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WES review - Release 1 (RCS)
Safe Work Australia evaluation of Workplace exposure standards for airborne contaminants

3 May 2019

Australian
Chamber of Commerce
and Industry

Australian Chamber of Commerce and Industry

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Introduction

The Australian Chamber of Commerce and Industry (**Australian Chamber**) welcomes the opportunity to provide a response to Safe Work Australia's (**SWA**) draft evaluation report for crystalline silica released in February 2019.

The Australian Chamber is concerned that the proposed lowering of the respirable crystalline silica (RCS) WES to 0.02 mg/m3 may occur without due regard to a range of current activities and issues beyond the narrow scope of whether the draft evaluation report has been drafted with technical accuracy.

Due to these concerns, our submission addresses a number of broad issues in relation to silica, health-based versus pragmatic standards, use of exposure standards, measurement of airborne contaminants, compliance with exposure standards and practicality and feasibility issues of a lowered WES. This is in addition to commentary on the daft evaluation report.

From these broader observations we provide the following key recommendations:

Recommendation 1: A pragmatic standard for RCS

A pragmatic WES value is needed for crystalline silica given the difficulties in measurement, lack of a clear NOAEL, varying views on toxicological information and data and practical challenges with implementing controls and demonstrating compliance.

Recommendation 2: Standardised air monitoring methodologies

Promotion of standardised air monitoring methodologies for occupational hygienists and regulators is needed to ensure sampling and analysis is conducted with commonly available technology and at levels that can be consistently measured.

Recommendation 3: Maintain a TWA of 0.1 mg/m3

The TWA value should remain at 0.1 mg/m3 noting; there already exists a legislative requirement on PCBUs to ensure that risks from exposure are eliminated or minimised as far as is reasonably practicable, there are limitations in measurement technology which restrict the accurate measurement of very low-level exposure below 0.05 mg/m3, there are existing issues with demonstrating compliance that would be exacerbated with a lower WES, the current action level is 0.05 mg/m3 and a value of 0.1 mg/m3 allows for 'reasonably practicable' efforts when the exposure is below this. Additionally we note that there is now increased regulator proactive investigation and a large number of resultant enforcement actions at this level.

Australian Chamber of Commerce and Industry

Recommendation 4: Explore the use of Schedule 10

The WES are mandatory blanket limits for all industries. It is known that various activities across a range of industries have different exposure risks. We propose that SWA should explore the use of Schedule 10 in the model WHS Regulations to differentiate high-risk/exposure activities.

Recommendation 5: Awareness campaigns to provide education and information on silica across impacted industries.

Awareness and education campaigns on WES, silica risks and obligations around air and health monitoring targeted at small and medium businesses are critical to an effective response to the issue.

Education and awareness activities should be undertaken to increase PCBU and worker knowledge of the risks of RCS exposure, need for, limitations and correct use of RPE and higher-level control strategies.

Industry funding should be provided to allow for the provision and dissemination of meaningful information targeted at specific industry sub-sectors through industry associations.

Recommendation 6: Compliance support and monitoring

Regulators should provide increased support and resources to inspectorates for greater proactive compliance monitoring and education activities by inspectors.

Any departures from the current WES should be phased in with an appropriate adjustment period, and a range of initiatives should be developed to help workplaces understand and comply with the requirements.

Recommendation 7: Further research into technologies and controls.

Further research is needed into what technologies and PPE are available (and at what cost) to assist PCBUs in ensuring exposure is below the standard and ALARP, particularly for SMEs. Research should also be conducted into understanding the residual exposure when various controls are used and which controls work better for what tasks.

These comments are provided on the basis of feedback from members and wider consultations and are in support of any comments from our individual member organisations. These comments are made by Australian Chamber in its own right, without prejudice to any consideration of these matters or submissions made by any of our members.

1 Tackling Silica as a national priority

There has been a highly publicised spike in the number of silicosis diagnoses in workers in the stone industry since mid-2018. This has resulted in significant community concern and an expectation for regulatory action including a revision and update of the silica exposure standard.

In response to this, many jurisdictions have advised they have implemented targeted interventions to improve understanding of the risks and control measures required under the WHS laws including air monitoring, health monitoring and other enforcement activities.

In October 2018, a national registry was discussed at the COAG Health Council where it was agreed the Principal Clinical Committee would conduct an examination of such a registry.

SWA Members added occupational lung diseases as a priority condition to the *Australian Work Health and Safety Strategy 2012–2022*. At the December meeting a forward work plan for occupational lung diseases (including additional silica actions) was agreed that aims to address work practices and industries where workers:

- may be exposed to agents that can cause occupational lung diseases, and
- are exposed to respirable crystalline silica and consequently being diagnosed with silicosis.

The forward work plan includes:

i. development of national guidance materials for working with silica and silica containing products as priority
ii. updating the *Occupational lung diseases in Australia* report
iii. conducting a literature review on advances in technologies to control airborne dust in the workplace
iv. publishing *Exploring dust exposure in the stone industry* on the Safe Work Australia website including the context in which the research was carried out and should be used
v. developing a National awareness campaign based on the Breathe Freely program with the AIOH
vi. investigating MADIP as a data source to estimate the incidence and industry profile of occupational lung diseases, and
vii. collecting and analysing data provided by the jurisdictions to inform future national policy work.

In addition and covered in section 2, industry associations also responded with the development and dissemination of information on how to identify and manage silica exposure.

This not insignificant amount of work is important to note as reviewing the WES for Silica is just one of many responses to the issue. Furthermore it is not the 'silver bullet' it may be perceived as and we caution against blanket 'one-size-fits-all' responses to risks identified in particular industries.

