MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

Work with engineered stone and materials containing crystalline silica

DECEMBER 2024

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Ministry of Business, Innovation and Employment (MBIE) Hīkina Whakatutuki – Lifting to make successful

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How to have your say

Making a submission

The Ministry of Business, Innovation and Employment (MBIE) seeks written submissions on the issues raised in this document by 5pm on 18 March 2025. We are interested in hearing from any interested persons, including individuals, businesses, and community organisations. Your submission may respond to any or all of the questions posed to submitters.

You can find a template for submissions on our website, alongside this discussion document, at [insert link]. Where possible, please include evidence to support your views, such as examples or references to independent research or facts and figures. Please include your contact details in the template form when providing your submission.

You can make your submission:

- via email as a Microsoft Word document to HSWHaveYourSay@mbie.govt.nz, or
- via mail to: Health and Safety Policy, Labour, Science and Enterprise, Ministry of Business, Innovation & Employment, PO Box 1473, Wellington 6140.

Please direct any questions that you have in relation to the submissions process to HSWHaveYourSay@mbie.govt.nz.

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Minister's foreword

All workers and their families deserve to have confidence that they will return home safe from work, including those in the engineered stone industry and sectors working with materials that contain crystalline silica.

While crystalline silica is a natural substance found in concrete, bricks, stone, sand and clay, the crystalline silica content of engineered stone can be far higher than in most natural stone or stone products.

In its solid form, such as the slab supplied to a workplace for fabrication, or once installed in a home, engineered stone does not have hazardous properties. It is the dust that is generated from cutting, grinding, or polishing engineered stone that has the potential to cause harm when it is breathed in. It is this very fine crystalline silica dust in respirable form which can penetrate deeply into the lungs and lead to a range of respiratory diseases, including silicosis, chronic obstructive pulmonary disease, and lung cancer.

To date, several countries have implemented additional regulatory requirements to manage risks related to respirable crystalline silica. Australia is the only country that has implemented a full ban on the importation, use and supply of engineered stone.

It is important that we use an evidence-based approach and consider a range of regulatory tools to tackle this issue in a New Zealand context. This is why I am consulting on the full range of regulatory options to control the risks to workers from engineered stone and other sources of exposure to respirable crystalline silica.

I am committed to introducing an effective, evidence-based, and practical approach to health and safety regulations.

I strongly encourage you to make a written submission or complete the online submission form.

Hon Brooke van Velden
Minister for Workplace Relations and Safety

Executive summary

Respirable crystalline silica (RCS) poses a significant health risk to workers that are exposed to processing and manipulation of products with a high crystalline silica content, such as engineered stone. Engineered stone is the name given to a range of highly polished, durable, and affordable benchtop products that have become increasingly popular for use in kitchens and bathrooms since the late 1980s.

As the demand for engineered stone benchtop and similar fabricated products continues to grow, this has resulted in a workforce of between 600–1,000 workers being at significantly elevated risk of silica-related disease.

RCS exposure can lead to silicosis, a chronic fibrotic lung disease, that can emerge in workers after varying degrees of exposure. This includes acute silicosis (<1 year exposure), accelerated silicosis (3–10 years exposure), or chronic silicosis (typically >20 years but may be less).

Due to the associated health risks of RCS, California (United States of America) has required increased exposure control methods,[1] and the United Kingdom's Health and Safety Executive (HSE) recently sought industry feedback on new guidelines for working with engineered stone. In Australia, Commonwealth, State, and Territory Workplace Relations and Work Health and Safety (WHS) Ministers met to settle a national response to the use of engineered stone. Ultimately, the Australian model WHS laws were updated to implement a national ban on the import, supply, or use of engineered stone from 1 July 2024, and all Australian states have adopted this ban. Australia is the only country to introduce a ban of this nature.

We are considering options to ensure workers in New Zealand are protected from the risks, while ensuring we follow an evidence-based approach which also considers the economic and equity impacts of any potential changes.

We are now consulting on options that would eliminate or reduce risks to workers frequently exposed to RCS. These options range from import restrictions through to mandatory workplace requirements and standards, or to mandatory health and exposure monitoring. The options outlined in this discussion document are preliminary only. Their inclusion in this document does not mean that changes will be made, and we note that new options may be developed based on submissions received.

