AMA QUEENSLAND
www.amaq.com.au
88 L'Estrange Terrace
Kelvin Grove 4059
PO Box 123
Red Hill 4059
Ph: (07) 3872 2222
Fax: (07) 3856 4727
amaq@amaq.com.au
ACN: 009 660 280
ABN: 17 009 660 280

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Research Director
Coal Workers' Pneumoconiosis Select Committee
Via email: ***cwpsc@parliament.qld.gov.au***

To the Research Director

Thank you for providing AMA Queensland with the opportunity to give feedback to the Coal Workers Pneumoconiosis (CWP) Select Committee.

AMA Queensland is the state's peak medical advocacy group, representing over 6000 medical practitioners across Queensland and throughout all levels of the health system. We value and believe in the work doctors do, and have previously advocated publicly on issues of public health, vaccination and medical regulation.

In providing comments as to the future of Queensland's Coal Mine Workers Health Scheme, which has been subject to inquiries by both the Senate Select Committee on Health and the Queensland Government-sponsored Monash Report, AMA Queensland notes there has been a great deal of criticism around the general practitioners (GPs), nominated medical advisors (NMAs) and radiologists who worked within the system. Especially in the case of the latter, there has been commentary which suggests there has been a failure by Queensland radiologists in diagnosing CWP (also known as "black lung") and that Queensland expertise is inferior to that of United States B-Readers who report to the International Labour Organisation's (ILO) standard for the *International Classification of Radiographs of Pneumoconiosis.*

These issues are all important to address in understanding the re-emergence of CWP in Queensland today. As such, we will structure our submission to deal with these issues separately.

Before doing so, AMA Queensland wishes to express its sincere thanks to the members and non-members whose expertise we have called upon in writing this submission. These experts include general practitioners, radiologists, occupational physicians, respiratory physicians and junior doctors. AMA Queensland sincerely thanks them all for their assistance.

The CWP monitoring regime's effectiveness

CWP is a medical condition which has been well described for almost a century and while there is no cure, it is a completely preventable condition – avoiding or limiting exposure to the source. To prevent CWP (new cases and continuing progression of current cases) exposure to inspirable coal dust needs to be controlled – in other words, restricted and monitored in a standardised manner.

In the case of CWP, the hazard is invisible and early signs unrecognisable. Control requires awareness and resourcing of the regulators, and awareness and commitment of upper management of the mining companies to reduce and control hazardous exposures at the workplace.

AMA Queensland understands that the system that was in place to monitor coal miners' exposure to known causes of CWP, known as the Queensland Coal Mine Workers' Health Scheme (QCMWHS) was for many years meeting this criterion and was therefore seen to be effective and fit for purpose.

Indeed, many of the experts we spoke to believe that the system's effectiveness may have worked against it; because the system was working so proficiently, many of those who were tasked with monitoring CWP believed it had been eliminated and would not return. For example, one radiologist we spoke to said that because there had not been a case of CWP or silicosis for over ten years, most radiologists would have placed these at the bottom of their differential list, much as a General Practitioner (GP) would put polio at the bottom of theirs.

It is worth noting that occupational illnesses such as CWP, as distinct from injury, have long latency periods of ten years or more where the condition is developing but asymptomatic, multiple exposures and interactions are common factors. These factors are what make identification of occupational illness as distinct from injury difficult, and why occupational injury is grossly underreported to regulators and compensation insurers.

It is difficult to specify an exact date as to when the QCMWHS began to fail, however many of those people we spoke to believe that the system began to fracture sometime between 2005 and 2013. One easily identifiable reason for this breakdown is the massive changes occurring in the mining industry at this time. More workers were being employed by the industry and more coal was being extracted, which led to more dust and longer exposure time to more workers. Short term contractors and drive in, drive out (DIDO) and fly-in, fly-out (FIFO) workers also became a much bigger phenomenon in the mining industry which effectively destroyed the historically close ties between NMAs and coal miners and led to a dilution in corporate OH&S knowledge and awareness.

Queensland's FIFO workers operate primarily in the Bowen and Galilee Basins, which together make up Queensland's largest coal mining regions. They incorporate four regions of the state; namely Whitsunday, Isaac, Central Highlands, Banana and Barcaldine[1]. The Queensland Treasury has analysed the non-resident populations of these areas and has found the following key statistics.

