Submission No 1

INQUIRY INTO 2024 REVIEW OF THE DUST DISEASES SCHEME

Organisation: Australian Institute of Occupational Hygienists, Inc.

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AIOH Submission

2024 Review of the NSW Dust Diseases Scheme

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Who we are

Occupational hygienists are the main frontline professionals who assess worker exposure to health hazards to prevent ill health through science-based investigation and testing of the efficacy of risk controls.

The Australian Institute of Occupational Hygienists Inc (AIOH) is the largest professional body for the scientists and engineers dedicated to protecting the health of workers in Australia. Established more than 40 years ago our members are at the coal face of health and safety assessment and risk reduction, working in metropolitan, rural and remote locations. We are in a unique position to understand the true nature of workplace health hazards and the efficacy of the protection against occupational illness provided to Australian workers.

The AIOH is the certifying body ensuring professional occupational hygienist competency and maintains registers of professional members and Certified Occupational Hygienists (COH)® to assist organisations seeking to engage the most highly skilled occupational hygienists.

Our mission is to promote healthy workplaces and protect the health of workers through the advancement of the knowledge, practice and standing of occupational health and occupational hygiene. The AIOH is a founding member of the International Occupational Hygiene Association and many Australian occupational hygienists are engaged in occupational hygiene research with international collaborators. The AIOH brings world-wide experience and insights on a range of traditional and emerging occupational hygiene issues.

Summary

Occupational hygienists work to prevent illness and disease in the workplace, which includes the prevention of significant occupational exposure to dusts that cause disease. Occupational hygienists specialise in the anticipation, recognition and control of workplace exposure and work closely with other health professionals working in health surveillance and worker's compensation.

We acknowledge the improvements in place in NSW since the last review of the scheme was conducted. This includes the ban on the manufacture, supply and installation of engineered stone benchtops, panels and slabs, and the adoption of the model crystalline silica substances amendment to the Work Health and Safety Regulations.

We thank the NSW Government for the opportunity to make a submission to the review of the Dust Diseases Scheme. We understand that the Committee's focus is on two key areas in this review, being the support available to younger workers with diagnosed dust diseases, and other high risk activities for silicosis such as tunnelling and quarrying. We share the committees concerns in these areas and we raise additional points for consideration by the committee in our submission.

We make the following priority recommendations:

1. Guidance on returning to work is needed to support all NSW industries where dust diseases are likely. We recommend that a certified occupational hygienist (COH)® with knowledge and experience in exposure assessment be engaged to support this guidance in conjunction with medical, toxicology and aerosol scientists.
2. Options for extended support for medical assessment for workers who have left at-risk industries is needed. At present, when workers leave their employment, the screening processes cease. As disease can manifest years or decades later, these workers may not be receiving the necessary medical screening and care.
3. A revised Tunnels Under Construction Code of Practice is urgently needed.
4. We recommend that it be a requirement for NSW Government employers, in addition to private entities and projects which receive NSW Government funding, to use the services of icare rather than through private medical providers where workers require health monitoring for crystalline silica. Where capacity challenges exist, a secondary measure could be to require any health monitoring screening data undertaken by a provider other than icare to be submitted to icare on a routine basis.
5. Guidance in the form of a Code of Practice is needed to address the requirement for basic competencies of those who undertake monitoring for RCS along with the

process and interpretation of monitoring and applying the results to testing and implementation of dust control strategies.

The AIOH would be very happy to nominate a representative to give evidence in person at a public hearing.

Submission

Support available to workers after diagnosed dust disease

What is a safe environment to enable return to work?

As the realities of excessive silica dust exposures from a range of industries manifest, NSW employers and policymakers must grapple with the complexities of supporting workers who are returning to work after lung disease diagnoses. Exacerbations and / or acceleration of conditions associated with dust diseases impose a significant burden on both the individual and the healthcare system, underscoring the need for comprehensive strategies to address this issue.

We note the world-first guide published by the Queensland Workers' Compensation Regulatory Services for workers returning to work with a mine dust lung disease puts forward a strategy to provide enhanced surveillance of workers with dust diseases. This guide classifies workers according to their level of clinical impairment (e.g. predicted FEV_1) or radiological classification. Upon return to work, stricter exposure standards should be applied to these workers for airborne contaminants (e.g. inhalable dust, respirable dust and respirable crystalline silica) depending on their classification. The guide also includes requirements around enhanced medical surveillance and increased dust monitoring frequencies.

The principles outlined in this guide have recently been adopted by Coal Services Health in NSW for coal mine workers diagnosed with work-related respiratory conditions.

These guides are welcomed as a first step in addressing the important issue of return to work for workers impacted by disease. There are significant challenges that remain, particularly around determining what constitutes a safe working environment for workers whose dust disease makes them susceptible to further harm.