The SWA forward work plan has been agreed recognising that:

- An issue with data on the incidence and industry profiles of occupational lung disease, including silicosis was identified;
- The focus of research and regulator activity has been on the stone industry as the highest risk profile;
- Research has shown limited awareness about the health and safety risks associated with generated dust in stone industry workplaces, a lack of awareness of appropriate control measures and incorrect selection and use of PPE;
- Most jurisdictions have focused activities on the stone industry and indicated only recent proactive compliance and enforcement activities specific to this issue;
- There is widespread non-compliance relating to exposure levels, use of controls such as respiratory protective equipment (RPE) and air/health monitoring; and
- There is limited knowledge of technologies available to control airborne dust in the workplace.

These issues are also relevant to consideration of a Silica WES.

We strongly believe this program of work which will provide much needed information, data and evidence should be conducted prior to progressing the updating of the WES on Silica.

1.1 What industry is doing?

The Australian Chamber and our members are committed to improving health and safety outcomes in workplaces. Recognising there is significant industry and community concern regarding the recent spike in diagnosis of silicosis in workers exposed to RCS in the engineered stone benchtop industry, our members have produced materials to increase awareness and provide guidance to employers within their sectors.

Specific examples of Industry Association activities to promote awareness are set out below.

Manufacturing (brick and paver)

Think Brick Australia

Think Brick Australia (TBA) represents the clay brick and paver manufacturers of Australia. Safety is a major issue and concern for our members.

TBA is aware of the safety concerns from activities associated with brick, block or paver`s cutting works, and encourage the industry to take steps to protect workers from exposure to respirable crystalline silica.

After holding industry forums in late 2018 to develop a response to this growing issue, TBA has produced a fact sheet free to industry on the management of silica dust on site.

The factsheet outlines the health hazards associated with silica dust, presents the key requirements from legislation and provides suggestions for alternative installation methods to control the silica component exposure level. A checklist is also provided.

Manufacturing (concrete masonry)

Concrete Masonry Association of Australia

Concrete Masonry Association of Australia (CMAA) represents the concrete masonry manufacturers. Safety is a major issue and concern for our members.

CMAA is aware of the safety concerns from activities associated with brick, block or paver cutting works, and encourage the industry to take steps to protect workers from exposure to respirable crystalline silica.

After holding industry forums in late 2018 to develop a response to this growing issue, CMAA produced fact sheet free to industry on the management of silica dust on site.

The factsheet outlines the health hazards associated with silica dust, presents the key requirements from legislation and provides suggestions for alternative installation methods to control the silica component exposure level. A checklist is also provided.

CMAA also released the *Workplace Health and Safety Guideline - Management of Respirable Crystalline Silica in Quarries* which is designed to assist quarry sites with implementing WHS standards and includes a tool box talk.

CMAA are also working on a guideline on product SDSs being up to date on silica.

Construction Industry

Housing Industry Australia

RCS is a significant component of the building materials and products used by HIA members to construct and renovate buildings and structures. This includes sand, concrete and concrete products, autoclaved aerated concrete blocks and panels, clay and concrete roof tiles, bricks, ceramic tiles, pavers, fibre cement products and other products.

HIA has prepared an information sheet with advice for HIA members on how to prevent exposure of workers to RCS and to raise greater awareness of this issue. This information sheet is available from HIA's website www.hia.com.au

2 Exposure Standards

Exposure standards refer to the airborne concentration of individual chemicals in the worker's breathing zone which should not cause adverse health effects to nearly all workers.

As tools to eliminate or minimise injury and illness, exposure standards are used to:

- provide information to duty holders about the health risks of work-related exposures to chemicals;
- provide guidance to work health and safety professionals (for example industrial hygienists, occupational physicians and safety engineers);
- help select effective risk controls; and
- determine the effectiveness of existing controls.

Industrial hygienists caution that exposure standards are only one of multiple factors to be considered in evaluating specific workplace situations and conditions noting that WES are based solely on health factors (with no consideration given to economic or technical feasibility), they are tools to be used by professionals trained in the practice of industrial hygiene and they are <u>not quantitative estimates of risk</u> at different exposure levels or by different routes of exposure.

Exposure standards are currently specified in the model Work Health and Safety Regulations as mandatory legal limits to protect the health of workers and minimise exposure to hazardous chemicals in the workplace.

Workplace Exposure Standards must still be considered in the context of the obligations under WHS legislation. The legislation recognises there is a duty to eliminate or minimise exposure to hazards so far as is reasonably practicable. Under Sections 17 and 19 of the WHS Act the risks posed by exposure to substances in the workplace must be eliminated or kept as low as is reasonably practicable.

As part of a risk management approach, the focus should be on eliminating wherever possible and if not possible minimising exposure by controlling the hazard using the control hierarchy.

Regardless of the WES value, PCBU's have a legislative duty to eliminate or minimise exposure so far as is reasonably practicable. Regulators are responsible for monitoring and enforcing this.

SWA guidance on the interpretation of workplace exposure standards for airborne contaminants further states:

Exposure standards do not identify a dividing line between a healthy or unhealthy working environment. Natural biological variation and the range of individual susceptibilities mean some people might experience adverse health effects below the exposure standard. Therefore, exposure standards ***should not*** *be considered as representing an acceptable level of exposure to workers. They establish a statutory <u>maximum upper limit</u>.*

The Australian Chamber maintains that:

- The exposure standards should NOT be used as lines between “safe and unsafe".
- WES are useful tools for professionals to use in determining appropriate controls and effectiveness.
- These standards are best used to assess the quality of the working environment and indicate where appropriate control measures are required. They are used by occupational hygienists to assist and assess effectiveness and appropriate control measures.
- The focus is and should always be on good risk management practices of eliminating wherever possible and if not possible, minimising exposure by controlling the hazard using the control hierarchy as far/low as is reasonably practicable.