We ask a series of questions throughout this document. Your answers and any additional information that you can provide will help us determine what is the best option to ensure workers' health and safety in engineered stone and other RCS-generative industries.

Consultation closes on 18 March 2025.

[1] Emergency Temporary Standard (ETS) on Respirable Crystalline Silica (RCS) for General Industry, see: Frequently Asked Question about Respirable Crystalline Silica Standards and Resources.

Introduction

Crystalline silica is a natural substance found in concrete, bricks, rocks, stone (including artificial or engineered stone found in composite kitchen benchtops), sand and clay.[2] When in the form of a fine respirable dust (respirable crystalline silica or RCS) it is considered hazardous to health. RCS is generally created in the workplace by processes such as cutting, drilling, crushing, grinding, sawing and polishing of natural or man-made products containing crystalline silica.

RCS is released into the air if appropriate control measures are not in place. For example, the dry cutting of engineered stone, where dust is readily dispersed into the air when control measures such as a water spray or a vacuum source are not in use. Workers in the following industries or who work with the following materials are most at risk of being exposed to RCS: mining; quarrying; tunnelling; roading; foundries; construction; manufacturing of concrete, bricks and tiles; **kitchen benchtop manufacturing (natural and engineered stone)**, finishing and fitting; abrasive blasting; monumental masonry work; concrete drilling, cutting, grinding, fettling, mixing, handling, and dry shovelling.[2]

Ongoing exposure to RCS can cause a fibrotic lung disease called silicosis, as well as lung cancer and other disease. However, evidence indicates that silicosis from working with engineered stone occurs at a younger age, after shorter exposure periods, and has more severe health impacts. This is called 'accelerated' silicosis.

Due to the higher risks involved with engineered stone this document sets out several options which directly relate to work with engineered stone (refer to options 2, 3, and 5). However, to ensure controls are in place for all exposed industries we have also included options which would apply to all industries.

Engineered stone is widely used in New Zealand

Engineered stone is a popular kitchen and bathroom bench material used in New Zealand homes and businesses, and is used in more than half of new home builds. The product is popular because of its serviceability, high standard of finish, and price, and the market for it has grown steadily since it first became available in New Zealand in the late 1980s.

Engineered stone is imported as slabs or solid sheets from United States, Israel, Spain, and China in particular, and there are six or more major suppliers into the New Zealand market. Since the early 2000s, engineered stone sales have maintained five per cent per annum growth to make it the pre-eminent benchtop material. Sales are currently about 60,000 slabs[3] annually. To meet this demand, there are currently about 157 fabrication businesses employing about 600 fabrication workers in New Zealand. WorkSafe estimates the cumulative number of fabrication workers in the industry since 2001 at approximately 1,000.

[2] WorkSafe 2019, https://www.worksafe.govt.nz/topic-and-industry/dust/silica-dust-in-the-workplace/.
[3] Engineered stone is generally manufactured and imported in 3.0 by 1.4 m slabs.

There are health risks faced by workers in engineered stone fabrication

Engineered stone products are a mixture of natural stone, glass and other materials that are ground and baked into a polymer binder. Engineered stone is primarily made up of quartz and can contain in excess of 90 per cent crystalline silica, compared to 3–40 per cent in natural stone, such as granite or marble.

The manipulation of engineered stone, such as cutting to size, drilling holes for positioning taps or sinks, and polishing, creates RCS which can cause severe health implications in workers frequently exposed to it.

Exposure to, and inhalation of, high levels of RCS can cause silicosis, a fibrotic disease of the lungs. All workers who come in contact with RCS are at risk of chronic silicosis, usually over long periods of exposure, but those exposed to RCS from work with engineered stone are at risk of earlier and more severe disease, known as 'accelerated silicosis'.[4] Accelerated silicosis is an emerging occupational disease caused by exposure to significant concentrations of respirable crystalline silica from unsafe work with engineered stone benchtops. It is an aggressive form of silica-related disease that can develop over a short period of time (usually approximately 3–10 years, although it can manifest in less than one year). It is distinct from chronic silicosis, which is not uncommon and rarely becomes progressive.

Several Australian screening studies have found that 20–30 per cent of engineered stone workers exposed to RCS in the period before 2019 have developed some degree of respiratory disease as a result.[5] This figure is likely to increase over time. Since 2019, Australian regulatory settings regarding risk management of RCS have changed; however, the impact of these changes on silicosis incidence has not been assessed.

