australia wide.

4.23 NSW Coal Services explained that under the NSW model, dust control is seen as 'the true prevention focus' for NSW Coal Services and their stakeholders.[3] Ms Lucy Flemming, CEO of NSW Coal Services told the committee that:

> The dust requirements in New South Wales are pursuant to the regulation which prescribes monitoring requirements for respirable dust, including specific locations and frequencies of that dust monitoring. It is actually very highly regulated. That regulation also directs us to be independent of the mine and we must be licensed by the New South Wales Department of Industry, Division of Resources and Energy. If we do measure any dust exceedances, there must be resampling and corrective action taken.[4]

4.24 Ms Flemming explained that when conducting dust monitoring, NSW Coal Services is empowered to travel into the mines to the coalface and provide immediate advice and corrective action on dust control:

> Getting down to their expertise, the occupational hygiene team have a very broad level of skills, incorporating actual hygienists, specialist laboratory technicians and coal industry experienced inspectors. We actually have ex-coalminers on staff being able to monitor dust and also provide educational assistance as they go. Being an effective licensed provider in doing dust monitoring is more than just being able to apply a personal dust monitor to a worker and being a NATA [National Association of Testing Authorities] accredited laboratory. Our inspectors actually go underground with the miners. They travel underground with the mining crew to conduct the actual dust monitoring and are able to observe any operational practices. They are able to audit control measures and provide on the spot guidance and education to the coalminers underground. If we see something that is not quite right, we can give on-the-spot advice and assistance to make that worker safer and stand out of the dust. We work collaboratively with the mine management to help monitor the effectiveness of improvement

3 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 10.

4 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 10.

> opportunities or any corrective actions that have been implemented to rectify any exceedances detected. [5]

4.25 Graph 1 provided to the committee in NSW Coal Services's submission is proof that NSW's regulatory scheme works.

4.26 By comparison, Graph 2, which is reported in the Queensland Commissioner for Mines Safety and Health, Queensland Mines Inspectorate Annual Performance Report 2014-15, is proof that the Queensland system has resulted in workers being exposed to hazardous levels of dust.

4.27 The committee considers that there cannot be effective monitoring and mitigation of coal dust without a focus on prevention of dust diseases such as CWP embedded in legislation. In NSW, the focus on prevention and mitigating of dust levels is a core part of the work of NSW Coal Services. The opposite is true of the Queensland regime, where, as noted in Chapter 2, monitoring arrangements are result of previous governments legislation, is the responsibility of the mining companies. The DNRM only provides light-touch oversight and reporting on compliance.

4.28 Given their role in providing a safe system of work for coal miners, the committee was disappointed that witnesses from the Queensland Resources Council, Vale Australia, Anglo American Coal, and the DNRM were unfamiliar with the conclusions of Drs Plush, Ren, and Aziz's 2011 research paper, chiefly, that dust controls in longwall mining could be greatly improved.

4.29 The committee also notes that Professor Sim's interim report, part of his review of the CWHS, emphasises the need for the prevention of coal dust exposure:

> The review team would like to emphasise medical surveillance of CMDLD [coal mine dust lung disease] is only useful for secondary prevention and identifying where there may have been excessive coal mine dust exposure. However, because of the long latency in the development of CMDLD, it is not a substitute for primary prevention, which should be in the form of coal mine dust monitoring and control.[6]

4.30 The committee urges the Queensland Government to review the NSW Coal Services model with a view to strengthening the protection for mine workers in the Queensland mining legislation.

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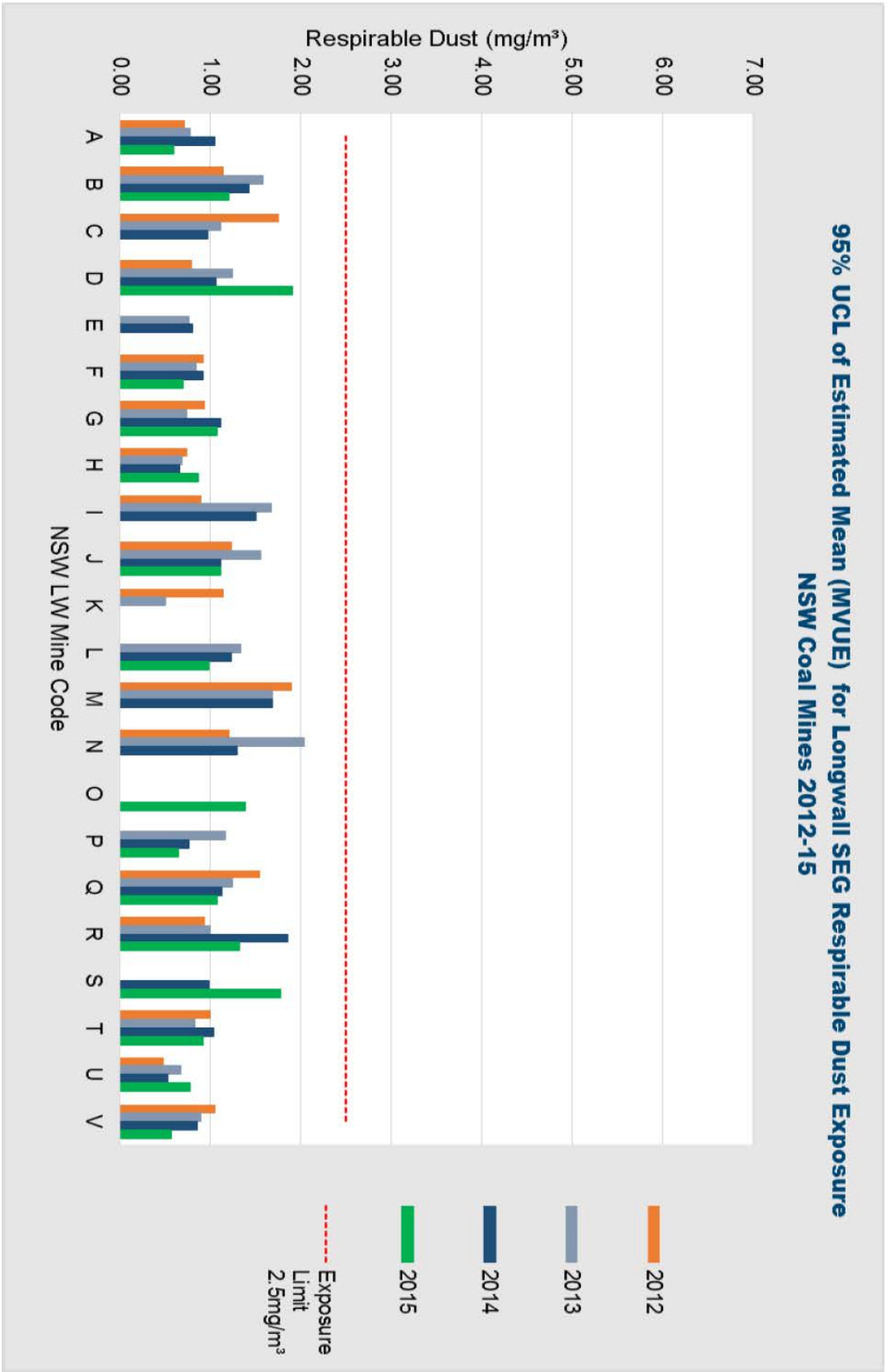
5 Ms Lucy Flemming, NSW, Coal Services, *Committee Hansard*, 8 March 2016, p. 10.

