Submission to the Coal Workers’ Pneumoconiosis (CWP) Select Committee

Preamble

The Thoracic Society of Australia and New Zealand (TSANZ) and Lung Foundation Australia (LFA) welcome the opportunity to provide a submission to the Coal Workers Pneumoconiosis (CWP) Select Committee.

The TSANZ mission is to lead, support and enable all health workers and researchers who aim to prevent, cure and relieve disability caused by lung disease. The TSANZ is the Peak Body representing all health professionals working in all fields of respiratory health. As such, we provide the Australian Government with direct access to professional expertise and highly credible engagement with respiratory health care specialists in all disciplines across Australia. The TSANZ has a membership base of 1400+ individual members from a wide range of health and research disciplines and has a database of approximately 3000 contacts. The TSANZ is a leading provider of evidence based guidelines for the treatment of respiratory disease in Australia, undertakes a large amount of professional education and training, is responsible for significant research administration and coordinates an accredited respiratory laboratory program.

LFA is the patient advocacy body whose vision is to make lung health a priority for all in Australia. It achieves this by implementing community awareness programs; providing patient support services and resources; promoting equitable access to evidence-based management, particularly in the primary care and allied health spaces; supporting research; and advocating on behalf of our patients.

Respiratory disease is a leading cause of premature death in Australia and a key contributor to hospital expenditure. Until recently, Australia was thought to have largely eradicated occupationally acquired coal workers’ pneumoconiosis (CWP). We are very concerned that there are now confirmed cases of CWP, and new cases of severe silicosis, which have not been previously identified through routine screening. We have recently published a position paper2 on this issue where we recommend 1) a national registry of occupational lung diseases (including CWP), 2) national, best practice standardisation of dust exposure limits and protocols, 3) a mandatory screening program and 4) medical workforce training.

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1. About Coal Workers Pneumoconiosis (CWP)

1.1 CWP is a type of pneumoconiosis (or fibrotic lung disease due to dust inhalation), and is an occupational lung disease solely caused by the inhalation of coal mine dust. Prolonged inhalation of coal mine dust is associated with the development of several chronic lung diseases including CWP, silicosis, mixed dust pneumoconiosis and chronic obstructive pulmonary disease. Inhalation of sufficient crystalline silica has also been recognised as an occupational carcinogen by the International Agency for Research on Cancer (IARC), and by WorkSafe Australia, and is a cause of lung cancer. In 2013, pneumoconiosis resulted in 260,000 deaths globally. Of these deaths, 46,000 were due to silicosis, 24,000 to asbestosis and 25,000 to CWP. Most of these cases occurred in the setting of poor occupational hygiene and limited systems for dust control.

1.2 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.

1.3 The risk of developing CWP is directly related to the magnitude and duration of exposure to coal mine dust.

1.4 The World Health Organisation has set a target to eliminate pneumoconiosis by 2030.

1.5 In the Australian context, new cases of pneumoconiosis were largely thought to have been eradicated although 37 cases of silicosis were recorded in the Safe Work NOSI database (2001-2003). The Dust Diseases Board reported 186 NSW workers receiving compensation for silicosis in the financial year 2002-3. In NSW, coal workers’ pneumoconiosis is not covered by the Dust Diseases Board and, as such, is not recorded. Over the same period (2001-2003), 750 new cases of pneumoconiosis were reported by the National Occupational Health and Safety Commission. However, it is not clear what proportion of cases relate to CWP and these data are unreliable as they are based entirely on compensation statistics.

1.6. It is not possible to ascertain the true number of pneumoconiosis cases in Australia based on currently available data, which is dated, incomplete and unreliable. In addition to the probable under diagnosis of CWP, there is inconsistent data collection and reporting of pneumoconiosis cases across Australia.

1.7 There are no national data relating to people diagnosed with pneumoconiosis.

1.8 Previously, voluntary notification schemes for occupational lung disease existed in Victoria and NSW (SABRE schemes), but these had poor response rates and funding difficulties. A national notification scheme and registry for occupational lung disease with mandatory reporting is urgently needed. Without this registry, we are unable to 1) assess the true extent of CWP, 2) identify individuals

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at risk of developing disease, 3) track re-emergence of disease and intervene and 4) identify new causes of occupational lung disorders or new exposures producing disease.

2. Diagnosis and Screening.

2.1 The number of primary practice encounters for CWP is too small to provide an accurate indication of the extent of the condition. Most cases of CWP are likely to be diagnosed during specialist respiratory physician consultations. Screening for CWP is usually conducted by occupational physicians or general practitioners with occupational training.

2.2 Early diagnosis of CWP is difficult because the first stages of the condition are not associated with any respiratory symptoms. As the condition progresses, patients may present with breathlessness and cough. Symptoms are highly variable and can range from no respiratory complaints at all to severe impairment in advanced disease.