- The non-resident population of the Bowen Basin was 16,360 persons in June 2014, down from a peak of 25,040 in June 2012 [2]
- Development of large greenfield mining projects, rail and power infrastructure in the Galilee Basin would see the non-resident population of Barcaldine (R) increase substantially to a peak of between 3,260 and 3,270 persons by 2021[3]

Outside of mining activity in Queensland, it is estimated up to 200,000 workers are not residents in the areas where they live nationwide[4], with many Queensland workers flying to other mining operations in Western Australian and the Northern Territory.

Before any prospective mine worker could even start work in the industry, each of these prospective employees had to undergo medical screening under the Health Scheme. As a 2013 Queensland

[1] Barker, R., (2011) Resource Communities Research, Office of Economic and Statistical Research, Queensland Treasury, July 2011
[2] Queensland Treasury (2014), *Bowen and Galilee Basins non–resident population projections 2015 to 2021*, http://bit.ly/1zw4CD8
[3] *ibid*
[4] Naidoo, V, *The Human face of FIFO,* Sunshine Coast Daily, http://bit.ly/1HDZM9S, 30th September, 2012

Resources Council submission[5] makes clear, a large body of aspiring coal miners – who never subsequently found employment – also underwent screening in the hope that this would give them an advantage over job competitors. Collectively, such changes placed a massive burden on the resources of the Health Scheme; a burden beyond that which it was designed for.

NMA Expertise and Training

Under the QCMWHS the primary contact point for miners undergoing screening have been the NMAs. There was no training component required to become an NMA, with the only key requirement being that the NMA had to be registered with the Australian Health Practitioner Registration Agency (AHPRA)[6]. However, there was an implicit expectation under the Scheme that the NMAs appointed by mine operators would be General Practitioners residing in coal mining districts who would have an understanding of their patient's occupational and medical histories and could visit the mine to understand the tasks and hazards that workers would be exposed to there.

From 2005, around the same time as the QCMWHS is believed to have started to breakdown, the number of NMAs increased significantly, growing from approximately 40 in 2005 to approximately 250 today. A majority of NMAs - as with the coal mining workforce itself - no longer lived adjacent to the coal fields. This meant that there was no intrinsic link between the NMA, coal miners, the industry they worked in and understandings of occupational disease patterns. One expert we spoke to noted a particular concern that of those 250 appointed screeners in Queensland, he believed that less than 20 of them had been formally trained in occupational medicine and detecting CWP.

Prior to 2005, we understand that many stakeholders had already begun to raise concerns with the Department of Natural Resources and Mines (DNRM) about the training levels of several of the appointments, particularly around those without occupational medicine training.

Many of these medical practitioners with limited occupation medicine awareness and training would likely have concentrated on the fitness for work aspects of the medical rather than the identification of hazardous exposures such as carbon particulates. As a result of this, it is likely that the identification of the hazards that cause CWP and other hazardous exposures (e.g. noise) have also been missed.

Many who we spoke to also voiced concerns around poor communication between the industry and its nominated medical advisors (NMAs). The issue here appears to be that employers were not properly completing health assessment forms, which led to NMAs not having a complete picture of what health checks and/or investigations (including chest x-rays (CXRs)) needed to be performed. This was reflected in the Monash Report, which said;

> *The employer's section of the form was poorly completed. This may in part be due to workers being required to complete a health assessment prior to being employed. This is problematic in*

[5] Queensland Resources Council (2013), *Regulatory Impact Statement on Consistent Mine Health and Safety Legislation*, (Brisbane: Queensland Resources Council)

[6] https://www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/nominated-medical-advisers

that the job may be unknown, particularly where contractors are involved, and so the appropriate decision about whether a chest x-ray is needed cannot be made[7].

This lack of communication also extended to the timeliness of radiologists receiving CXRs. Some radiologists reported receiving CXRs that had been taken as part of an employee's pre-employment medical examination during the same employee's routine five-year medical examination.

AMA Queensland understands that this issue has arrived mostly as a result of older or antiquated IT systems. Currently in Australia in most radiologic imaging is read via complex IT computer based reporting. Each public hospital has a separate IT reporting system which does not easily communicate with other public (and some private) hospitals. Larger private radiology companies have very good integrated systems. However older chest x-rays in central QLD were often taken by a local GP as a "hard copy only" which cannot be integrated into the modern computer based radiologic systems. This led to a major backlog of case files being entered into the system. During the recent boom in coal mining employment, AMA Queensland understands the HSU had a backlog of more than 150,000 case files that had not been entered into any database. This is not, of course, the fault of the local GP but a problem for which the solution must rest with Government. AMA Queensland will explore potential solutions to this problem in the next part of this submission.