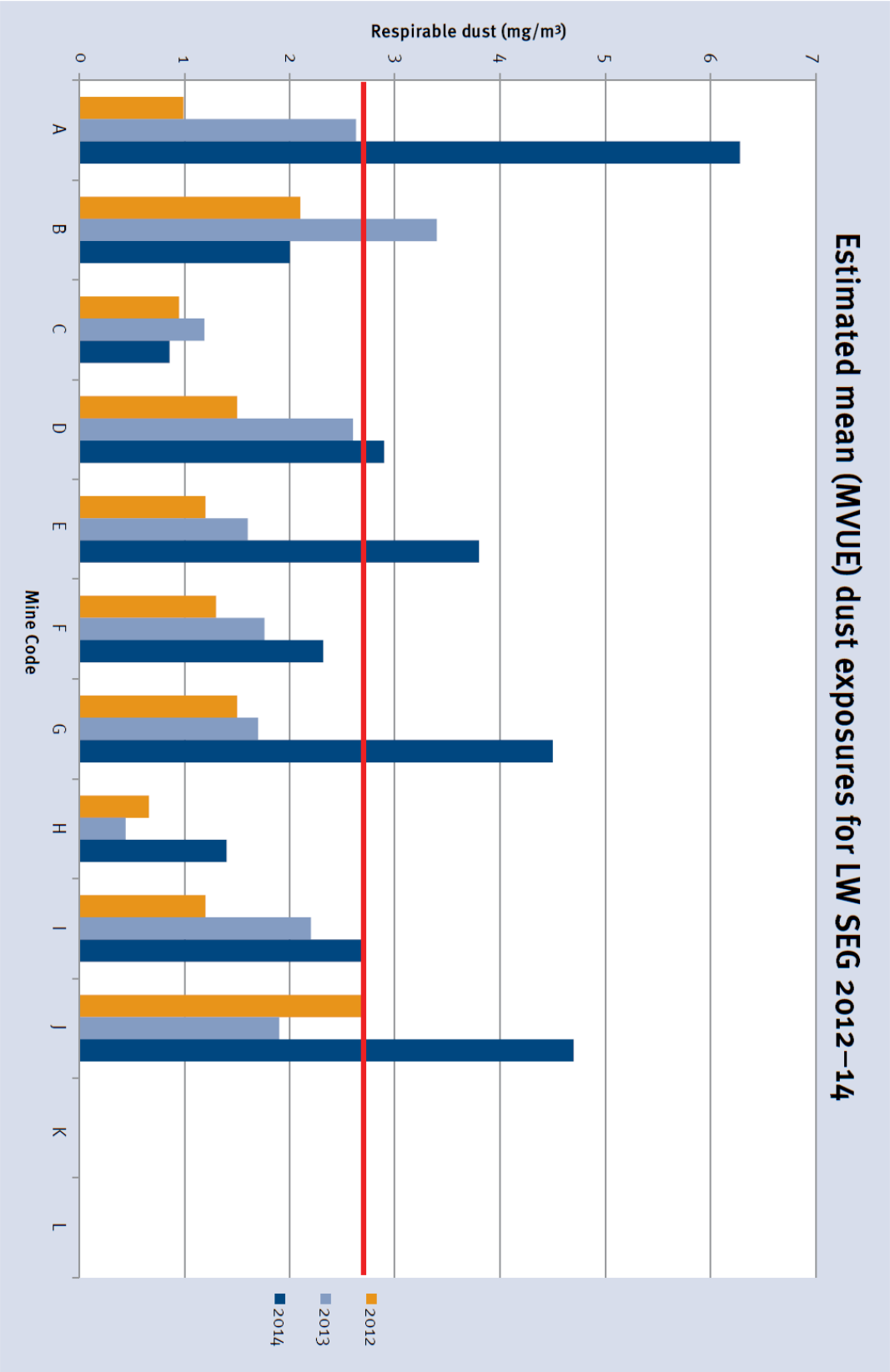
6 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, p. 6.