The above-mentioned guides require occupational hygienists to review air monitoring data for groups of workers (referred to as 'similar exposure groups', or 'SEGs') and "*determine if the exposure profile is adequate*".

At present there is no clear definition or advice as to what statistical measure of air monitoring data should be used to determine adequacy of the exposure profile with the recommended exposure standards. Additionally, a requirement for "*enhanced*" monitoring of exposures experienced by the worker is required. Again, the particular regime for this monitoring is not identified, except a time-based recommendation of "*quarterly*". In practice this could constitute as little as one full shift sample of a workers exposure in a 3-month period.

Uncertainty in areas surrounding exposure assessment decisions will inevitably cause conflict and unease around this definition when occupational hygienists try to explain the process or present a determination to medical officers, workers, their representatives and employers.

In the light of growing numbers of compensable dust disease cases, we recommend that guides of this type be extended to all industries at risk of dust diseases to facilitate the safe employment of workers with dust diseases. We recommend that certified occupational hygienists (COH)® with knowledge and experience in exposure assessment be engaged to support the development of a revised version of these guides for implementation in NSW in conjunction with medical, toxicology and aerosol scientists.

Gaps in support for exposed workers

If any worker is diagnosed with occupational dust disease, there is a need to identify whether there is over exposure to an agent such as respirable crystalline silica (RCS) by carrying out a thorough occupational hygiene survey of the associated workplace/s. If exposure is high, control measures should be implemented as a matter of urgency and all workers offered screening for dust diseases. However due to the lag between exposure to RCS and the development of disease, the workplace(s) where exposure occurred may no longer exist. This is particularly the case with tunnel construction and the construction environment more broadly.

While the sad reality of the many cases of silicosis in young workers must be addressed, we submit to the Committee that diseases like silicosis still often become apparent after a worker has left the workplace or into retirement. Health monitoring for crystalline silica is only offered to at-risk workers while employed. Undiagnosed but exposed workers are seldom offered continuing medical monitoring once they leave employment. When the disease manifests, typically the support is no longer available.

We understand the focus on silicosis, but we also raise the increased risk of lung cancer following repeated exposure to RCS. Lung cancer can develop with or without silicosis. The link between lung cancer and RCS exposure can be missed, particularly if it has been some time since the worker left employment.

Latest risk estimates suggest that following 40 years exposure for eight hours per day to 0.0363 mg/m^3 RCS (less than the current workplace exposure standard), there would be four excess lung cancer deaths per 1,000 exposed workers.

Other diseases have also been associated with silica exposure: chronic obstructive pulmonary disease (COPD), renal diseases, cardiovascular diseases, autoimmune diseases for example. Many of these are also slow to be diagnosed.

We recommend that the Committee consider options for extended support for medical assessment for workers who have left at-risk industries.

Tunnelling and Quarrying

Return to work

Tunnel workers affected by dust diseases typically experience chronic silicosis. While not categorised as 'young' workers, the size of this cohort is significant.

There is an increasing challenge with the number of workers diagnosed with silica-related diseases that are identified during routine health monitoring who are still early in their working life and who stay in the tunnelling industry. This scenario requires active management in consultation with other stakeholders such as occupational physicians, occupational hygienists, the employer and the affected worker. At present, no guidelines exist for management of this ever increasing scenario.

Level of risk

The insight from occupational hygienists on what is happening 'on the ground' provides a unique and valuable perspective different to that of clinicians and physicians who see the patient but not the dust. Occupational hygienists have first-hand experience of the current management of RCS exposure in Australian workplaces, however there is scarce public information available on how effectively RCS exposure has been controlled across Australia.

In 2022 we published a survey of occupational hygienists about their practical experiences and perspectives on RCS exposure and regulatory action across a range of industries. Based on professional experience, 71% were concerned about the potential for RCS over-exposure. Barriers to adequate exposure control included lack of management commitment and financial resources. The employment of specialist occupational hygiene inspectors by regulators was considered to be the most effective strategy to enforce standards. This is consistent with our previous submissions to this review.

From our survey, we can report that in construction and tunnelling sector less than 10% of respondents reported that all exposures to RCS were less than the workplace exposure standard with very good single or multilayered controls in place. Occupational hygienists were concerned about potential over-exposure, and worryingly, approximately 20% of respondents in the construction and tunnelling industries reported that air monitoring is 'seldom' undertaken appropriately to assess exposure to RCS and where it is, compliance is suboptimal (e.g. exposures above the RCS exposure standard).

We identified that there are a large number of exposed workers in the construction industry, with only a moderate awareness of the effects of dust exposure. This could lead to significant cost shifting of the burden of occupational lung disease from employers on to individuals and into public health systems, such as the dust diseases scheme.