Exposure standards are not quantitative estimates of risk and should not be considered as representing an acceptable level of exposure to workers. They establish a statutory <u>maximum</u> upper limit.

Any WES for Silica should reflect this position (as an upper limit) which is currently does at a TWA of 0.1 mg/m3.

3 Silica WES – Considerations impacting TWA value

3.1 Health-based versus pragmatic standards

Recognising that a WES does not replace the requirement in the WHS Regulations to identify and minimise the risks from hazardous chemicals and that they are primarily used as tools to educate, assess exposure and the effectiveness of controls, WES values should incorporate the certainty of health-based standards set at a quantified NOAEL with recognition of pragmatic standards which address the uncertainties for chemicals where it is not possible to quantify a NOAEL and consideration of practicality and feasibility concerns.

Health-based exposure standards

Health-based exposure standards are those that have been set at a level where known adverse health effects are unlikely to occur, referred to as the 'no observed adverse effect level' (NOAEL/NOAEC).

SWA's 2015 Discussion Paper notes:

> *For some chemicals, the level of exposure where adverse health effects are unlikely to occur cannot be determined and a health-based standard cannot be set. For example, for some carcinogens there is no known safe level of exposure. In this case a health-based exposure cannot be set and the exposure standard needs to be set at a pragmatic or 'hazard-control' level.*

Pragmatic exposure standards

Pragmatic exposure standards are set at a level higher than the NOAEL. Pragmatic exposure standards may also be set in situations where it is not reasonably practicable to comply with a NOAEL in the workplace. These exposure standards are set at a level that is reasonably practicable to achieve. Pragmatic exposure standards are also set where there are measurement difficulties.

Most of Australia's exposure standards are health-based standards but a small number are 'pragmatic' exposure standards which take a range of factors into account—like costs of compliance and technical feasibility—not just health considerations.

There is a perception by some that pragmatic standards and health-based standards are dichotomies; that setting pragmatic values compromises health outcomes. Pragmatic standards are not opposite to health-based standards, but rather include consideration of health-based standard quantities and current best available methodologies for detection, analysis and reduction of airborne contaminants. They also allow for reasonable practicability.

Recommendation 1:

A pragmatic WES value is needed for crystalline silica given the difficulties in measurement, lack of a clear NOAEL, varying views on toxicological information and data and practical challenges with implementing controls and demonstrating compliance.

3.2 Measurement

Air monitoring measurement has a number of inherent uncertainties that must be considered in setting a WES value.

These include:

- analytical measurement uncertainty (e.g. +2 to 5 µg)
- unpredictable uncertainties associated with interfering minerals (independent of FTIR or XRD, which both have different levels of sensitivity to different interfering materials), and
- uncertainties associated with sampling (e.g. flow rate and sample duration).

This has led the Australian Institute of Occupational Hygienists (AIOH) to conclude that "the reliable determination of RCS levels less than 0.05 mg/m3 in real world occupational exposure situations is fraught with difficulties."[1]

"Using competently operated modern analytical instruments and methodology, an 8-hour sampling period should provide an **acceptable level of uncertainty at an RCS concentration of 0.05 mg/m3**."

The AIOH strongly recommends:

- Conducting near full shift sampling (i.e. an 8-hour sample period or 12-hour sample period for an 8 or 12-hour shift, respectively) in accordance with AS 2985.
- Due consideration of the limitations associated with both sampling and analysis for RCS. (Caution is needed with regard to the flow rate used and to not overload the cyclone sampler in high dust situations, which makes analysis difficult or even impossible.)
- Use of a NATA accredited laboratory to conduct RCS analysis and that the results are reported on NATA endorsed test certificates.

3.3 Testing technology, techniques and standardisation

There is a need for consistent and standardised practices in relation to silica monitoring. Given the identified uncertainties and variability in readings, it is essential that a clearly articulated air

[1] Australian Institute of Occupational Hygienists (AIOH). (2018) Respirable Crystalline Silica and Occupational Health Issues. Position Paper. AIOH.

monitoring methodology is followed by occupational hygienists, regulators and others conducting the testing.

The detection limits of lab equipment vary to the detection limits of sampling. The agreed methodology should be at a level that the majority of Australia labs and practitioners can consistently measure too (not at the fringes of technological break-through).

Current best practice is that samples are taken in accordance with AS2985-2009 and in conjunction with National Health and Medical Research Council (NHMRC) Methods for Measurement of Quartz in Respirable Airborne Dust by Infra-Red Spectroscopy and X-ray Diffractometry.

The analysis for respirable crystalline silica (RCS) in laboratory can have very low limits of detection, however if the person collecting the sample makes an error in sampling, the capabilities of the testing equipment are irrelevant. Current thinking is that the process for sampling does not allow for accuracy at low levels.

Recommendation 2:

Promote standardised air monitoring methodologies for occupational hygienists and regulators and ensure recommended sampling and analysis is conducted with commonly available technology and at levels that can be consistently measured.

Using competently operated modern and commonly available analytical instruments and methodology, an 8-hour sampling period should provide an acceptable level of uncertainty at an RCS concentration of 0.05 mg/m3.

By using consistent air monitoring methodologies we will be able to build a knowledge base of average exposure in Australia to various similarly exposed groups (SEGs) and for various tasks which can be used as comparison data and to inform segregation of high exposure and low exposure tasks.