Graph 1—Coal dust concentration in NSW mines, 2012-15[7]



7 NSW Coal Services, *Submission 198*, p. 10.

Graph 2—Coal dust concentration levels in Queensland mines, 2012-2014[8]



8 Commissioner for Mine Safety and Health, *Queensland Mines Inspectorate Annual Performance Report 2014-15*, p. 3.

Recommendation 2

4.31 In light of emerging problems identified in the mining industry the committee is concerned that safety standards in all jurisdictions may not be providing a safe working environment for mine workers. The committee therefore recommends that the state governments identify best practice dust monitoring devices or similar best practice technology to be used in all Australian coal mines. The Queensland government should review the protections provided under the Coal Services New South Wales model and identify which aspects should be applied to any new legislative regime in Queensland.

4.32 The committee also recommends that the state governments require that dust monitoring be undertaken in a consistent and methodical way, which monitors dust levels in all relevant parts of the mine during both maintenance and production times.

4.33 The committee also recommends that state governments increase public transparency and accountability around dust monitoring. Dust monitoring data should be made publically available as a means of increasing accountability and restoring coal mine workers' confidence in the regulatory system.

Recommendation 3

4.34 The committee recommends that the proposed National Coal Dust Monitoring Group in consultation with mining companies, state governments, technical experts and industry stakeholders, and with the support of Safe Work Australia, create and manage a database of best practice dust suppression techniques and management of dust sampling data. This would enable coal mining companies to continuously improve their safe work practices and provide increased protection for coal miners.

4.35 The committee recommends that the establishment of the database, and its day to day running costs, be funded by the state government and the coal mining industry.

4.36 The committee recommends legislation requiring mining companies' input on, and compliance with the database must be instigated at both federal and state government levels.

4.37 The committee recommends that the National Coal Dust Monitoring Group, and state based bodies, also facilitate cross-jurisdiction information sharing about coal dust mitigation measures.

Medium-term actions

4.38 Evidence received by the committee points to the superiority of the NSW regulatory system, which includes a Standing Dust Committee which is a forum for participation of all concerned parties in dust mitigation: industry stakeholders, unions, and government.

4.39 A standing dust committee, or a similar independent body, would allow Queensland stakeholders to work together to implement best practice dust controls.

Recommendation 4

4.40 The committee recommends that, in addition to the National Coal Dust Monitoring Group, the Queensland Government, in consultation with mining companies, technical experts, unions, and industry stakeholders, form a standing dust committee or similar forum, in the near to medium term, to achieve best practice dust control in Queensland coal mines and to address the concerns raised about the current mitigation and monitoring issues.

More thorough medical screening for CWP

Immediate actions

4.41 Evidence from Mr Keith Stoddart, who has been diagnosed with CWP was a damning indictment on the inability of the Queensland CWHS to provide adequate screening, and to be a means of support for miners diagnosed with CWP:

> I have paid for all of this myself. All of my travelling, all of my CAT scans, PET scans, the specialists; it has all come out of my pocket.[9]

4.42 The committee believes action should be taken immediately to provide support for former coal mine workers like Mr Stoddart, who have been diagnosed with CWP, and to arrange for medical screening for current coal mine workers.

4.43 The committee is also concerned by evidence from miners that they have lost confidence in the CWHS, and that they believed that their x-rays were not being assessed under the CWHS.

4.44 While the focus of these recommendations at present time is confined to Queensland, CWP may yet reveal itself to be a national problem. Disappointingly, it appears there is no assistance currently available for former coal miners who wish to be tested for CWP. The committee heard that many former miners do not even realise that they should be tested.

4.45 In undertaking this inquiry, the committee has taken a federal perspective on the issue of the re-emergence of CWP. The committee believes that this issue is not limited to Queensland alone, and that without national best practice standards of dust control and monitoring, and without a national emphasis on prevention as noted above, there will be more reported cases of CWP in Australia.

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9 Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 3.

4.46 The committee is of the view that a national focus is needed to establish a mechanism by which former workers seeking medical advice, and those workers diagnosed with CWP, can receive assistance.

4.47 CWP is a disease with no cure. Its effects on the human respiratory system are debilitating. Mrs Danielle Stoddart told the committee that she had seen her husband, Mr Keith Stoddart, become a shadow of his former self as CWP took hold of his lungs:

> I have seen Keith go, every day actually, as soon as he exerts himself—he cannot even manage mowing a lawn. He does not have the energy or the strength to do things that he used to be able to do. Once, he used to wake up in the morning and his breathing would be fine for a couple of hours. Now it is starting to get that way that as soon as he gets up he is exhausted. He is starting to wake up through the night with pains in his chest. He is very angry because of what is happening to him, and I find it hard to understand. So, therefore, we have had a few words trying to come to grips with what is happening to him and what kind of a life he is going to have. He needs quality of life. This is what I want for him. You will just to excuse me for a minute. I just cannot—[10]

4.48 Mr Percy Verrall described a similar situation:

> It has buggered my life. I can walk for only about three houses and I am buggered and have to go back. My lounge chair lies down like a bed and I go back and lie down on that. It takes me over an hour to start feeling good again. That is how bad I get. Like right now, even when I am talking too long I lose my breath.[11]

4.49 Establishing a nationally consistent scheme to help former coal mine workers will require the cooperation of government, industry, unions, and the health system. Ultimately however, the committee is persuaded by the description of the US model provided by Professor Robert Cohen and discussed in Chapter 3 as the best compensation model. Under this scheme, compensation for workers who contract CWP is the responsibility of the insurer of the mining company.

4.50 As noted in Chapter 3, the question of funding any form of support or on-going screening scheme for former mine workers was discussed at the committee's public hearings. The committee agrees with the comments made by Mr Andrew Vella, General Manager at the Vale Australia Carborough Downs Mine, when he described the need for an industry-wide compensation fund.[12]

4.51 Such a fund would need to be free from the current problems associated with workers' access to compensation, including time limitations. A number of witnesses

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10 Mrs Danielle Stoddart, wife of Mr Keith Stoddart, coal miner, private capacity, *Committee Hansard*, 8 March 2016, p. 5.