We note the new legislative requirement to notify a WHS regulatory authority of exceedances of the workplace exposure standard for RCS. SafeWork NSW will therefore be alerted of this issue at the time of exposure, hopefully leading to intervention to prevent the onset of disease.

Unlike disease surveillance of any condition, exposure surveillance fills an important niche in occupational health because it identifies risks of ill-health, including long latency or chronic diseases, without waiting for the disease to manifest. It also allows for intervention and exposure reduction efforts to target interventions to locations already identified to be sources of exposure. In addition, it also removes any concerns of individual privacy in the reporting of health status. Exposure surveillance can also take into account the organisational context in which the exposure occurs — especially fixed industry versus mobile workforce such as construction, or on demand (gig) and freelance work etc.

Code of Practice

We refer to our previous submission to the NSW Government on the Tunnels Under Construction Code of Practice review in June 2023. In that submission we stated that there were changes in technology, the working environment and day to day work practices which have taken place after the previous code was published. Indeed there are specific hazards and risks needing further consideration, and that a revised code is urgently required.

The table below summarises changes in technology, the working environment and day to day work practices impacting the risk of dust diseases since the publication of the previous Code. Unfortunately, more than 12-months on, the Code has not progressed.

The majority of all Australian tunnelling occurs in the state of NSW. We urgently recommend that the NSW State Government lead the revision and publication of a revised Tunnels Under Construction Code of Practice.

Table: Summary of changes relevant to a revised Tunnels Under Construction Code of Practice

Factors that increase the risk of dust diseases	Factors that decrease the risk of dust diseases
○ Recent tunnel projects have had condensed construction timeframes. This leads to some work activities impacting adjacent work groups. This increasing trend of parallel working activities whereby tunnelling occurs at the working face while back-end works occur at the same time results in some challenging environments to manage from a temporary ventilation perspective. ○ Many tunnel spans (tunnel diameter) are increasing which poses some challenges with the effectiveness of temporary ventilation. ○ Worker shift lengths have generally increased with most working extended shifts more than 40-hour work weeks. ○ There is an increased transient workforce between projects in addition to more younger and inexperienced workers entering the industry (skills gap). ○ There is a heavy reliance on respiratory protection to reduce exposure to below the Workplace Exposure Standard for respirable crystalline silica.	○ There is an increasing amount of new technologies where generated dusts are able to be removed at the source. ○ The use of closed-cabin positive pressure cabins on heavy plant is increasingly common. ○ Release of Standards that have applicability (e.g. ISO 23875 Standard for Air Quality Control Systems for Operator Enclosures in Mining). ○ Increased awareness and use of health risk assessments, exposure control plans, and the use of critical controls to address significant hazards present in tunnelling. ○ Real time indicators for critical control verification are now available (e.g. cabin pressurisation real time monitoring, ventilation performance etc). ○ There is an increased use of remote-controlled heavy plant, dust suppression, walking scrubbers, localised scrubbers (e.g. cross passages), underground refuge area, and surface miners and trenchers coupled with the use of tow-behind scrubbers. ○ There is an increased use of real-time monitoring to detect hazardous sources of airborne contaminants and the associated effectiveness of control measures applied; and challenges remain with the use and limitations of this technology. ○ There are lower and new exposure standards for hazardous chemicals such as respirable crystalline silica and diesel particulate matter. ○ There are many advancements in electric vehicles and improvements in emissions control technology generally. ○ There has been improvement in respiratory protection management programs through improved designs (eg PAPR systems) and respirator fit-testing through the AIOH RESP-FIT accreditation program

Prevalence

We note the Committee Chairs aim to learn more about the current prevalence of dust diseases, and submit that at present, there are only a few avenues available to government to obtain this information.

While the newly established National Occupational Respiratory Disease Registry (NORDR) contains information of those with a diagnosed occupational respiratory disease, its use in calculating a prevalence is limited. Firstly, the NORDR does not include all dust diseases under the NSW scheme, and secondly, the NORDR does not include information on the number of persons screened (i.e. the denominator) preventing a prevalence calculation. Thirdly it has not publicly reported since it was set up and the mechanism for reporting is unclear.

A mechanism available to the NSW Government is to review the health monitoring and screening activities conducted by icare NSW for tunnel workers. As tunnelling contractors can choose whether to use icare or another medical provider, any prevalence calculated through the review of icare information may be limited.

Most tunnel projects constructed in NSW are funded, at least in part, by the NSW State Government. We recommend that it be a requirement for NSW Government employers, in addition to private entities and projects which receive NSW Government funding, to use the services of icare rather than through private medical providers where workers require health monitoring for crystalline silica. Where capacity challenges exist, a secondary measure could be to require any health monitoring screening data undertaken by a provider other than icare to be submitted to icare on a routine basis.