3.4 Shift-work complexities

The exposure standard represents the airborne concentration of a particular substance or mixture that must not be exceeded. The exposure standard for silica is in the form of a Time-Weighted Average (TWA)—the maximum average airborne concentration of a substance when calculated over an eight-hour working day, for a five-day working week.

WES values are not static however involving complex measurements and adjustments. One such adjustment is for shift-work.

This is particularly prevalent in the mining industry.

In the WA mining industry WES values are adjusted for shift and roster length in line with DMIRS guide *Adjustment of atmospheric contaminant exposure standards*. In the context of the proposed

TWA of 0.02mg/m3, for an operator working 2-week-on, 1 week-off and 12 hour shifts the adjusted occupational exposure limit (OEL/ WES) will be at the very limit of detection (0.0142mg/m3).

In addition to regulatory exposure standards, companies set internal 'action levels', typically at 50% of the WES to assist them in identifying and managing potentially problematic exposures before they become an exceedance and triggering investigation of the sources of exposure and implementation of suitable control strategies as well as health surveillance. In the case of the aforementioned example the action level would therefore be 0.0071 mg/m3, which falls below the limit of detection. The accuracy of measuring at these levels with current methods is challenging.

This creates obvious practical challenges with measurement as current practice cannot accurately measure below the adjusted exposure standard of 0.014 mg/m3.

To be able to accurately measure to these levels a new cost-effective method would need to be developed prior to reducing the exposure standard (particularly once shift adjusted). Accurate measurement of the RCS exposure is essential to understand who is at risk and to prioritise resources for control.

This again supports the need for a pragmatic standard given the significant measurement issues for shift-adjusted exposure.

3.5 Service Demands

Sampling, evaluating and reporting on exposure is done by professionals (i.e. an occupational hygienist) and is not a task a small business can perform themselves.

Silica is a component of many common products.

Industry has already reported significant concern from small businesses engaging professionals for air monitoring and health monitoring services due to cost considerations and accessibility for those in remote and rural areas.

Furthermore, given the increased attention to monitoring and a proposed lowering of the WES value, we can expect an increased demand for occupational hygienists and testing labs but there may not be enough qualified professionals to measure and evaluate all possible exposures to silica (RCS) and there may be substantial delays at NATA accredited laboratories.

3.6 Toxicological information and data that the value is based upon

The draft evaluation report states there is "no clearly defined NOAEC in humans" however DFG state NOAEL was determined to be below 0.02 mg/m^3 as does SCOEL.

There is no detailed discussion and analysis provided in regards to the authors comments about uncertainties with a NOAEC. The author concludes that there is no clearly defined NOAEC however a number of sources suggest a NOAEC level of 0.02.

The draft evaluation report identified a range of sources that state that an increased risk is identified at 0.05 mg/m^3 or that "a limit of 0.05 mg/m^3 should be protective against silicotic effects":

- ACGIH – "epidemiological studies show 0.05 mg/m^3 is associated with pulmonary radiographic changes"… and "increased risk of silicosis is observed in retirees exposed to 0.06 mg/m^3".
- "Increased risk of lung cancer in those chronically exposed to silica at concentrations above 0.065 mg/m^3".
- DFG – "concentrations of 0.05 mg/m^3 are associated with a risk of 5-10% for silicosis".

The report concludes that all data sources "indicate that chronic exposure above 0.02 mg/m^3 are associated with radiographic changes in the lungs".

Based on the information presented, we would challenge this conclusion noting that the majority of cited sources state clearly the figure of 0.05 mg/m^3 or above is linked to evidence of radiographic change and increased risk of silicosis and some note no adverse effects at 0.02 mg/m^3.

The recommendation of SWA's draft evaluation report does not appear to be based on an objective assessment. It is unscientific and inappropriate to base a WES on 'indicative' factors. Robust evidence is needed. This alone makes the author's basis for the proposed lower WES questionable.

It is unclear how the author has reached the conclusions presented. Furthermore, we note that some of the publications quoted are not freely or readily accessible, and one key publication is not available at all. There are also significant uncertainties associated with the primary sources quoted in the draft evaluation. The draft evaluation report acknowledges that at least two of the sources quoted, the ACGIH and the DFG sources, contain uncertainties in the epidemiological studies. Despite this admission, this is not explored or considered in detail. The uncertainties are likely to be important, even be crucial, in the context of setting up a WES, and cannot be ignored.

The evidence presented to justify the proposed WES does not appear to be compelling without further analysis of the rationale, the uncertainties and the impacts. Without such assessments it cannot be considered reliable.

The report does not provide "a robust scientific justification for the selected WES value" as it stated would be provided.

The report does not provide "a robust scientific justification for the selected WES value" as it stated would be provided.

There are uncertainties in the measurement of workplace exposure levels at the proposed lower WES, and whether achieving the lower WES is feasible in practice. These are significant factors that need to be taken into account.

4 The proposed WES for Silica

Currently, WHS legislation requires a person in control of a business or undertaking (PCBU) to:

demonstrate that all reasonably practicable hazard controls are in place and effective and that attempts have been made to eliminate or minimise exposure, as well as not exceed the relevant workplace exposure standard (WES) as set out in Workplace Exposure Standards for Airborne Contaminant 18 April 2013.

SWA guidance on the interpretation of workplace exposure standards for airborne contaminants further states:

Exposure standards do not identify a dividing line between a healthy or unhealthy working environment. …exposure standards ***should not*** *be considered as representing an acceptable level of exposure to workers. They establish a statutory maximum upper limit.*

It is standard occupational hygiene practice that 50% of the WES is set as the action level where controls need to be improved to reduce exposure.