11 Mr Percy Verrall, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 7.

12 Mr Andrew Vella, General Manager, Carborough Downs Mine, Vale Australia, *Committee Hansard*, 7 March 2016, p. 37.

agreed that the period over which CWP develops means that time-limits on access to compensation deny sufferers a fair outcome. Dr Richard Slaughter, from the College of Radiologists, told the committee that 'most patients who have pneumoconiosis had at least 10 years of [dust] exposure.'[13] Dr Slaughter could see no reason why a limitation should be imposed on workers who develop CWP and seek compensation:

> We recognise that this disease is caused by dust exposure, and that is an ongoing process that can worsen after the exposure.[14]

4.52 Dr Rob McCartney, Chief Medical Officer, Anglo American Coal, agreed:

> Senator CAMERON: Okay. Finally, does anyone disagree with the need for ongoing monitoring? There is also the latency period—the period that people can make a workers compensation claim. Do you both agree that that should be extended?
>
> Dr McCartney: I think that is the main issue. People leave employment, and they have been exposed to hazards that can cause chronic disease or to carcinogenic hazards. To cease health surveillance at the point of ceasing employment does not make sense, and they definitely should be a followed up.
>
> Senator CAMERON: Surely the main issue is that people are dying?
>
> Dr McCartney: Correct. Also, in relation to the issue of compensation: just because one has stopped working, one is not excluded from compensation. You can still make compensation claims well after you have ceased employment, and should be allowed to. That does happen in this sector as well, I believe.[15]

4.53 Ms Flemming, CEO of NSW Coal Services told the committee that:

> The most important thing for an injured worker is their health—to make sure that they are able to get the necessary treatment required to, in the best case scenario, return to work and return to a relatively normal way of life. This is a very serious disease. Some of those things might not be possible. So it is assisting the worker as much as possible more from a medical perspective, but also, obviously, a financial perspective. If things have been incurred that should have been covered from a workers compensation system, then they would be paid for.[16]

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13 Dr Richard Slaughter, cardiovascular and thoracic radiologist, representative, Royal Australian and New Zealand College of Radiologists, *Committee Hansard*, 7 March 2016, p. 24.

14 Dr Richard Slaughter, cardiovascular and thoracic radiologist, representative, Royal Australian and New Zealand College of Radiologists, *Committee Hansard*, 7 March 2016, p. 24.

15 Dr Rob McCartney, Chief Medical Officer, Anglo American Coal, *Committee Hansard*, 7 March 2016, p. 37.

16 Ms Lucy Flemming, CEO, NSW Coal Services, *Committee Hansard*, 8 March 2016, p. 13.

Recommendation 5

4.54 The committee recommends that the mining industry, through its representative bodies, must create an industry-wide fund to provide compensation for coal mine workers who contract CWP. The fund's aims should include identification of, and communications with former mine workers who may require CWP screening and compensation for travel, medical, and other costs associated with undergoing CWP screening and diagnosis. Workers' access to compensation from this fund should not be time-limited in any way.

4.55 The committee also recommends that state governments provide a means for former and current miners to seek assistance which is independent of their employers and Nominated Medical Advisors such as a hotline or helpdesk, to be funded by the industry and independently administered by an organisation such as the Lung Foundation Australia.

Medium term actions

4.56 From the evidence received, it is clear that the CWHS is urgently in need of improvement. In the medium-term, an overhaul of the CWHS will be the only way that Queensland miners' confidence in the screening process can be restored.

4.57 The committee understands that the Queensland Government will examine changes to the CWHS once the Sim review is complete. Professor Sim provided his report to the Queensland Government on 31 March 2016 and the report was released publicly on 8 April 2016.

4.58 The Thoracic Society made a number of recommendations in relation to CWP screening practices, and the committee endorses these recommendations and strongly encourages the Queensland Government to have regard to these recommendations.[17]

4.59 The committee believes that the National Coal Dust Monitoring Group would be best placed to set standards for screening.

Better coal dust regulation

Immediate actions

4.60 As noted above, the committee believes that strong regulation, with a focus on independent checks and balances, is vital to creating a healthier and safer work environment for coal miners. Evidence the committee received about the NSW Coal Services system supported this conclusion.

4.61 Under the NSW system, the independent organisation NSW Coal Services is jointly owned by the mining industry and the CFMEU. It has carriage of dust monitoring, compliance, and enforcement, and provides medical screening services.

17 Thoracic Society of Australia and New Zealand and Lung Foundation Australia, Submission 194, pp. 5-6.

4.62 In comparison, the Queensland system puts the onus on mining companies to properly conduct dust monitoring. The Mines Inspectorate monitors companies' compliance with dust levels and issues directives for non-compliance. The CWHS hinges upon the Nominated Medical Advisors, who are both chosen and renumerated by the mining companies.

4.63 The committee fears that without action now, the high levels of hazardous dust in Queensland mines is potentially setting up current and future coal mine workers to develop CWP in the future.

4.64 The committee believes that the stark difference between the Queensland and NSW coal dust levels indicates that properly regulated dust mitigation and dust monitoring have a huge impact on the dust levels to which coal mine workers are exposed.

4.65 Evidence before the committee clearly indicates that without independent, high quality dust monitoring and effective dust controls, dust exposure can spike to dangerous levels. Higher levels of hazardous dust are clearly linked to the development of CWP; a point on which all witnesses and submitters were in agreement.

4.66 However, the committee considers that there cannot be effective monitoring and mitigation without a focus on prevention of dust diseases embedded in legislation. In NSW, this focus on prevention and mitigating dust levels is a core part of the work of NSW Coal Services. The opposite is true in Queensland, where, as noted in Chapter 2, monitoring is the responsibility of the mining companies and the DNRM reports on compliance.

4.67 While the committee supports the Queensland Government's response to the re-emergence of CWP, and its five point action plan, the committee urges the Queensland Government to look to the NSW Coal Services model for ways in which the Queensland regulations can be improved.