It is expected that as the demand for engineered stone benchtop and similar fabricated products continues to grow in New Zealand, between 600–1,000 workers are at significantly elevated risk of crystalline silica-related disease.[6] Evidence from Australia is that about one in four of this group of workers already have silicosis, even though some do not yet show symptoms.[7] Fewer workers have been assessed in New Zealand than Australia.

There are other industries that face similar risks due to the generation of RCS

As noted above, risks of RCS exposure are not limited to engineered stone. Approximately 270,000 workers in New Zealand are probably exposed to RCS, and

[4] See Annex I for a brief history on silicosis and its incidence rate in New Zealand.
[5] Hoy RF, Dimitriadis C, Abramson M, *et al.* (2023). Prevalence and risk factors for silicosis among a large cohort of stone benchtop industry workers. Occupational and Environmental Medicine, 80;439-446. This study in Victoria, Australia, found that 117 of 414 engineered stone workers who underwent screening (28 per cent) had silica-related disease. The median age of diagnosis was 42 years, and the median exposure time was 12 years.
[6] Based on WorkSafe estimates.
[7] See https://www.health.gov.au/ministers/the-hon-ged-kearney-mp/media/national-registry-to-fight-silicosis-and-protect-workers.

approximately 80,000 have probable high exposure,[8] defined as exposure at or above the corresponding Workplace Exposure Standard (WES). Most workers with probable high exposure work in the construction sector.[9]

Current risk requirements

New Zealand's current requirements are based on the general duties of the Health and Safety at Work Act

Current measures taken by the regulator (WorkSafe) and industries that work with materials containing crystalline silica are premised on the existence of the general duties on businesses and workers under the Health and Safety at Work Act 2015 (HSW Act).[10] These duties require Persons conducting a business or undertaking (PCBUs) to eliminate, or use controls to minimise, worker exposure to risks, including from RCS.[11]

PCBUs must complete a risk assessment and review controls before starting work using engineered stone, and:

- eliminate risks that arise from its work so far as is reasonably practicable, or
- minimise risks so far as is reasonably practicable.

In most instances when working with sources of RCS (including engineered stone), this will mean making use of wet-working control measures, dust control measures, and Personal Protective Equipment (PPE).[12]

Several initiatives have been established to encourage businesses to improve their risk management practices.

- WorkSafe has:
  - conducted inspections in workplaces fabricating engineered stone since 2019
  - published information for businesses and workers on RCS and silicosis, and
  - reduced the workplace exposure standard for RCS in 2019 and again in 2023.[13]
- The Accident Compensation Corporation (ACC), Ministry of Health, and WorkSafe have established the Accelerated Silicosis Assessment Pathway (ASAP) to enable eligible workers to have their health checked.

[8] Based on the New Zealand Carcinogens Survey (2021) and workforce data (2021).
[9] See New Zealand Carcinogens Survey 2021: https://www.worksafe.govt.nz/research/new-zealand-carcinogens-survey-2021/ and McLean D, Glass B, 't Mannetje A & Douwes J (2017). Exposure to respirable crystalline silica in the construction industry—do we have a problem? The New Zealand Medical Journal, 130;1466, p78-82.
[10] See Annex II for an overview of the Health and Safety regulatory regime.
[11] See: https://www.worksafe.govt.nz/topic-and-industry/dust/silica-dust-in-the-workplace/.
[12] From WorkSafe's Quick Guide on Silica dust in the workplace, November 2019.
[13] See Annex III for more on the workplace exposure standard.

- The New Zealand Engineered Stone Advisory Group (NZESAG) has developed and implemented a voluntary industry accreditation scheme for engineered stone businesses, with support from ACC.[14]

Problem definition

We have defined our problem as: despite current actions, risk management practices are insufficient to manage the risks posed by RCS

Despite the actions listed above, risk management practices remain inconsistent. WorkSafe inspections have found that even better-performing businesses sometimes lapse in applying effective controls. We note that the engineered stone industry has similar features to Australia, with a high proportion of smaller businesses and relatively high business turnover[15]. Due to the high risk posed to workers, we are considering options to strengthen the regulatory requirements in place to ensure the safety of anyone involved with work where RCS may be present. We have particularly focused on engineered stone due to the higher risk posed in this industry; however, we are interested in feedback regarding all industries where workers are exposed to RCS.