Currently the TWA is set at 0.01 mg/m^3.

The action level is 0.05 mg/m^3.

The draft evaluation report proposes a TWA of 0.02 mg/m^3.

The revised action level is assumed at 0.01 mg/m^3.

5 Compliance

5.1 The legislation

Australia's model WHS laws are designed to provide the framework for protecting the health, safety and well-being of workers and others, that may be negatively affected by work activities conducted by a business or undertaking. The model WHS Regulations provide the enforcement mechanisms to assist in the elimination and minimisation of risks in the workplace.

The model WHS Act (section 17) requires duty holders to eliminate risks to health and safety, so far as is reasonably practicable; and if it is not reasonably practicable to do so, to minimise those risks so far as is reasonably practicable.

Under the model WHS Regulations (regulation 36), duty holders must minimise risks to health and safety using the hierarchy of controls. These requirements contribute to reducing workplace injury and illness and the corresponding impact on individuals, families, community and economy.

Deciding what is 'reasonably practicable' to protect workers requires consideration of all relevant matters, including:

- the likelihood of the hazard or risk concerned occurring
- the degree of harm that might result from the hazard or risk
- knowledge about the hazard or risk, and ways of eliminating or minimising the risk
- the availability and suitability of ways to eliminate or minimise the risk, and
- after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk .

The model WHS Regulations further specify that persons conducting a business or undertaking (PCBUs) must ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the workplace exposure standard (regulation 49). The regulations specify air monitoring is to be carried out where there is uncertainty as to whether the workplace exposure standard has been exceeded or to determine if there is a risk to health (regulation 50).

In addition, where there is a significant risk to the worker's health because of exposure to a hazardous chemical mentioned in schedule 14, the health monitoring (surveillance) requirement (regulation 368) is triggered.

5.2 Issues with demonstrating compliance with WES

Regulation 49 of the Model WHS Regulations specifies that the PCBU must ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the workplace exposure standard. Unlike the duty to eliminate or minimize risks, r49 is not qualified by "so far as is reasonably practicable".

Compliance with workplace exposure standards can be demonstrated only when the exposure of an individual or a group of workers is known, with an acceptable degree of certainty, to be below the WES value.

This creates a challenge when PPE controls are used to minimise the risk of exposure, for example:

> *Following the hierarchy of controls, a properly fitted breathing apparatus may be used if the airborne contaminant levels cannot be controlled below WES levels through elimination, reduction, engineering controls, etc. however it is not possible to test for contaminant levels within the breathing zone.*

Therefore compliance with WES cannot be demonstrated, and therefore there can be no confirmation as to whether the WES is complied with.

Meeting compliance with the existing TWA is already challenging for small and medium businesses in the stone industry when they are aware of their obligations and actively using controls such as wet-cutting. The difficulty primarily stems from a lack of knowledge of the nature of the risk, an understanding of effective controls and enforcing practices such as a clean-shaven policy for RPE.

Even with the best of intentions and full knowledge and awareness it may not be possible or reasonably practicable to reduce exposure below an amount of 0.02 mg/m3 as proposed.

Examples of difficulties:

On-site cutting, edging/grinding and polishing are all dust generating tasks occurring during installation of engineered stone benchtops. These activities are usually done dry or with limited water spray due to limitations on control measures in installation conditions (home kitchen). It may be very difficult in some instances to achieve the proposed lower WES of 0.02 mg/m3, even when using current best practice dust control methods, without having to rely heavily on RPE to reduce worker exposure.

It is much more difficult to measure and control exposures in dynamic situations, such as occur on construction sites. This is particularly so for construction activities for which wet cutting or grinding is not practicable, such as in-situ cutting and trimming of installed autoclaved aerated concrete panels or during wall chasing in concrete to install services.

Our members are aware that some builders have been investigating the tools available to capture and collect respirable dust generated during the cutting, grinding and polishing of bricks, blocks, tiles, cement sheet, aerated concrete, and other materials and activities. For example, for the autoclaved aerated concrete panels widely used in housing construction, it is often not practicable to use wet methods, and there are few suitable saw/HEPA vacuum systems available for this task

and they are extremely expensive.

The Queensland Findings report: Phase one audits of engineered stone benchtop fabricators in South East Queensland[2] found that, RCS exposure levels determined exceeded 0.05 mg/m3 (50% of the current WES) in many instances where water suppression methods were used as the primary dust control measure. The results indicate that water suppression alone was not always sufficient to achieve exposure levels of less than 0.025 mg/m3. Whilst further control measures may reduce these levels, it may be difficult if not impossible to consistently achieve RCS levels below the proposed lower WES.

Some construction industry members that have also carried out exposure monitoring with respect to the current WES have found that the measurement and control of RCS levels works reasonably well in static factory and workshop settings, where isolation, containment, wet methods and high efficiency dust extraction at the source can be readily applied. But they find that it is more difficult to reliably measure for and control incidental exposures to other support workers such as forklift drivers and supervisors. It is also more difficult to measure and control exposures in dynamic situations, such as occur on construction sites.

With a new TWA at 0.02 mg/m3, this would likely result in a number of non-compliance scenarios' with regulation 49 given it is an absolute and is not qualified by 'reasonably practicable'. It is not good policy to set an unachievable compliance benchmark even when good risk management practices are in place.

5.3 Application of the proposed WES at 0.02 mg/m^3.

5.3.1 Audit results and regulator action

Workplace Health and Safety Queensland (WHSQ) within the Office of Industrial Relations recently undertook a proactive, industry-wide audit of stone benchtop fabricators in Queensland in response to concerns of medical experts relating to an increase in silicosis diagnoses among workers in the industry.