Recommendation 6

4.68 The committee recommends that the Queensland Government gives the highest priority to its review of coal dust regulations as part of its five point action plan. To achieve this the committee recommends that the Queensland Government take note of the concerns expressed by the committee in relation to the mine Directives, particularly the enforcement of these Directives and the need for the information contained within the Directives and rates of compliance to be able to be audited and reported on. Directives issued by government departments should use standardised language and have a rigorous process for auditing, compliance, and data collection.

4.69 The committee is of the view that the Queensland coal mine regulatory system is at a high risk of regulatory capture. This conclusion was borne out when it became clear on repeated questioning that Queensland Government officials could not provide evidence of what measures were in place to limit the possibility of regulatory capture.

4.70 The committee urges the Queensland Government to note, as part of its review, the evidence provided by the Acting Chief Inspector of Mines and the Deputy Director-General, Minerals and Energy Resources, which demonstrated that the relationship between the regulator and the regulated is very close, and subject to a perceived, if not real, conflict of interest.[18]

4.71 An important part of the response to the re-emergence of CWP will be restoring confidence in the regulatory protections for coal mine workers. The committee therefore urges the Queensland Government to do all it can to ensure the independence of its regulatory regime and officials.

Recommendation 7

4.72 The committee recommends that the Queensland Government direct relevant officials to undertake independent, high level, training on avoiding regulatory capture.

4.73 The committee recommends that in developing this training the Queensland Government have regard to the Better Practice Guides developed by the Australian National Audit Office in relation to regulatory capture.

4.74 As outlined in Chapter 3, the committee believes that the NMAs are particularly vulnerable to regulatory capture. Further, the committee agrees with the points made by Professor Sim at the committee's public hearing on 7 March 2016, that the NMAs should have special training for their role, and be geographically proximate to the mine they serve.

4.75 Professor Sim's interim report was publicly released on 8 April 2016. The report's findings were the same as the evidence Professor Sim had provided to the committee at its hearing, and the report made the following recommendations in relation to NMAs:

- Appointment of NMAs to assess the respiratory health of those miners at risk of dust exposure should become a QDNRM function, but consideration will need to be given to the minimum numbers and geographical spread to ensure that miners, including those who are fly-in-fly-out, have easy access to an NMA.

18 Ms Rachel Cronin, Deputy Director-General, and Mr Russell Albury, Acting Chief Inspector Mines, Department of Natural Resources and Mines, Queensland Government, Queensland, *Committee Hansard*, 23 March 2016, p.48, p. 49 and p. 56.

- Minimum requirements to be met by NMAs in terms of medical training and experience to undertake the respiratory component of the coal mine health assessment should be established.
- A formal induction training and ongoing audit program for these NMAs should be developed. The training should be completed by NMAs prior to undertaking respiratory assessments in the coal mine workers' health assessment scheme.
- This training program should include:
    1. Information about the primary purpose of the respiratory component of the health assessment scheme, in particular health protection, prevention and early detection of CMDLD [coal mine dust lung disease].
    2. Information about the spectrum of diseases included in CMDLD.
    3. How to conduct and interpret quality spirometry.
    4. An introduction to the ILO CXR [chest x-rays] classification of pneumoconiosis.
    5. Information about coal dust and silica exposure associated with the coal mining industry in Queensland.
    6. A visit to a mine(s), with a focus on inspecting those jobs "at risk of dust exposure".
    7. Training in how to complete each section of the respiratory component of the health assessment form and identify abnormalities.
    8. Training in the use of clinical guidelines for follow-up and appropriate referral in cases where respiratory abnormalities are found.
- An experienced Medical Officer should be responsible for the ongoing training and audit of those NMAs undertaking respiratory assessments.
- NMA training and auditing should utilise effective methods of modern communication, such as webinars, where geographical constraints make travel difficult.[19]

4.76 The committee supports the recommendations made in Professor Sim's interim report and urges the Queensland Government to implementing these recommendations promptly.

4.77 The committee is sceptical of the role of the NMAs, particularly given the risk of regulatory capture by mining companies. However, the committee did not receive

19 Centre for Occupational and Environmental Health, Monash University, and School of Public Health, University of Illinois at Chicago, *Interim Finding: Review of Respiratory Component of the Coal Mine Workers' Health Scheme*, 31 March 2016, p. 10.

enough evidence to enable a clear determination on the continuation of the NMAs role. The committee believes that the NMA role should be part of consideration in the National Coal Dust Monitoring Group recommended by the committee. At a minimum the committee believes that the positions of NMAs must be both independent and statutory-based, with selections approved by specialist advice from organisations such as the Thoracic Society or the Lung Foundation Australia.

Recommendation 8

4.78 The committee recommends that in the short term the Queensland Government mitigate the risk of regulatory capture of the Nominated Medical Advisors by making the role an independent statutory position, selected through a rigorous process conducted by Queensland Health in consultation with the Department of Natural Resources and Mines and specialists groups such as the Thoracic Society and the Lung Foundation.

Medium-term actions

4.79 As noted with regard to coal dust exposure and medical screening, the committee received a number of recommendations which were based on a national approach. In particular, the committee supports the recommendations of the Thoracic Society and Lung Foundation Australia which could form the basis for a national best practice health monitoring model encompassing:

- a nation-wide action to protect workers from dust disease by enhancement of the current framework for regulation of dust management and surveillance of exposed workers for respiratory disease;
- publication of Australian jurisdictions' current screening practices;
- mandatory participation of coal miners and workers exposed to respirable free silica in a regular screening program;
- establishment and mandatory reporting of pneumoconiosis cases of all types (including CWP) to a national registry;
- referral for all coal miners presenting with respiratory symptoms for assessment to a respiratory specialist physician, ideally with qualifications in occupational lung disease;
- ongoing discussions in relation to development of the optimal construct of a screening program, including radiological interpretation and respiratory function testing suited to the Australian context;
- development of GP training materials to identify and refer coal miners, including retired workers with respiratory disease, to a respiratory specialist; and
- ongoing screening for miners who have since retired.

