National Dust Disease Taskforce - Phase 2 Consultation Paper.

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Regulatory and Guidance

1. From a regulatory perspective, what should be considered 'engineered stone'? Please provide the rationale for your recommendation.

From a health perspective the principal identifying feature of the material is not whether it is engineered or artificial but the percentage of quartz present in the material. Regulatory classification could be tiered on the basis of the quartz composition. It would then be possible to have a multi-tiered classification covering all quartz containing building materials with recommended controls for each tier. This approach is based on the established principle of Control-Banding, used extensively in other jurisdictions[1], its adoption in Australia has been limited. This point was made in 2010 in relation to engineered nanomaterials in the SafeWork Australia report "Engineered Nanomaterials: Feasibility of establishing exposure standards and using control banding in Australia". The authors concluding;

> "However in general, Australian workplaces do not have wide experience of using the control banding approach for other hazards. This situation is likely to remain so until there is impetus nationally to accept the control banding approach in support of State, Territory and Commonwealth regulations. Control banding should be used together with the conventional approach of assessment and control undertaken in the current jurisdictional regulations, including those existing for human carcinogens."

Since that time little progress has been made on the use of control banding in Australia.

2. Various jurisdictions have already banned uncontrolled dry processing of engineered stone. What other practical measures could be introduced to reduce worker exposure to silica dust?

There are a range of dust extraction units available for both fixed and portable power tools. The availability of these to small and medium sized enterprises through existing rebates such as the SafeWork NSW Small Business Rebate is currently limited to $500. Temporarily increasing the value of rebates such as this in conjunction with widespread communication of the program may create a step change in the magnitude of the uptake of engineering dust controls. The adoption of engineering controls has been estimated to be of lower long term cost and more effective at reducing ill health [2] than extensive use of PPE alone.

3. Relevant to dust-related diseases, what mechanisms exist or could be further developed to ensure effective enforcement of regulations and codes of practice?

Relevant to construction and demolition sites the fugitive generation of dusts is indicative of the general attitude to dust control on the site. In NSW the majority of construction sites are not scheduled under the POEO Act, aside from major projects, and so dust generated on construction sites do not require licensing by state environmental regulators.

Non-scheduled construction sites are regulated by local government. The environmental management and resolution of any air pollution-based nuisance or off-site impacts caused by dust from such sites is the responsibility of the site owner and operator and policed by local government. Local government does not have jurisdiction on OHS issues, but could require the implementation of dust controls which positively benefit both the environmental emissions and occupational exposures of approved construction projects. For example:

The local government air quality toolkit is a required component of building consents https://www.environment.nsw.gov.au/resources/air/mod3p3construc07268.pdf

A requirement to install real time dust monitoring on larger scale projects could be added to building consents. This condition of consent could be used by local government to check on the actual level of control during inspections and / or be provided to regional WHS regulators to conduct random inspections. This information would also identify the companies involved in the works and the degree of control such companies adopt.

4. Hazard elimination sits at the top of the hierarchy of control measures (see https://www.safeworkaustralia.gov.au/risk for an example of a hierarchy of control measures). Do you consider a ban (either total or partial) of high silica content engineered stone material, a proportionate and practical response to the emergence of silicosis in the engineered stone benchtop industry in Australia?

   If a tiered response is adopted based on silica content, high silica materials may be subjected to extensive control which could involve partial restrictions on access. Combined with the adoption of a strategy similar to that described in ASTM E2625-19 "Standard Practice for Controlling Occupational Exposure to Respirable Crystalline Silica for Construction and Demolition Activities", where specific tasks are associated with mandatory types of control would provide clear unambiguous requirements without the need for a total ban.

5. The Taskforce is aware some jurisdictions are considering a licensing scheme for engineered stone. Do you consider this a proportionate and practical response in relation to the following:
   1. restricted (under licence) or otherwise prohibited manufacture in Australia?
   2. restricted (under licence) or otherwise prohibited importation and distribution?
   3. fabrication and installation performed only under licence?
   4. licence required after installation modifications or repurposing of installed engineered stone?