Phase 1 of the compliance audits involved comprehensive field based research at 10 pilot workplaces in South-east Queensland undertaken by or under the supervision of WHSQ's certified occupational hygienist. The *Findings report: Phase one audits of engineered stone benchtop fabricators in South East Queensland*[3] noted that an action level of 50% of the exposure standard, that is 0.05 mg/m3, was used for individual and similarly exposed group (SEG) results as a trigger to improve control measures in line with standard occupational hygienist practice.

[2] Workplace Health and safety Queensland. (2018) Findings report: Phase one audits of engineered stone benchtop fabricators in South East Queensland. Office of Industrial Relations, WHSQ.

[3] Workplace Health and safety Queensland. (2018) Findings report: Phase one audits of engineered stone benchtop fabricators in South East Queensland. Office of Industrial Relations, WHSQ.

The Queensland regulator states that "*PCBUs must ensure that risks from exposure are minimised as far as is reasonably practicable, not just until a statutory limit has been achieved. The enforcement procedure used by inspectors reflected this by focusing on control combinations known to reduce exposure to well below the current WES. This is because just complying with a statutory maximum does not mitigate health risks*."

The audits identified different exposure rangers for different SEGs. In regards to individual results:

- 70% of samples exceeded 0.025 mg/m3
- 35% of samples exceeded 0.05 mg/m3
- 9% of samples exceeded the WES (0.1 mg/m3), a statutory maximum.

Monitoring results and process observations suggest that exposures can be affected by various factors such as:

- Proximity to the tasks, i.e. the closer the worker is to the source of contamination/process, the more likely it is that contaminant can enter their breathing zone, however, workers exposed to purely background levels are still at risk (supervisors and labourers)
- Location of worker/task within area (ventilation)
- Individual worker techniques (e.g. placing a hand over grinder/polisher)
- Type of machine or hand tools used(bridge saw vs CNC router, grinder vs polisher)
- Speed of machine
- Design of machine (e.g. open guards vs closed on CNC).

Queensland inspectors issued notices for health monitoring to nine out of ten workplaces. The report noted that "*Health monitoring was not conducted at any of the sites, despite the fact that 70% of individual measured concentrations exceeded **0.025 mg/m3**. Feedback from businesses indicated the obligation to monitor workers health wasn't either known, considered or understood.*

Recommendations were provided for nine of the ten workplaces to conduct health monitoring. Company 3 did not receive enforcement action to conduct health monitoring because individual and estimated average concentrations for RCS were below 0.025 mg/m3."

It can be concluded that any readings over 0.025 mg/m3 resulted in inspectors requiring health monitoring.

We would challenge this interpretation given the requirement for health monitoring is linked to a 'significant risk to health' and for Schedule 14 chemicals, health monitoring decisions are intended to take into account the control measures in place and the use of RPE when determining significant risk. The significant risk decision is about the chemical itself, the exposure scenarios for the workers and what is in place to eliminate or minimise the identified exposures. Setting an arbitrary threshold at which health monitoring is required does not factor in the risk management principles, reduction of risk and exposure the controls effect and could create significant cost burdens for business unnecessarily and without a quantified risk to health.

We note that it is encouraging to see such an immediate and thorough response to silica concerns and view this campaign and activities as evidence that the current TWA is sufficient IF regulators are actively inspecting workplaces and informing PCBU's of their obligations and appropriate controls.

5.3.2 Additional application issues of a lowered WES

Additional issues include:

- **The new TWA would have an action level of 0.01 mg/m3 which is currently not measureable.**
  - Action levels result in a review of controls and additional control measures.
  - Exposure of 0.01 mg/m3 is not considered to pose a risk with suggested NOAEL at 0.02 mg/m3.
  - Cost would be significant to business with no health benefit.

- **Proposed TWA will apply to all industries**
  - The proposal to lower the WES has been driven by the spike of cases of silicosis recently seen in workers in the engineered stone benchtop industry – an industry that uses materials with very high crystalline silica content (reported contain up to 95% crystalline silica).
  - Applying a 'one-size-fits-all' approach when different risk profiles, maturity and regulatory action are needed.
  - No known audits or research into other industries to date.

- **The proposed lower WES will not deliver better safety outcomes, but will have disproportionate impacts on employers/PCBUs across other industries.**
  - A concern is with the wider application to the construction or demolition of buildings and the manufacture of building materials of less crystalline silica content than stone benchtops, with less potential for exposure to RCS. These include the cutting, grinding and abrading of other concrete products, concrete, clay and concrete roof tiles, bricks, ceramic tiles, pavers and fibre cement products.
  - A spike of cases of silicosis has not been experienced in regards to these activities in recent history, and there is no evidence to suggest that adverse health effects are occurring for these activities.

- The proposed lowering of the WES will result in a wide range of potential RCS generating activities being considered as a 'significant risk' of exposure. This will trigger air and health monitoring for a much greater number of workers than is currently the case. It will trigger health monitoring for activities for which no cases of silicosis have been reported, and for which there is less potential for exposure to RCS than there is in stone benchtop manufacture and installation.
- These changes would not factor in the current use of complex controls and their effectiveness.