Concluding remarks

4.80 As the committee's inquiry has progressed, the committee has been horrified that a disease thought to be eradicated in Australia for over 30 years has re-emerged. The committee believes that all stakeholders must work together to halt the re-emergence of CWP. The recommendations in this report should form the base-line of immediate and medium term Commonwealth and state measures to ensure that CWP can be prevented. Failure to take up these recommendations will fail Australian coal workers. In this regard, the committee echoes the wise words of Mr Percy Verrall at the committee's hearing on 7 March 2016 in Brisbane:

> I do not want to see any of the younger generation coming in, in that condition. It has to be fixed up so they do not get black lungs like all the other miners. They could finish up just the same way as me or be walking around with an oxygen bottle hooked up to them all the time.[20]

Senator Deborah O'Neill

Chair

20 Mr Percy Verrall, retired coal miner, private capacity, *Committee Hansard*, 7 March 2016, p. 3.

Appendix 1

Witnesses who appeared before the committee[1]

The committee held two full day hearings and one part day hearing focusing specifically on the issue of black lung on 7 and 8 March and 23 March 2016.

Monday, 7 March 2016 – Brisbane

Mr Percy Verrall, Private capacity

Mrs Daphne Verrall, Private capacity

Mr Ian Hiscock, Private capacity

Thoracic Society of Australia and New Zealand

Associate Professor Deborah Yates, Occupational and Environmental Special Interest Group Convener

Dr Ryan Hoy, Convenor, Occupational Lung Disease, Special Interest Group

Royal Australian and New Zealand College of Radiologists

Dr Richard Slaughter, Representative

Mr Mark Nevin, Senior Executive Officer

Mining panel

Vale Australia

Mr Andrew Vella, General Manager, Operations and SSE Carborough Downs

Dr Edward Foley, Nominated Medical Advisor - Carborough Downs

1 The hearings and witnesses listed in this appendix relate to the committee's hearing on 7 and 8 March and 23 March 2016 which focussed on black lung and related issues. A full list of the committee's hearings and witnesses is at the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Public_Hearings.

Anglo American Coal

Mr Mike Oswell, Head of Safety and Sustainability

Dr Rob McCartney, Resile Occupational and Environmental Physician, Coal Australia Chief Medical Officer

Ms Liz Sanderson, Occupational Health Specialist

Mr Dan Proffitt, Mine Operations Manager, Grasstree Mine

CFMEU Mining and Energy Division

Mr Andrew Vickers, General Secretary

Mr Steve Smyth, District President

Mr Jason Hill, Industry safety and health Representative

Queensland Resources Council

Mr Michael Roche, Chief Executive

Ms Judy Bertram, Director, Community, Skills and Safety Policy

Ms Liz Sanderson, Technical Expert – Industry

Mr Nev McAlary, Technical Expert – Industry

Review of Coal Miners' Health Scheme

Professor David Cliff, Independent Chair

Monash University

Professor Malcolm Sim, Director, Centre for Occupational and Environmental Health

Associate Professor Deborah Glass

Department of Natural Resources and Mines

Mr James Purtill, Director-General

Queensland Health

Dr Jeannette Young, Chief Health Officer and Deputy Director-General, Prevention Division

Ms Sophie Dwyer, Executive Director, Health Protection Branch, Prevention Division

Tuesday, 8 March 2016 – Mackay

Mr Keith Stoddart, Private capacity
Mrs Danielle Stoddart, Private capacity

NSW Coal Services
Ms Lucy Flemming, Managing Director/Chief Executive Officer
Mr Mark O'Neill, General Manager, Coal Services Health
Mr Matthew Fellowes, General Manager, Mines Rescue and Regulation and Compliance

Mackay Hospital and Health Service
Adjunct Associate Professor David Farlow

Mr Chris Carter, Private capacity

Review of Coal Miners' Health Scheme
Professor Robert Cohen, Review Team Expertise

Wednesday, 23 March 2016 – Campbelltown

University of Wollongong
Dr Brian Plush, Particulate Matter Scientist
Dr Ting Ren, Associate Professor in Mining Engineering

Department of Natural Resources and Mines
Ms Rachel Cronin, Deputy Director-General Minerals and Energy Resources
Mr Russell Albury, Acting Chief Inspector of Coal Mines

Appendix 2

Submissions received by the committee in relation to black lung[1]

69 Queensland Government (supplementary submission)

193 Queensland Nurses' Union

194 Thoracic Society of Australia and New Zealand and Lung Foundation Australia

195 Queensland Resources Council

196 Royal Australian and New Zealand College of Radiologists

197 Monash University

198 Coal Services

199 CFMEU

200 Vale

201 Dust to Dust: Make Black Lung History campaign standard submissions

202 Dust to Dust: Make Black Lung History campaign non-standard submissions

203 Australian Institute of Occupational Hygienists Inc.

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1 The submissions listed in this appendix relate to the committee's inquiry into the issue of black lung and related matters. A full list of submissions received by the committee is available on the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Submissions.

Appendix 3

Additional information and answers to questions on notice[1]

Tabled Documents

No.101 Tabled by Mr Michael Roche, Chief Executive, Queensland Resources Council at a public hearing in Brisbane on 7 March 2016 - Media release by Minister for State Development and Minister for Natural Resources and Mines, The Honourable Anthony Lynham

Answers to Questions on Notice

No. 68 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Thoracic Society of Australia & New Zealand

No. 69 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Associate Professor Deborah Glass, Monash University

No. 70 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Mr James Purtill, Director-General, Queensland Department of Natural Resources and Mines

No. 71 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Royal Australian and New Zealand College of Radiologists

No. 72 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Vale

No. 74 Answers to questions on notice - public hearing 23 March 2016, Campbelltown - Dr Ting Ren, University of Wollongong

No. 75 Answers to questions on notice - public hearing 7 March 2016, Brisbane - Safe Work Australia

No. 76 Answers to questions on notice - public hearing 23 March 2016, Campbelltown – Campbelltown City Council

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1 The documents listed in this appendix relate to the committee's inquiry into the re-emergence of black lung disease. A full list of documents is available at the committee's website: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Additional_Documents.