2.3 CWP may progress from an asymptomatic condition into life-threatening, complicated pneumoconiosis, a debilitating condition, called Progressive Massive Fibrosis (PMF) where large masses of fibrous tissue develop in the lung. The prevalence of PMF after a working lifetime of exposure to coal dust in underground miners was estimated to be between 1.3 and 2.9% in Australia, based on data from the UK and the USA, respectively. PMF has largely been eradicated due to improvements in dust exposure, yet there has been a worrying resurgence of cases in the USA and some new cases described in Europe largely due to changes in dust exposure controls.

2.4 Early detection of asymptomatic CWP is vital as workers who are removed from exposure can be prevented from developing PMF. Screening of all workers exposed to coal mine dust through a well-designed program of symptom assessment, chest radiography and respiratory function testing, aims to detect the earliest stage of CWP to reduce the risk of development of chronic lung disease. The factors which determine progression from simple pneumoconiosis to PMF are complex and incompletely understood. It should be emphasized that most workers who develop simple pneumoconiosis will not progress to severe symptomatic disease, but that reduction of dust exposure is advisable in this context.

2.5 The latency between exposure and development of CWP may be prolonged but decreases with increases in dust inhalation levels. Thus, more intensive screening is required if dust exposures are determined to be above acceptable levels.

2.6 The current international standard for diagnosis and staging is chest radiography using the International Labour Office (ILO) standardised method (ILO 2000 revised classification). However, this system has not been revised for many years, and does not take into account new developments in medical imaging. There are data which suggest screening using low dose computed tomography (CT) may be superior in detecting early disease. A recent study confirmed the greater sensitivity of high-

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resolution CT (HRCT) scanning in detecting small parenchymal changes, interstitial fibrosis and pleural abnormalities in workers with chest X-rays considered normal (ILO profusion category 0/0). \(^5\) However, this needs to be assessed in the Australian context.

2.7 The TSANZ is not of the opinion that all images need to be sent off-shore to designated ILO X-ray B-readers. The TSANZ and LFA support the compilation of a register of clinical radiologists who are competent in reporting radiographs using the ILO classification of pneumoconiosis. Regular updating of existing skills through continued medical education would enhance awareness of pneumoconiosis among radiologists in Australia as well as appropriate interpretation, and this is supported by TSANZ\(^6\).

New technology is available, including digital imaging, and should be used. Low-dose CT is more sensitive than chest radiography when workers’ images are reviewed by skilled Respiratory Physicians and Radiologists. Developments in CT scanning technology have allowed significant decreases in radiation dose and modern scanners are now available which use an identical low dose of radiation to a chest radiograph, yet with comparable quality to a conventional CT scan. Automated computed algorithms for detection of relevant abnormalities show significant promise in this area, with accompanying decreases in cost and increased accuracy compared with manual reading. Developments in technology allow central storage of de-identified images on centralised clouds which optimise access and longitudinal comparison, and obviate the need for hard copies.

2.8. International recommendations exist for the screening of workers exposed to coal dust and silica. The World Health Organization (WHO) recommends that all such workers should undergo lifelong health surveillance.\(^7\) They advise that a baseline chest X-ray should be obtained at the start of employment, with a repeat chest X-ray performed after 2–3 years. A screening chest X-ray should then be performed every 2-5 years thereafter, and more often if any relevant abnormality is detected. CT scanning is more effective in detecting early changes, and low dose CT scanning (which minimises radiation exposure for patients) is now widely available throughout Australia and should be used if abnormalities are detected.

2.9 A complete history of all dust exposures in all employments (including interstate exposures) needs to be recorded and made available to examining doctors, to allow estimation of total levels of dust exposure, which are strongly linked with development of disease. A history of tobacco consumption and other inhaled substances is required. It is possible to develop tools for automated assessment of total dust exposures using historical dust measurements and this would significantly enhance the accuracy of occupational exposure assessment. Spirometry and standardised symptom questionnaires should also be obtained from the start of employment and regularly thereafter and should result in prompt referral to specialist respiratory services if any abnormality is detected (WHO). Data are available from the USA National Institute of Occupational Safety and Health (NIOSH) regarding the


\(^{6}\) Occupational and Environmental Lung Disease Short Course, Thoracic Society of Australia and New Zealand; August 2016; Castlereagh Hotel, Sydney NSW.

expected rate of decline in lung function in coal workers, and lung function decline should be compared with these values. Enhanced spirometry to include measurement of gas transfer factor (a surrogate for assessing oxygen transfer across the lungs) should be considered for screening, as new equipment is available to measure this in the field and this would enhance early disease detection.

2.10 Coal miner participation in voluntary screening programs has been estimated to be as low as 40%.

The UK has had a very effective mandatory screening programme for almost 100 years and this has resulted in a large decrease in incident cases. We strongly support implementation of mandatory lifelong screening of all workers exposed to coal mine dust and silica.

