

# 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.<sup>1</sup>

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.'<sup>2</sup>

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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.'<sup>3</sup> The CDCP notes that the principal cause of the pneumoconioses is work-place exposure to dust.<sup>4</sup>

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.<sup>5</sup>

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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/](http://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<sup>6</sup>**



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

**Figure 2—specimen of a lung with Progressive Massive Fibrosis<sup>7</sup>**



2.8 The CDCP explains that the primary pneumoconioses 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,

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

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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'.<sup>8</sup>

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.<sup>9</sup>

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.<sup>10</sup>

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.<sup>11</sup>

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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.<sup>12</sup>

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.<sup>13</sup>

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.<sup>14</sup>

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.<sup>15</sup>

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.<sup>16</sup> Australia is currently the fifth largest producer of coal in the world with 2012-13 coal production at 527 million tonnes.<sup>17</sup> 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.<sup>18</sup> The coal industry in Australia provides direct employment for approximately 54 900 people.<sup>19</sup>

2.19 CWP has been a part of the coal mining industry in Australia from its inception.<sup>20</sup> 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.<sup>21</sup>

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.<sup>22</sup>

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16 Minerals Council of Australia, *Characteristics of the Australian Coal Industry*, website, [www.minerals.org.au/resources/coal/characteristics\\_of\\_the\\_australian\\_coal\\_industry](http://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](http://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](http://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](http://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.<sup>23</sup>

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.<sup>24</sup>

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.<sup>25</sup> 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.<sup>26</sup>

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.<sup>27</sup>

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](http://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.<sup>28</sup>

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.'<sup>29</sup>
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.<sup>30</sup>

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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.<sup>31</sup>

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.<sup>32</sup> This also led to criticism of the training Australia radiologists had received in diagnosing CWP, as the US B-Readers<sup>33</sup> were reporting to International Labor Organisation (ILO) standards; a reporting standard not widely used in Australia.<sup>34</sup>

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,<sup>35</sup> 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.'<sup>36</sup> This list was published on 4 March 2016.<sup>37</sup>

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](http://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](http://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](http://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](http://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](http://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.<sup>38</sup>

## 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.<sup>39</sup>

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<sup>3</sup>, the 40-year risks were 1.15% for PMF and 7.75% for CWP; for coal with a carbon content of 83%

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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<sup>3</sup>, 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<sup>3</sup> 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<sup>3</sup> prevalence was <5%, but prevalence was 30% for the group with exposure >110 mg-year/m<sup>3</sup>. On the basis of these data, miners of lignite and sub bituminous coal who work for 40 years at 2 mg/m<sup>3</sup> 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+. <sup>40</sup>

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

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<sup>3</sup> respirable dust would be likely to result in 15–25% prevalence of CWP depending on the hardness of the bituminous coal. <sup>42</sup>

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. <sup>43</sup>

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<sup>44</sup>

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.<sup>45</sup>

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.<sup>46</sup>

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

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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.<sup>47</sup>

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.'<sup>48</sup> The CWHS is established by the Coal Mining Safety and Health Regulation 2001.<sup>49</sup>

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.<sup>50</sup>

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

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

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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](http://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](http://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](http://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](http://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.<sup>55</sup>

2.47 Importantly, NMAs are appointed and remunerated 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.<sup>56</sup>

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<sup>3</sup> air;

(ii) for free silica—0.1mg/m<sup>3</sup> air.<sup>57</sup>

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'.<sup>58</sup>

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.<sup>59</sup> 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.<sup>60</sup>

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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.

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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.<sup>61</sup> 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.<sup>62</sup>

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

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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.<sup>63</sup>

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.<sup>64</sup>

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".<sup>65</sup>

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.<sup>66</sup>

### **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.

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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.