The effectiveness of the QCMWHS also meant that training in CWP detection was not routinely afforded to medical graduates in Australia. Because CWP had been thought to be eradicated, CWP was not a routine part of most junior doctor training. AMA Queensland's Council of Doctors in Training (CDT) believes there is some truth to this view. The CDT advised that there is little exposure to those kinds of diseases to medical students so experience in recognising and treating it is limited, but certainly they were made aware of it as part of their training. They echoed a view similar to that expressed by a radiologist earlier in this submission, saying that because they don't see it very often, CWP would not cross their mind in a list of usual diagnosis.

Supposed Lack of Queensland Radiology Expertise / Superiority of United States B-Reader

One final point AMA Queensland would like to specifically address in this part of the submission is the commentary that Australian radiologists are less well trained or of lower competence than US "B readers".

Some argue that failures of prior diagnosis reflects a failure of local radiology expertise. This view has been most forcefully put forward by the Construction Forestry Mining & Energy Union (CFMEU), which has sent the CXRs of members to Professor Bob Cohen at the American National Institute for Occupational Safety and Health (NIOSH) for diagnosis, where a number of cases – previously identified as emphysema – were reported as CWP. The Sims Inquiry also sent 248 CXRs to Professor Cohen for consideration by NIOSH "B-Readers". Since 27 July 2016 the Queensland Government has also required that all CXRs taken in conjunction with the Health Scheme be sent to an American B-Reader in addition to a Queensland radiologist[8].

[7] *Review of Respiratory Component of Coal Mine Workers Health Scheme for the Queensland Department of Natural Resources and Mines,* Monash University, July 2016

[8] https://www.business.qld.gov.au/industry/mining/safety-health/mining-safety-health/medicals/coal-board-medical/radiology-assessments-chest-x-rays

AMA Queensland respects the expertise of the NIOSH in the diagnosis and management occupational lung disease and appreciates the support provided to our medical colleagues over the past year. However, we utterly reject the argument that Australian radiologists are less well trained than their US counterparts. For the benefit and information of the committee, we would like to take this opportunity to clarify several issues regarding the B reader program and ILO chest radiograph screening.

The ILO Standard was originally developed for epidemiological purposes, not clinical diagnosis: Both the ILO standard and the American B-reader programme exist for consistent reporting of CXR presentations and for epidemiological purposes. Diagnosis of positive cases should not occur due to the ILO classification alone as coal worker's pneumoconiosis – as with any disease – requires a range of diagnostic tools, including patient occupational and medical histories and the use of additional diagnostic tools such as Computerised Tomography (CT). The ILO Standard itself notes "the Classification neither defines pathological entities nor takes into account working capacity. It does not imply legal definition."[9]

Film-Screen X-Rays (FSR) have a lower sensitivity for earlier disease than modern CT Examination: The ILO Standard is also based on film-screen X-rays (FSR) which a range of studies[10] have found to be have a lower sensitivity and specificity in diagnosis of CWP when compared to Computerised Tomography (CT). The failings of FSR-based X-ray has been long recognised in the United States with a 1999 study by Vallyathan, Brown, Green and Attfield (1996: 741) reporting that: "CXR were insensitive for detecting minimal CWP lesions, and unreliable indicators in the presence of concomitant pulmonary pathology." Similarly, a wide range of studies[11] have noted that FSR-based CXR is associated with a large degree of false positives and the attribution of other diseases to CWP. Extremely early CWP may be misdiagnosed on chest x-ray due to the inherent limitations of chest radiographs, not the failings of Australian trained radiologists.

American NIOSH B-Readers were unable to come to Definitive Diagnosis in Relation to Cases sent to them by the Sims Inquiry: Much has been publicly made of the fact that of the 248 CXRs sent by the Review Team who conducted the Monash Report to American B-Readers, 18 were reported as having "opacities consistent with simple [early stage] pneumoconiosis". Local examination of the same CXRs had indicated that only two had pneumoconiosis. However, what is seldom reported in relation to this finding is that the NIOSH B-readers were unable to come to a definitive analysis in *any* of the 18 cases. In *each* case it was reported that the opacities identified may have been due to emphysema rather than CWP. Accordingly, they were referred back to Queensland medical specialists – who have access to patient histories and CT examination – for definitive diagnosis. This supports the need for a centralised system where possible positive cases of dust induced pneumoconiosis is discussed by a multidisciplinary team of Australian based specialists.