6 TWA Recommendations

Recommendations:

3. **Maintain TWA of 0.1 mg/m^3**
4. **Explore the use of Schedule 10 to differentiate high-exposure and risk groups or activities.**
5. **Awareness campaigns to provide education and information on silica across impacted industries.**
6. **Increase support for greater active compliance monitoring by regulators.**
7. **Further research into technologies and controls.**

Maintain a TWA of 0.1 mg/m3

The TWA value should remain at 0.1 mg/m^3 noting; there already exists a legislative requirement on PCBUs to ensure that risks from exposure are eliminated or minimised as far as is reasonably practicable, there are limitations in measurement technology which restrict the accurate measurement of very low-level exposure below 0.05 mg/m3, there are existing issues with demonstrating compliance that would be exacerbated with a lower WES, the current action level is 0.05 mg/m^3 and a value of 0.1 mg/m3 allows for 'reasonably practicable' efforts when the exposure is below this. Additionally we note that there is now increased regulator proactive investigation and a large number of resultant enforcement actions at this level.

The primary issue as we see it is not with the WES value but with the lack of active compliance monitoring by regulators and low awareness of obligations, risk and controls by the stone benchtop manufacturing industry.

WES should be set as a maximum exposure limit noting the requirement to reduce risk applies irrespective and the action level is currently set at a TWA value of 0.05 mg/m3 which triggers investigation of the sources of exposure and implementation of suitable control strategies. This is also the level that the evaluation report highlights adverse health effects are observed.

It appears that reported new cases of silicosis are restricted to the stone benchtop industry, are mainly either due to historic poorly controlled long-term exposures or to contemporary poorly controlled exposure situations likely to have been above the current exposure limit.

Schedule 10

The WES are mandatory blanket limits for all industries. It is known that various activities across a range of industries have different exposure risks.

For example, workers conducting shaping work or those using grinders are at the highest risk of RCS exposure in stone benchtop manufacturing. Sandstone may have an average of 75% silica content. Artificial stone may have an average of >85% crystalline silica where marble may have an average of 2%. Estimates such as these have been researched already and could be used as a guide. [4]

We propose that SWA should explore the use of Schedule 10 in the model WHS Regulations to differentiate high-risk/exposure activities.

For example:

> Schedule 10, table 10.3, entry 10 lists **Free Silica (crystalline silicon dioxide)** as a restricted hazardous chemical **For abrasive blasting at a concentration of greater than 1%.**

Consideration could be given to regulation 383 being applied to RCS. Regulation 383 applies to Schedule 10 whereby regulators would need to grant authorisations for use of the prohibited or restricted carcinogen. Part of that process requires providing the following information (as an example) to regulators:

- Business name;
- Where the chemical will be used, handled or stored;
- The number of workers that may be exposed to the chemical;
- Information about how the person will manage risks to health and safety, including a summary of the steps taken, or to be taken including hazard identification, controls and if elimination or substitution of the chemical is not reasonably practicable – why it is not.

Awareness and education

Experiences in the US and various research reports indicate that there must be more to a regulatory response than simply reducing the current standards. A suite of education and awareness programs must be part of the response.

Larger businesses tend to be more aware of regulatory requirements in relation to the workplace exposure standards than small or medium. Many employ occupational hygienists or have the capacity to engage consultants to undertake this work and ensure compliance. These businesses

[4] SafeWork NSW Crystalline Silica, Typical crystalline silica levels in different materials https://www.safework.nsw.gov.au/hazards-a-z/hazardous-chemical/popover-content/crystalline-silica Accessed April 2019

may also set their own internal workplace exposure standards to align with international best practice and emerging health and toxicological information.

Examples of current controls used by larger businesses in Mining.

General approaches for the highest risk SEGs:

Exploration drilling: geological review of ore bodies to quantify risk of exposure to silica, focus on controlling at source of exposure e.g. wet drilling, regular air monitoring, provision of PPE, fit testing, clean shaven policy, health surveillance spirometry testing.

Laboratories: focus on engineering out through local exhaust and extraction ventilation. Effectiveness of vent systems are regularly monitored through sampling and ventilation surveys. PPE also used.

UG drillers: wet drilling, good ventilation systems underground to extract dust. Also removing workers from the vicinity of high risk areas e.g. UG drillers required to remain in cab. Regular testing of cab seels and education on safe practices (operating with windows up and aircon on).

Looking further down the line at automation options to assist with removing risk for occupations altogether.

Our own member feedback and the results of recent regulator campaigns however indicate that awareness of WES, silica risks and obligations around air and health monitoring are not well known or understood by small and medium businesses.

Awareness and education campaigns on WES, silica risks and obligations around air and health monitoring targeted at small and medium businesses are critical to an effective response to the issue.

There is also significant variation in understanding of use of controls.

Recent workplace observations in SA[5] and QLD[6] have shown stone benchtop manufacturing workplaces using a number of measures aiming to reduce exposures. General exhaust ventilation was typically provided by either large exhaust fans in the roof/walls of the building or large bay doors at various locations throughout the buildings. Hand tool processes were generally done wet, either with water supplied to the tool or with the use of a hand water spray onto the stone prior to processing. Other measures included an exhaust booth, LEV with filter bag connected to a mitre saw wet cutting in combination with LEV, and a mitre saw connected with a dust collection bag as well as automated machine processing (CNC) (enclosed).

[5] Gaskin, S., Jankewicz, G., Gun, R., Jersmann H., and Pisaniello,D (2018) Respirable Crystalline Silica Exposures in Engineered Stone Benchtop Fabrication. University of Adelaide, Adelaide Exposure Science and Health.
[6] Findings report: Phase one audits of engineered stone benchtop fabricators in South East Queensland. (2018) Workplace Health and safety Queensland. Office of Industrial Relations.