   A licensing scheme of fabrication and installation would identify the main users of high silica containing engineered stone enabling regulators to perform surveillance of these premises. Modelling the licensing scheme on the Pesticide Regulations which include provision for 5 yearly training, licensing, supervision and exemptions could form part of a proportionate response. If a tiered product hazard classification was implemented the elements of the licensing scheme could reflect the different levels of hazard.

   A licensing scheme for after installation modifications or repurposing of installed engineered stone would largely miss DIY and homeowners.

6. What learnings from the re-emergence of accelerated silicosis as an occupational health and safety risk can be applied to enhance workplace health and safety systems more generally?

   The inadequacy of current national and state institutions charged with oversight of worker health is a significant learning from both the accelerated silicosis and re-emergence of coal mine dust diseases. WHS Authorities have a heavy focus on acute injury and illness, not chronic disease. Future occupationally acquired diseases arising from changes in the working environment and worker demographics are largely unknown as the current reliance on workplace injury / illness data is primarily from workers compensation data. Workplace health and safety systems need to address chronic occupational health issues to a greater extent.

Workforce Organisational Culture

7. Given the nature of the building and construction industry, and the increase in the number of smaller, often independent businesses and suppliers, what particular strategies and supports are needed to ensure that these businesses are able to provide adequate protection for workers?

   As noted in Q3 Given many construction business require local government approvals for construction works, incorporating a mechanism to require construction and building companies to supply enhanced dust control measures in building consents may drive additional protection for workers. The provision of clear unambiguous guidance written specifically to the level of small – medium business is needed.

Current regulatory Codes of Practice are a complex mix of technical, regulatory and control advice. In trying to be all things to all readers the documents fall short of providing simple control advice and can be lacking in technical detail for occupational health professionals.

8. What health and safety strategies can be improved?

A consistent message throughout Australia.

Simple control advice to non-technical PCBU's who do not have access to OHS advisors

9. What return to work support is available or should be considered to assist workers following a diagnosis of silica-associated disease, including for those who are unable to return to the engineered stone industry?

I'm not qualified to address return to work strategies, however evidence has been published that indicates mine workers with dust diseases who are removed from work continue to experience progression of disease. [3].

10. What are examples of good dust exposure workplace monitoring processes? (Where possible please provide evidence to support the effectiveness of these processes).

For small to medium sized businesses the exposure assessment strategy described in European Standard EN 689:2018 adopts a pragmatic approach to dust exposure monitoring , with a focus on the implementation of exposure controls. The approach commonly applied in Australia and incorporated in state guidance (such as Queensland Government Code of Practice for engineered Stone 2019) is not cost effective for small to medium sized businesses. As such there is a reluctance to monitor silica dust exposure in SMEs unless directed by a regulator.

It would be more appropriate to develop and implement means for the regular monitoring of the performance of controls rather than the exposure. One example of this is the continuous monitoring of differential pressure in enclosed cabins used on mobile equipment and fixed control rooms. This example provides a means of measuring the positive pressurisation of cabins occupied by workers preventing the ingress of dust into the environment. Another example is the use of direct reading differential pressure measurement across fixed dust extraction systems which provide continuous monitoring of the velocity pressure (and hence flowrate) of dust extraction systems. When the pressure drops below a certain value an alarm or some notification or even interlock occurs top prevent further dust generation activities.

Resourcing and Capability

11. What specific resources (e.g. information, education, other supports etc.) are required, that are not currently available, for small to medium sized businesses, to ensure that owners and staff are fully informed of the availability and correct use of control methods, including by workers from non-English speaking backgrounds?

The original US OSHA communication on silica "If its silica its not just dust" is a straightforward simple message that has been repeated over the years in the USA both nationally and by state OSHAs. Australian regulators have taken a fragmented messaging approach which results in a dilution of the overall simple message. A simple Google search of this demonstrates the variety of messages used in Australia. Given that the majority of the affected population would obtain their information from the internet, a consistency of messaging for Australian workers would be beneficial.

12. With a specific focus on dust related diseases, what mechanisms exist that could be used as a basis for providing a coordinated national system with representation across stakeholder disciplines for identifying and communicating emerging issues?

Requiring the Department of Health or SafeWork Australia to provide to the heads of WHS agencies a 1 or 2 yearly review of the international literature on trends or sentinel events specific to occupational health diseases. This could be broken up by the main disease categories according to ICD-10 or ICD-11.