2.11 Inhalation of tobacco smoke and other substances is a major cause of respiratory disease and we recommend that smoking cessation advice should be included as part of the occupational screening program.

2.12. The Monash University Review of the Respiratory Component of the Coal Miner Workers Health Scheme identified many failings of the current health surveillance program, in particular the expertise of nominated medical advisors (NMAs), poor quality respiratory function testing and chest radiographs not being reported in accordance with ILO criteria. We support the recommendations provided in the report to address these issues.

3. The Occupational Environment

3.1 Occupational respiratory diseases are challenging to identify and to manage. The best approach is through prevention, by ensuring stringent control of hazards in the workplace. This is important for both workers and employers when an industry is under external financial pressure. Symptomatic workers can fear loss of employment at a time of employment insecurity and mining companies can be under pressure to cut costs – including costs associated with activities that mitigate dust exposure.

3.2 Factors influencing miners’ risks include the effectiveness of ventilation and methods of dust suppression. It is therefore highly concerning that the Qld Mines Inspectorate Annual Report in 2014-15 noted up to 70 per cent of Australian mine workers are exposed to cancer-causing substances or agents at work. At the same time, the report notes that the “significant upward trend over the last two years in average dust exposures for longwall and development mining across most sites. Sixty per cent of mines exposed longwall operators to levels equal to or greater than the adjusted regulatory exposure limit during 2014, compared with 10 per cent in 2012. The average dust exposure for longwall operators at one mine was found to exceed twice the adjusted regulatory exposure limit. The average dust exposure for development operators has risen sharply at a number of mines. In 2012 the average exposure at all mines was below the adjusted regulatory exposure limit, compared with 25 per cent rising well above this limit in 2014. Where exceedances in development activities have occurred they

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have been significant and average exposures have increased by 250 to 450 per cent between 2012 and 2014.\textsuperscript{10}

The composition of the respirable dusts is likely to have changed along with developments in mining technology. A case of CWP has recently been diagnosed in a coal surface worker, and this is in keeping with international literature, where significant dust exposure is not limited to underground workers. The exact composition of dusts in all occupations involving dust exposure needs to be regularly measured and monitored to ensure that hazardous dusts are not generated outside the regulated limits.

These are issues which need to be urgently addressed.

3.3. The standards for occupational exposure limits for the respirable fraction of coal mine dust standard are inconsistent in Australia. For example, they are set at $2.5\text{mg/m}^3$ in NSW and $3.0\text{mg/m}^3$ in Qld. By contrast, the standard in the USA is $1.5\text{mg/m}^3$, which may still not be low enough to prevent disease,\textsuperscript{4} and the Australian Institute of Occupational Hygienists has recommended the limit be reduced to $1.0\text{ mg/m}^3$.\textsuperscript{11} There are also differences in testing protocols between NSW and Qld that impact on how an individual miner’s total exposure to coal dust is calculated.\textsuperscript{9} We recommend a thorough review of the exposure limits for coal mine dust based on current state of the art knowledge of CWP and review of international standards.

4. Recommendations

The TSANZ\textsuperscript{1} and LFA strongly support consistent, nation-wide action to protect workers from dust diseases by (a) enhancement of the current framework for regulation of dust management and (b) improved surveillance of exposed workers for respiratory disease. This will require adequate and sustainable funding. The framework should include monitoring of adherence to the regulations and outcomes. We make these recommendations particularly in the context of evolving mining technologies, some of which may increase rather than reduce workers’ exposure to respirable dusts.

We further advise:

- The establishment and mandatory reporting of all occupationally acquired dust diseases of all types (not only CWP) to a national registry on occupational lung disease.
- Mandatory participation of coal miners, and all workers exposed to respirable free silica regardless of occupation, in a regular lifelong screening program.
- Ongoing discussions, in which TSANZ is currently engaged with the Queensland Government, in relation to development of the optimal screening program, including medical imaging.


radiological interpretation and respiratory function testing, that is best suited for the Australian context.

- Referral for all coal miners presenting with respiratory symptoms, new radiological abnormalities and/or a decline in lung function greater than that predicted using the NIOSH algorithm for assessment to a respiratory specialist physician; ideally with training and/or qualifications in occupational lung disease.

- Review of current exposure limits and monitoring procedures based on international best-practice standards and closer surveillance of respirable dust exposures to coal and silica.

- The development of GP training materials to identify and refer coal miners, including retired workers with respiratory disease, to a respiratory specialist.

Approval and Contact Details
This submission has been reviewed and approved by the Board of the Thoracic Society of Australia and New Zealand and the Board of Lung Foundation Australia.

We are happy to expand on any of the matters raised in this submission.

For further information please contact the CEO, Ms Tanya Buchanan at The Thoracic Society of Australia and New Zealand Ltd (TSANZ).

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