Whilst some form of control was observed at every workplace, there appeared an overreliance of lower-level controls with a pattern emerging highlighting:

- The need for and limitations of respiratory protective equipment (RPE) and the risks associated with RCS exposure weren't well understood,
- Whilst RPE was provided by employers, these devices were often poorly stored (and contaminated with dust inside) and were not used by all workers,
- RPE was typically not fit-tested and most users were not clean shaven with little awareness of why this was needed for the RPE to be effective, and
- Generally poor housekeeping practices.

Education and awareness activities should be undertaken to increase PCBU and worker knowledge of the risks of RCS exposure, need for, limitations and correct use of RPE and higher-level control strategies.

Industry funding should be provided to allow for the provision and dissemination of meaningful information targeted at specific industry sub-sectors through industry associations.

Compliance support and monitoring

Regulators should provide increased support and resources to inspectorates for greater proactive compliance monitoring and education activities by inspectors.

Any departures from the current WES will need to be phased in with an appropriate adjustment period, and a range of initiatives should be developed to help workplaces understand and comply with the requirements. This should include practical information on hazards, risks and how to mitigate hazardous exposures to RCS through publications and regular state / territory government subsidised information sessions.

Exposure control plans will be especially important when looking at implementing reduced WES values (particularly those that are significantly reduced such as the proposed silica) within a transitional period.

Exposure control plans can greatly assist PCBUs to reach the required WES over a time period that is not overly taxing (it's an opportunity to both educate and learn about the process of controlling risks and reviewing and amending control measures).

Research

Further research is needed into what technologies and PPE are available (and at what cost) to assist PCBUs in ensuring exposure is below the standard and ALARP, particularly for SMEs. Research should also be conducted into understanding the residual exposure when various controls are used and which controls work better for what tasks.

Australian Chamber of Commerce and Industry

7 About the Australian Chamber

The Australian Chamber of Commerce and Industry is the largest and most representative business advocacy network in Australia. We speak on behalf of Australian business at home and abroad.

Our membership comprises all state and territory chambers of commerce and dozens of national industry associations. Individual businesses are also able to be members of our Business Leaders Council.

We represent more than 300,000 businesses of all sizes, across all industries and all parts of the country, employing over 4 million Australian workers.

The Australian Chamber strives to make Australia the best place in the world to do business – so that Australians have the jobs, living standards and opportunities to which they aspire.

We seek to create an environment in which businesspeople, employees and independent contractors can achieve their potential as part of a dynamic private sector. We encourage entrepreneurship and innovation to achieve prosperity, economic growth and jobs.

We focus on issues that impact on business, including economics, trade, workplace relations, work health and safety, and employment, education and training.

We advocate for Australian business in public debate and to policy decision-makers, including ministers, shadow ministers, other members of parliament, ministerial policy advisors, public servants, regulators and other national agencies. We represent Australian business in international forums.

We represent the broad interests of the private sector rather than individual clients or a narrow sectional interest.

OUR MEMBERS

Australian Chamber of Commerce and Industry

CHAMBER

- Business SA – Chamber of Commerce and Industry South Australia
- Canberra Business Chamber
- Chamber of Commerce Northern Territory
- CCIQ – Powering business potential
- Chamber of Commerce and Industry WA
- NSW Business Chamber
- TCCI – Invigorating Business
- Victorian Chamber of Commerce and Industry

INDUSTRY ASSOCIATION

- accord – hygiene, cosmetic & specialty products industry
- AMCA
- Animal Medicines Australia
- afa – Great advice for more Australians
- ais nsw
- Australia Arab Chamber of Commerce & Industry
- AADA
- Australian Beverages
- ADA – Australian Dental Association
- ADIA – Australian Dental Industry Association
- AFEI – Australian Federation of Employers & Industries
- Australian Gift & Homewares Association
- AHA
- aicm – Australian Institute of Credit Management
- Australian Made
- AMPC
- AMMA – Australian Resources & Energy Group
- AMTA – Australian Mobile Telecommunications Association
- apmf – Australian Pavit Manufacturers' Federation Inc.
- ARIA – Australian Recording Industry Association
- ARITA
- Australian Retailers Association
- ARTA
- ASMI – Australian Self Medication Industry
- Australian Steel Institute
- ATEC – Australian Tourism Export Council
- ATIC – Australian Tourism Industry Council
- ATA – Australian Trucking Association
- AVA – Australian Veterinary Association
- BIC – Bus Industry Confederation, moving people
- Business Council of Co-operatives and Mutuals
- Caravan Industry – Association of Australia
- Cement Concrete & Aggregates Australia
- Chemistry Australia
- CAA
- CMAA
- Consult Australia
- COPHE – Council Of Private Higher Education
- CPA Australia
- CLIK – Cross Laid International Association Australasia
- Customer Owned Banking Association
- Direct Selling Australia
- Exhibition & Event Association of Australasia
- Fitness Australia
- Franchisee Federation
- HIA
- LFRA – Large Format Retail Association
- Live Performance Australia
- Master Builders Australia
- master plumbers – Expert. Committed. Professional.
- MTAA – Medical Technology Association of Australia
- Medicines Australia
- NALSPA
- NDS – National Disability Services
- neca – national electrical and communications association
- nesa – national employment services association
- National Fire Industry Association
- NRA – National Retail Association
- NRMA – MYNRMA.COM.AU
- NSW HCA – The voice of the Hire Car Industry
- New Taxi Council
- Outdoor Media Association
- The Pharmacy Guild of Australia
- ppca
- Primerus – The World's Finest Law Firms
- Association of Superannuation Funds of Australia
- rcsa – Leading in the world of work
- Restaurant & Catering
- SAP
- The Tax Institute
- Think Brick Australia
- VACC – You're in good hands