Occupational dust exposures result in a range of lung conditions, not only "nodular" coal worker's pneumoconiosis which is seen on chest x-rays: As the Rathus and Abrahams (1984: 14) Inquiry indicated "the early stages of pneumoconiosis [are] … easily confused with … emphysema, chronic bronchitis and asthma"; diseases which under X-ray can reveal the same small opacities as pneumoconiosis. Confusion also stems from the fact the CWP appears in two forms: simple

[9] ILO, *Guidelines for the use of ILO International Classification of Radiographs of Pneumoconiosis, 2000 Edition, Geneva, International Labour Office, 2002, (Occupational Safety and Health Series, No.22 (rev.2000)))*
[10] Rose and Lynch, 2011; Xing et al., 2014
[11] Lange, Worth, Smidt, Stahlman, 1980; Balmer, 1992; Vallyathan, Brown, Green and Attfield, 1996; Rose and Lynch, 2004

pneumoconiosis (which is asymptomatic and does not progress if dust exposure is ended) and Progressive Massive Fibrosis (PMF), which has debilitating symptoms. Other diseases are also produced by coal dust. Thus, whereas Rathus and Abrahams (1984: 9) reported 75 cases of pneumoconiosis, they also reported 47 cases of emphysema and 3 of sarcoidosis. Many chemical agents can be found in coal dust (carbon, iron, cadmium and lead), crystalline free silica exposes miners to risk of silicosis (Zosky et al., 2016: 414). Many miners also suffer from exposure to asbestos and silica in jobs undertaken prior to coal mining occupations. Such complex occupational histories further highlights the need for a closer relationship between NMO and radiologists.

Australian Radiologists are World Class and with adequate government support able to diagnosis CWP: Australian Radiologists have completed a minimum of five years supervised training and have passed an extensive series of written and oral examinations to report on medical imaging studies in Australia. Further they must participate in ongoing training and education on an annual basis as required by both the Australian Medical Board and the Royal Australian and New Zealand College of Radiologists. The Royal Australian and New Zealand College of Radiologists (RANZCR) has taken appropriate steps to have CXRs taken in association with the Coal Mine Workers' Health Scheme examined by appropriately qualified radiologists with specialist expertise in pneumoconiosis diagnosis with the public release of a "Register of Clinical Radiologists for CWP Screening". We believe this is an appropriate first step whilst further training pathways of radiologists on the registry is finalised.

Roadblocks to Reform and Possible Solutions

AMA Queensland believes the QCMWHS is still largely fit for purpose, as it had been effective in eliminating CWP until some of the deficiencies raised above began to emerge. However, regulation will continue to fail without compliance.

As we mentioned at the beginning of this submission, control of CWP requires awareness and resourcing of the regulators, and awareness and commitment of upper management of the mining companies to reduce and control hazardous exposures at the workplace. Ideally there should be a single Australian standard in regard to exposure limits and monitoring requirements.

As a way forward, AMA Queensland believes that the QCMWHS should be retained, with appropriate updates and amendments to ensure it reflects the current realities of the industry and that the failures which led to CWP re-emergence are not repeated. However, AMA Queensland understands that there may also be a resourcing issue at play in the Health Surveillance Unit (HSU).

Specifically, we understand the HSU is using an antiquated and inadequate health database. We note the Monash Review includes a recommendation that the DNRM should "transition to an electronic system of data entry and storage, whereby doctors undertaking these respiratory assessments enter the data for their assessment and can access previously collected data for the mine worker and to facilitate auditing.[12]" AMA Queensland believes that this issue needs to be considered in relation to the wider issue of radiological screening and we would support this recommendation moving forward.

[12] *Review of Respiratory Component of Coal Mine Workers Health Scheme for the Queensland Department of Natural Resources and Mines,* Monash University, July 2016

The new monitoring regime will also need to find solutions to inadequate compliance with the regulations by several NMA's, and lack of professional training of several NMA's, lack of compliance and awareness of the system by many employers, workers, and many of the corporate medical service providers. AMA Queensland supports recommendations 7 and 8 in the Monash Report which calls for a smaller pool of approved doctors being involved in the scheme and that all doctors must undergo a formal training program prior to approval by DNRM respectively.