Appendix 4

Previous interim reports[1]

Health Committee's first interim report

The committee's first interim report was tabled on 2 December 2014.[2] That report detailed the committee's findings and conclusions at that time, focussing on issues raised during the committee's hearings and through submissions. Key areas of focus in the first report were:

- the government's proposed patient co-payments, cuts to hospital funding and the abolition of Australian National Preventative Health Agency;
- the government's plan to close the 61 Medicare Locals and replace them with 30 Primary Health Networks; and
- the merger of the Organ and Tissue Authority and the National Blood Authority.

Second interim report

The committee's second interim report was tabled on 24 June 2015.[3] That report encompassed the committee's findings regarding the government's primary healthcare and general practice policies. In particular the report was a record of the government's frequent changes of policy since the 2014-15 Budget. The second interim report focused specifically on:

- the vital importance of general practice and primary healthcare and the threat posed by the government's numerous policy changes since the 2014-15 Budget;
- the responses of GPs and the primary healthcare sector to the government's various primary care policies; and
- an examination of the 2015-16 Budget's health measures and commentary from stakeholders.

Third interim report

The committee's third interim report was tabled on 17 September 2015.[4] That report examined the government's proposed privatisation of Australian Hearing and the National Acoustics Laboratories. The proposal was originally recommended by the National Commission of Audit in February 2014.[5] In the 2014-15 Budget the government allocated

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1 The previous interim reports of the Senate Select Committee on Health can be accessed via the committee's website: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health.

2 *Journals of the Senate*, 2 December 2014, p. 1948. The report can be accessed at: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/First_Interim_Report.

3 *Journals of the Senate*, 24 June 2015, p. 2809. The report can be accessed at: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Second_Interim_Report.

4 *Journals of the Senate*, 17 September 2015, p. 3158. The report can be accessed at: www.aph.gov.au/Parliamentary_Business/Committees/Senate/Health/Health/Third_Interim_Report.

5 National Commission of Audit, *Phase One Report*, paragraph 10.1 and recommendation 57.

funding for a scoping study for the proposed privatisation of Australian Hearing.[6] The 2015-16 Budget included the postponement of a decision on the scoping study, pending further consultation.[7]

The third interim report outlined the evidence taken at the 10 July 2015 public hearing and the related written submissions made by witnesses. It also examined:

- the impacts privatisation would have on users of the Australian Hearing services; and
- the National Disability Insurance Scheme (NDIS) and Australian Hearing.

Fourth interim report

The committee's fourth interim report was tabled on 8 October 2015. That report examined mental health issues in the context of the National Mental Health Commission's *National Review of Mental Health Programmes and Services Report* and the pending government response. The report included six chapters:

- background—setting the broad context of mental health policy in Australia (Chapter 2);
- Chapter 3 examined the high-level findings of the National Mental Health Commission's (the Commission) *National Review of Mental Health Programmes and Services Report*
- the Government reaction to the Commission's review was minimal and cautious, which was a disappointment to many in the mental health sector (Chapter 4);
- Chapters 5 and 6 described the issues witnesses and submitters raised with the committee throughout its inquiry; and
- a key issue of concern for stakeholders was ensuring the smooth transition of Government mental health programmes into the NDIS (Chapter 7).

6 Commonwealth of Australia 2014-15 Budget, Budget Paper No. 2, Budget Measure: Smaller Government—scoping studies for four operations of government, May 2014, p. 117.

7 Senator the Hon Mathias Cormann, Minister for Finance, media release, 'Further Consultation on Future Ownership Options for Australian Hearing', 8 May 2015.

Appendix 5

Witness	Question	Hansard reference
University of Wollongong	**Senator CAMERON:** Do you have any specific recommendations on how you should improve regulation on dust exposure? **Dr Ren:** We do. There are very specific recommendation on some of the practices, from the short term to the medium term to the longer term, including monitoring practices. So we do have lots of so-called good practices. **Senator CAMERON:** Could you give us those recommendations in a concise form that might be practical for implementation? **Dr Ren:** I would be happy to draw up some dot points based on some of my experience and see how some of the practice can be used in the industry. I am more than happy to do that. **Senator CAMERON:** Thanks very much.	p. 44

Prepared by:

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TABLE OF CONTENT

MAJOR DUST SOURCES ON LONGWALLS

- **Outbye beltroad (and travel road):** Dusts can be generated by outbye conveyor belt systems, vehicle movements and roadway repair or maintenance work. These dust clouds can be carried by intake ventilation to inbye working places.
- **BSL crusher/transfer point:** dust pickups by incoming ventilation as the BSL sections/transfer points were not properly covered or the dust suppression systems in place (if any) were not working effectively.
- **Face AFC:** Coals falling onto the face AFC from shearer cutting or face spalling along the LW face.
- **L/W Shearer Cutting and Spalling:** A major source of dust on LW. Shearer cutting also induces coal spalling/sloughing ahead of the cutting drum which in turn can produce large amount of dust.
- **Face spalling/fracturing:** Coal spalling and fracturing of coal seam, particularly for high (thick) seams, could contribute to significant dust generation along the face as the coal falls on the moving AFC. Face spalling is linked to in-seam gas drainage, the geo-stress direction, as well as the chock support/alignment.
- **Chock movements:** Significant amount of fractured/crushed coals/roof chippings can be generated during chocking and these (dusts) will drop off during chock movements into the airflow traveling along the face, contaminating anything on its way.
- **Goaf falls and chock movements:** dusts can be brought back to longwall face during longwall goaf caving and high goaf ventilation loss from MG entering the goaf.