We are now consulting on whether additional requirements should be put in place

We are now looking to consult on the effectiveness of options to strengthen the current requirements already in place (the status quo is referred to as option 1 throughout the remainder of this paper). This paper outlines the policy problems as we currently see them, our objectives, and options to address the problem.

We ask a series of questions throughout the document. Answers to these questions will help us identify preferred options that will minimise risk of exposure to workers so far as is reasonably practicable. We also welcome any further options or points of consideration you think relevant.

We have also commissioned an independent scientific review in order to gather further evidence to assess the risks and impacts of working with engineered stone.

This paper covers a wide scope of issues and a wide range of options

The areas we are seeking feedback on through this discussion document, and which the options outlined encompass, are:

- working with engineered stone
- working with materials containing crystalline silica in other industries, and
- how to control the risks from engineered stone and other sources of exposure to respirable crystalline silica.

[14] See Annex IV for more on NZESAG's accreditation programme.
[15] For a summary of Australia's amendments to its regulatory settings please refer to Annex V.

It is important to remember that while this document focuses primarily on engineered stone, we are interested in understanding the risks associated with RCS in all relevant industries.

Issues that are out of scope

We are aware there could be other health and safety policy and regulatory issues relating to engineered stone and materials containing crystalline silica of interest to submitters that have not been included for discussion in this paper. In some cases, work on these issues is already being progressed by MBIE or other government agencies. In other cases, issues may not be identified as a priority for consideration at this time.

In particular, the following areas are out of scope of this discussion document:

- **Work health and safety regulatory system** – MBIE has publicly consulted separately on the work health and safety system on behalf of the Minister for Workplace Relations and Safety. Feedback is being reviewed and considered, which will inform advice to Ministers on any improvements that could be made to the work health and safety system.
- **Hazardous substances regulations** – Work on reforming these regulations has not yet started. Hazardous substances are substances that are one or more of explosive, flammable, able to oxidise, corrosive, or toxic – such as RCS.[16] The substances are grouped into class, based on the properties of the substance.

Options for working with engineered stone and materials containing crystalline silica

Our main objective is to ensure PCBUs minimise worker exposure to RCS so far as is reasonably practicable

The primary objective is that RCS risks to workers are managed in all workplaces, consistent with the general duties and intent of the HSW Act. The HSW Act places a duty on PCBUs to ensure, so far as is reasonably practicable, the health and safety of workers who work for the PCBU, and workers whose activities in carrying out the work are influenced or directed by the PCBU.

The HSW Act also requires PCBUs to follow a hierarchy of controls when managing risks to health and safety. Where reasonably practicable, the risks must be eliminated, and where it is not reasonably practicable to eliminate the risks, they must be minimised.

[16] Note this substance is only hazardous if it is a fine respirable dust, see: https://www.epa.govt.nz/database-search/approved-hazardous-substances-with-controls/view/2E5633A9-555C-477B-984A-47B182A8F401.

The HSW Act and supporting regulations include a range of subordinate duties and processes to ensure PCBUs manage risks to workers and others. These may apply to practices in all workplaces, specific types of workplaces or sectors, and particular risks.

As noted above, the policy problem is that guidance and enforcement measures to minimise worker exposure to RCS to date, despite considerable regulator effort, have not led to a consistent level of compliance and improvement in workplace practices. Due to the underlying risk and scientific uncertainty about what drives harm from working with engineered stone, the current regulatory settings may not be sufficient to ensure that risks from RCS are eliminated or minimised by PCBUs so far as is reasonably practicable. This means that a significant group of workers remain at considerable risk of harm from their work.

To solve the policy problem, the objective is that PCBUs consistently manage the risks to workers to meet their duties under the HSW Act. Determining the best ways to achieve this objective will involve consideration of a range of options from the status quo, such as using education, guidance, and approved codes of practice, to imposing new mandatory requirements that will apply to all workplaces.

As RCS exposure does not solely occur in engineered stone fabrication, we have included options that consider strengthening the regulation of other work with crystalline silica-containing materials, where exposure is lower, but the number of workers exposed is much higher, and practices are known to be inconsistent. Refer to Diagram 1 for an overview of the problem definition and objective.