As mentioned earlier, coordination of CXR films, and providing results back to patients is a potential roadblock for reforming the system. Regarding the issues around the coordination of CXR films, there are two potential solutions to this problem.

- **Use other screening programs as a model:** Screening of dust induced pneumoconiosis should reflect other screening programs such as Breast Screen or the NIOSH dust screening system. This should be performed as a "hub and wheel" type system with NMAs acquiring histories and spirometry data in peripheral centres with radiologists reporting of chest radiographs occurring in a centralised manner. This clearly would require a radiology firm or government body to provide a radiology IT reporting system able to co-ordinate multiple sites and store radiology data in a way that it could be accessed anywhere in Queensland. The radiologists within the centralised hub should not report imaging in isolation but also co-ordinate regular teleconference clinical meetings with NMAs and respiratory physicians so that positive cases can be discussed in detail if required. Finally, the centralised clinical hub should be involved in ongoing research with local Queensland Universities and conduct ongoing epidemiological research into occupational lung disease in Queensland.

- **Contract Out or Better Resource the HSU:** The Queensland Government must either better resource the HSU to ensure it can upgrade its systems to the level required or consider contracting out the reporting to a large private company that can meet these requirements. Ideally this should include the ability to have an IT cache where all dust screening chest x-rays and CTs are kept in one single IT location that can be accessed across Australia

Another difficulty that will impact this issue going forward is the rise of FIFO. The nature of FIFO work means that many workers currently employed in mines in Queensland may not live in the state or may not live in the state for more than a few years at a time. As CWP typically takes around 10+ years to develop, a national, standardised screening approach is needed to ensure workers are given the medical support they need. Alternatively, this could be achieved through the Workers Compensation scheme for those with pathology associated with exposure or for those without symptoms but who have had significant exposure.

Objective measurement of lung function and radiologic imaging will remain the cornerstones of screening for and investigation of CWP. The use of these modalities therefore needs to be accurate, in accordance with guidelines and appropriately applied to the entire 'at risk' population in order to identify those miners with possible evidence of disease for further investigation. Similar to the competence of acquiring and reporting radiologic imaging as already discussed, lung function assessment (e.g. spirometry) needs to be conducted with appropriately maintained and calibrated equipment by an individual trained in performing this assessment.

Role of the Queensland Health Promotion Commission and other stakeholders

In 2015 the Queensland Government allocated $7.5 million towards the establishment of a Queensland Health Promotion Commission (QHPC). A recent Parliamentary inquiry into the QHPC recommended that the Commission be established however a model has not yet been agreed upon. AMA Queensland has strongly supported the establishment of the QHPC as an agency which could help facilitate a whole-of-government approach to public health.

As CWP is a public health issue, AMA Queensland believes that once the QHPC has been established it should examine how it can bring a whole-of-government focus to the issue of CWP and other occupational illness. Developing and increasing collaboration between DNRM and Queensland Health will help to strengthen the new and improved QCMWHS.

AMA Queensland also believes DNRM and/or the QHPC should form partnerships with relevant colleges and professional associations, such as RANZCR and ANZSOM to ensure that the QCMWHS is the beneficiary of as much professional advice and consultation as is necessary. Professional advice and consultation on Workplace Health Surveillance should be sought from the Australasian Faculty of Occupational and Environmental Medicine and other Colleges who may have specific interest and expertise in specific aspects of surveillance.

There may also be opportunities to partner with Research and Educational Institutions to make full use of the data collected provide relevant education and build competent professional capacity in geographically appropriate regions

AMA Queensland will continue to publicly advocate on CWP as a public health issue and would be willing to assist the development and implementation of the new QCMWHS as needed.

Conclusion

AMA Queensland believes that health surveillance schemes are not a control measure, but a risk management tool providing an indication of the failure (or adequacy) of control measures.

To be effective the health surveillance scheme needs to be managed, resourced, and have a centralised database which can be readily accessible by appropriately trained and qualified professionals. It must also be relevant to the current state of the industry it is meant to oversee, and must be dynamic enough to change and modernise itself as the industry changes and grows.

In closing, AMA Queensland thanks you for providing us with the opportunity to provide the committee with a submission on this issue. If you require further information or assistance in this matter, please contact Mr Leif Bremermann, Senior Policy Advisor,

Yours sincerely

Dr Chris Zappala
President
Australian Medical Association Queensland