CONTROLS FOR DUST MITIGATION

Outbye beltroad (and travel road):

- Belt maintenance - Missing rollers, belt slippage, and worn belts can cause belt misalignment and create spillage
- Wetting of the coal product - rewetting of the coal may be necessary along the belt
- Regular wetting of the inbye travel road (at least the section close to the longwall) and the (last) open c/t linking the beltroad
- Full cone spray on top surface of non-conveying side belt followed by material to wipe belt and remove dust fines
- Belt cleaning –

    - The top and bottom of the belt should be cleaned with spring-loaded or counter-weight scrapers
    - Slightly moisten belt with low quantity sprays to complement the scrapers
    - Waters sprays in conjunction with scrapers have the potential to reduce dust level along the belt
- Rotary brush: Clean the conveying side of the belt.

BSL crusher/transfer point

- Stageloader/crusher are fully enclosed
- Imperative that seals and skirts be maintained
- Installation of sprays or spray bars (span the width) at
    - Entrance
    - Above crusher hammer
    - Discharge area
    - Belt transfer area

and cover these spray locations and other exposed BSL sections as much as possible (using durable poly plate)

- Where possible, seal any gaps of BSL (from BSL/AFC transfer point to belt Bootend) to minimise dust escaping and ventilation pickups
- Installation of BLS scrubber(s) with due consideration of airflow patterns to avoid additional flow turbulence.

Maingate entry:

- Installation of a wing or cut-out curtain between the panel-side rib and the stageloader; Considering the use of perforated ventilation wings around BSL/AFC enclosure to slightly slow down and streamline the ventilation towards the face
- Installation and maintenance of a goaf curtain to reduce ventilation leakage into the goaf. The goaf curtain should be extended towards the roof (and floor) and close to the rib
- Installation of sprays or venturi units around Maingate and AFC transfer point (crusher entrance)

LW Chock:

- Installation of canopy-mounted sprays systems on all chocks (automatically activated by the position of the shearer) with proper on/off sequencing
- Sprays to be aligned toward the face and airflow to enhance the envelope of clean air created by the shearer's directional spray system
- Installation of extra venturi units on the first 5 MG chocks close to maingate to streamline ventilation (dust flow) towards face and with airflow

LW Shearer:

- Shearer mounted sprays oriented downwind (not against face ventilation)
- Drum mounted water spray using full cone or solid stream spray pattern
- Crescent sprays on the top and end of ranging arms and oriented towards face and with airflow
- Directional spray manifolds between the drum (on top and face side of the shearer) oriented towards face with airflow
- Installation of shearer clearer (to cover the full length of the shearer drum) on both side of the shearer drums. Spray (Venturi) directions need to be orientated slightly inwards (towards the face) and with face ventilation (not facing the drum or against the ventilation direction).
- Considering the installation of shearer dust scrubber(s) for cutting drum(s)
- Practise of Uni-di cutting and good personnel positioning while chocking

Coal spalling and AFC

- Practise tight roof control by timely advancing chocks to minimise roof falls and the fracturing of coal seam. This practice will not only improve roof control but also minimise coal spalling due to coal seam fracturing/shearing
- Installation of pan (full corn) spray bars at an interval of every 10 chocks along the Bretby handler, with due consideration of its direction (towards face with airflow), droplet size and thrust distance; These sprays should be on when the shearer is cutting (AFC is moving)

Ventilation optimisation:

Whilst sufficient ventilation is essential for dust (and gas) dilution, too much of ventilation may promote the pickup of dust, dry-up exposed (fine) coals quickly and exaggerate dust contaminations. A ventilation volume no more than 45 m^3/s is recommended subject to gas emission levels and climate control.

CRITICAL REVIEW OF CURRENT DUST MONITORING AND CONTROL PRACTICES

- A need to critically examine the practice and validity of current dust monitoring practices and regulatory limits (NSW and QLD). This may involve the procedures of dust monitoring on mine site and dust sample measurement and reporting, the obligation of mine operators in response to dust monitoring results and implementation of dust controls

- An independent monthly (if not weekly) dust monitoring program should be established and implemented to identify exposure levels during normal cutting shift, and dust loads at independent sources of dust generation on the longwall and assess the effectiveness of installed controls for the mitigation of produced dust
- Whilst a wide range of dust controls exist in the industry, the effectiveness or success of their applications varies due to different site conditions and implementation strategies. There is a need to critically examine current dust control practices in Australia and internationally with the aim of establishing the Best Practices that can be applied at individual coal mines in Australia.

RESEARCH FOR PROACTIVE DUST CONTROL METHODS

Most of the above mentioned dust control methods are passive, i.e, they are aimed to suppress already air-borne dust particles. A major contributor to the dust problems, particularly in QLD, is the use of surface in-seam (SIS) and underground in-seam (UIS) gas drainage boreholes to drain gas before mining. Whist offering benefits of reducing gas emission during mining, this process has to deplete water contents in coal seams before coal seam gas can desorb and be collected by these boreholes. As a result, coal seams that have been extensively drained are becoming drier, more fragile and water repelling when they are mined by longwall mining, producing more fine coals and dusts.

A proactive dust control method – water infusion via in-seam boreholes, should be investigated and if successful, implemented at all mines prior to longwall extraction. Extensive work has been done in this area in Europe, the US, and more recently China. Although this type of work has been conducted in Australia over 10 years ago and only limited success has been claimed, it is strongly recommended to look into this technology again and conduct a field trial using existing gas drainage boreholes (SIS) or even a few underground in-seam boreholes that can be drilled parallel to the longwall face. There is a need to conduct more fundamental study into the mechanism of water infusion into post-drainage seam factures and the use of possible agent to enhance the infusion process and extent around the borehole(s). This work should be combined with detailed assessment of all available dust control options on longwall face as well as a robust dust monitoring strategy.

There is a need to establish a dust control Task Force led by the government to jointly address the issue of coal mine dust and associated black lung disease.