Diagram 1 – Overview of problem definition.

<table>
<tr><th>Industry</th><td>Work with Engineered Stone</td><td>All Industries where RCS risks exist</td></tr>
<tr><th>Level of risk</th><td>High risk</td><td>Variable, mostly medium to low risk</td></tr>
<tr><th>Problem definition</th><td>Current requirements not proportionate to risk</td><td>Current requirements may not be proportionate to risk</td></tr>
<tr><th>Objective</th><td colspan="2">Risks to workers are managed in all workplaces, consistent with general duties and intent of the HSW Act</td></tr>
<tr><th rowspan="2">Options</th><td>Options to address high risk work (Options 2,3,5)</td><td></td></tr>
<tr><td colspan="2">Options to address all risk where RCS is present (Option 4)</td></tr>
</table>

There are a range of options from those that minimise the risks, through to monitoring the risks and impacts, and finally to elimination of the risks. Diagram 2 below provides an overview of the options outlined in this discussion document, ranging from fully flexible and self-managing options to high levels of regulatory control imposed by regulations and therefore lower flexibility. We have split the options into those relating to engineered stone only (options 2, 3, and 5) and those that relate to all work with materials containing crystalline silica (options 4A–C). Options 2 and 4A seek to codify the current duties implied by the HSW Act to make it clearer what workers and PCBUs should do.

We note that it is possible to combine a number of the options together, e.g. option 2 (specific mandatory engineered stone requirements) and option 4 (general duties and mandatory monitoring). Some options are mutually exclusive (e.g. option 5A – a total ban – renders most other options relating to engineered stone obsolete). We therefore welcome views on the options individually or as a package.

We have not identified a preferred option or combination of options. We welcome feedback on each option, including the potential impact on workers and businesses or any additional options you may wish to present.