The Australian Institute of Health and Welfare collects and compiles a range of health and welfare data through multiple sources. Augmenting the terminology used by the National Clinical Terminology Source in SNOMED CT-AU to include terms used by Occupational Hygiene professionals to describe exposure and expanding the range of occupations and agents would enable a more complete exposure assignment record against individuals diagnosed with dust related diseases.

Research and Development

13. What industry mechanisms could be introduced to ensure workers have appropriate competencies for handling engineered stone or performing processes that generate silica dust?

Adopting a model similar to that used in Pesticide Regulations for high silica materials may provide an avenue to increase competencies among workers handling engineered stone.

14. What are the specific challenges related to linking workplace exposure with disease development (at a later date) and how should these be addressed?

The collection and quantification of exposure data as they apply to specific occupations and occupation sub-classes must be facilitated by the development of a specific data standard. Such a standard for the collection of occupational exposure data could be developed under the auspices of the National Health Data and Information Standards Committee (NHDISC) of the Australian Institute of Health and Welfare (AIHW) in conjunction with persons knowledgeable in occupational exposure assessment. This could create a standard which would enable either national or state-based exposure registers to be compiled or crosswalked from existing data sets i.e. WA Resources Safety CONTAM database or commercial enterprise systems i.e. Cority

This standard would include criteria to address consistency of assessment methods, workplace conditions, and types of samples collected. Once the standard is developed, data from regulators, published studies and commercial organisations can then the used to commence populating exposure register(s). Given that initially there is likely to be a scarcity of data, the use of bayesian statistical methods [4] incorporating qualitative priors based on peer-reviewed published studies would provide early estimates of exposure profiles for occupational groups.

15. What are three key pieces of information about dust disease that you would like to see collected at a national level? What are the three key uses of the information collected at a national level?

    1. The occupational classification(s) of persons with diagnoses of respiratory diseases linked to or associated with dust exposure. These classification(s) should be the ANZSCO code.
    2. The time since first employment in these occupations.
    3. The size of the enterprise the person was employed in.

These three pieces of data will provide insight into the occupations being affected by dust diseases and not just silicosis. The use of standard coding will enable international comparison. Estimates of duration of exposure can provide initial crude estimates of exposure, which could be augmented in the future with quantitative data. Enterprise size can support the delivery of strategies to SME's in relation to dust diseases.

16. What alternative products are currently available which could replace high silica-content engineered stone? How could we drive innovation in relation to products?

I am not sufficiently knowledgeable on alternative products to provide meaningful comment

17. The interim advice identified immediate research priorities which has led to a research funding grant opportunity announced by the Medical Research Future Fund and National Health and Medical Research

Council. Are there other research priority areas that have not been identified in the interim advice that should be considered, and why? What research areas should be a priority following this first round of research funding?

Much of the literature and dose-response information in relation to respirable crystalline silica is based on the mass measurement of crystalline silica in the respirable fraction of inhaled dusts by X-Ray powder diffraction or Infra-red spectroscopy. There are acknowledged uncertainties in the measurement of the respirable fraction depending on the different cyclones and particle size distributions of the sampled dust clouds [5-8]. Differences in the analytical response by the two commonly used methods is also dependent on the particle size of silica and considerable uncertainties arise, even among accredited laboratories [9]. These uncertainties have been largely ignored by occupational hygienists in Australia.

The differences in the particle size distributions of silica containing mineral dust exposures are one area of investigation for 2 potential outcomes:

1. Clarification of the role of particle count (or particle number) on the exposure response as opposed to the traditional mass concentration. It is known that amorphous nano-silica particles exhibit increased inflammatory responses in the lung [10, 11]. Differences in the exposure response outcomes in epidemiological studies across different silica exposed occupational groups may be partially explained by differences In the particle count exposure rather than simply the mass of respirable silica.

2. Clearer identification of particle size distribution can enable more targeted control measures such as the development of higher resolution CFD models to refine ventilation systems or configure the use of specific spray configurations and types such as high pressure micro-mist water sprays for more efficient control of fine aerosols.

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