This action would ensure that icare obtains information on diagnosis and the population of screened workers, thereby enabling an understanding of the prevalence of silica-related disease in this, and other, high-risk industries.

Other items of importance to this review

Measuring silica dust in air

The previous review of the dust diseases scheme heard of technological developments to improve real-time monitoring of air quality. Since that review, the stationary real-time monitor known as the Trolex Air XS has come to market and used across workplaces in Australia. We are aware of a review into the efficacy of the Trolex Air XS being undertaken by the NSW Chief Scientist & Engineer. We await the output of their review before commenting further on this specific product.

That aside – we provide some information to clarify for the committee the difference between RCS in air monitoring as required under Regulation 49 and 50 of the NSW Work Health and Safety Regulation, and real-time air monitoring below.

There are various methods of measuring RCS in air. A well-informed workplace may use multiple methods to better understand the risk of exposure. However, only personal exposure monitoring results assessed in accordance SWA Guidance on the interpretation of WES for airborne contaminants can be used to evaluate compliance against a Workplace Exposure Standard. The table overleaf summarises the common methods, their function and specific considerations. Further information can be found here.

We share this information because there is an increasing trend by product suppliers to sell real-time monitoring devices for air monitoring to businesses under the guise of being able to use them to comply with the new silica regulations. While using real-time monitoring supports personal exposure monitoring as required by the WHS Regulations, it does not *replace* it.

This issue highlights an increasing trend of persons offering air monitoring services to employers for RCS. Under legislation, employers must engage a competent person in relation to RCS in air monitoring, however experience from our members suggests that persons engaged do not always hold a relevant competency. We are concerned at the risk of persons providing incorrect advice to employers on high-risk substances such as RCS.

At present there are no minimum mandated competency levels for RCS in air monitoring. To address this, we recommend that a Code of Practice be applied in NSW that addresses the need for basic competencies of those who undertake monitoring for RCS along with the process and interpretation of monitoring and applying the results to testing and implementation of dust control strategies. This should include monitoring undertaken by professional occupational hygienists overseen by a Certified Occupational Hygienist (COH)®.

Table: Summary of Air Monitoring Methods for RCS

Method	Description	Function	Considerations for Use
Personal exposure monitoring	Involves using personal samplers worn by workers in breathing zone to measure RCS exposure during shifts, including breaks.	• Assesses workgroup exposure based on representative amount of individual samples. • Required to evaluate compliance against WES or whether exposure from CS processing reasonably likely to exceed 50% of WES as per Reg 529CA. • May indicate future workgroup exposures, if statistically valid data is captured.	• Requires equipment and process to meet Australian Standard AS2985 method for sampling and analysis of respirable dust. • Requires analysis by a NATA-accredited lab using validated methods such as Xray Diffraction (XRD) or Fourier- Transform Infra-Red (FTIR). • AIOH recommends this type of air monitoring be undertaken and interpreted by persons with specific competencies outline here
Static (fixed) sampling	Measures RCS levels in specific areas to identify sources and assess process control effectiveness	• Useful for verifying engineering controls and prioritizing dust management efforts. • Helpful to identify sources of CS and whether they are releasing RCS.	• Locations of static sampling points should be well-documented for repeatability. • Results inform control effectiveness but cannot be used for demonstrating compliance with a WES. • AS2985 method for sampling and analysis of respirable dust still applies.
Real-time monitoring	Uses direct-reading devices for immediate dust concentration measurements.	• Indicates dust concentrations in a work area or during a work task over time. • Supports real-time control adjustments. • Investigate dust sources. • Detect peak exposures. • Not all monitors are specific to CS. More commonly they measure all dust particles	• Allow for rapid response as provides real-time dust results typically displayed on a digital interface or screen. • Cannot be used for demonstrating exposure against a WES. • Useful for indicating how long dust concentrations remain airborne and for when controls need to be increased for example respirators worn. • Competence in operation and knowledge of limitations of particulate real time monitors is essential.

Research

We note the research is currently underway that is directly relevant to this review. This includes research at:

- The University of Queensland into returning to work after dust lung disease;
- Monash University into non-invasive screening for silicosis, use of Ultra-low dose CT scans for diagnosis, use of AI in screening CT scans; investigating measures to improve detection of dyspnoea and optimising future healthcare and support for people with silicosis;
- The University of Sydney into respirable crystalline silica exposures to tunnel construction workers in Australia; and
- The University of Adelaide into evaluating real-time dust monitors for use in quarries.

The Committee may wish to seek an update from the researchers at the institutions above to inform the review.