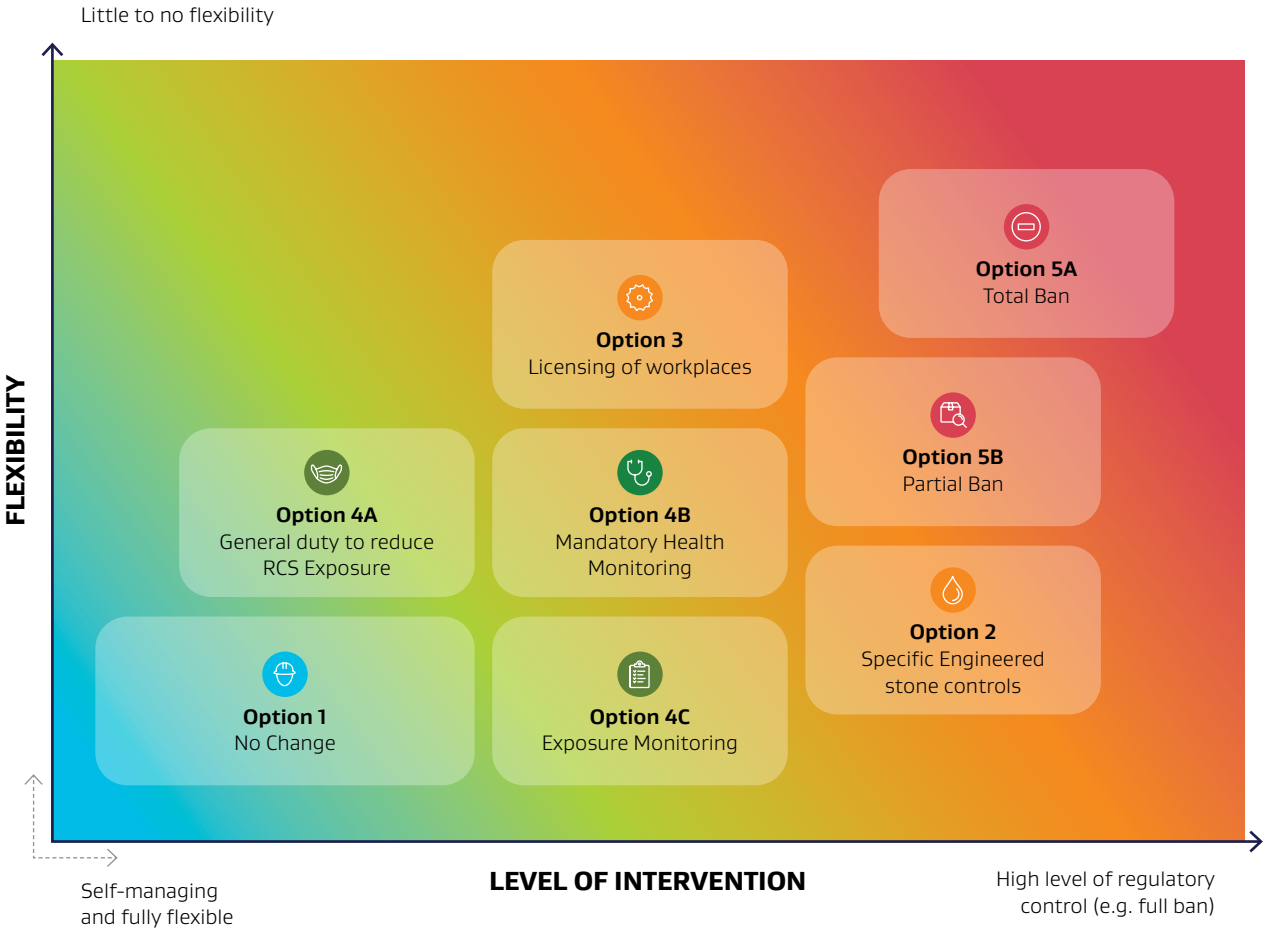
Key limitations on analysis

While we are able to consider the impacts on the Australian workforce of the controls put in place through its regulatory system, it is not entirely comparable to New Zealand. We also do not consider that there is sufficient information to consider how some options, such as a full ban, would impact on the behaviour of individuals and businesses when it comes to engineered stone that is already in the country.[17]

While we have a good understanding of the risks and the potential mitigations, we lack information on how each option would impact on many businesses, and the consumer response. Feedback on this consultation document is therefore important to provide this evidence.

[17] We do note an expectation that stock levels would reduce during a transition period before a ban was introduced.

Diagram 2 – Overview of options presented in this discussion document for consultation.



Option 1: No Change
- No restrictions on importation, supply or use of engineered stone, including engineered stone with higher silica count.
- Voluntary accreditation of workplaces.

Option 2: Specific Engineered stone controls
Introduction of specific controls to reduce RCS dust exposure from work with engineered stone.

Option 3: Licensing of workplaces
Introduction of licensing for workplaces that cut, grind, or polish engineered stone.

Option 4A: General duty to reduce RCS Exposure
- Introduction of a general duty to reduce RCS dust exposures.
- Broad application across workplaces that work with RCS substances.

Option 4B: Mandatory Health Monitoring
Implementation of mandatory health monitoring in all likely RCS-Exposure industries.

Option 4C: Exposure Monitoring
Implementation of exposure monitoring in all likely RCS-exposure industries.

Option 5A: Total Ban
Introduce a total ban on import, use, and supply of engineered stone.

Option 5B: Partial Ban
Introduce a partial ban on import, use, and supply of engineered stone with >40% crystalline silica.

Multi-criteria analysis

We are proposing the following five criteria to compare the options to the status quo:

- **Effective** – options will reduce harm arising from work and prevent regulatory failure.
- **Proportionate** – options are proportionate to the risk and will target key risks.
- **Clear** – options are logical, consistent, and easy to understand, provide sufficient certainty to support the duty holders to comply and the regulator to enforce, and provide assurance for workers of protection of their health and safety.
- **Cost-efficient** – options will minimise compliance and transitional costs for the duty holders and for the regulator, for the benefits they deliver.
- **Adaptable** – options are future-proofed to manage risks as there are changes in technology and ways of working.

While not explicitly mentioned, options should provide equal protection to workers facing the same or similar risks in other sectors. We would also consider impacts on consumers as a part of any cost inefficiency identified.

Question about the criteria and analysis

1. Do you consider we have outlined the correct criteria and do you think any weighting should be applied? If so, why?

Table 1 below provides a high-level summary of our provisional view of how each of the options weigh up against the status quo, using the below key. The sections below set out more detail about how each option has been assessed against the criteria. We would expect to analyse various combinations of options as a part of final decision making. The document asks a series of questions that we will use to refine our analysis. We also welcome any feedback on our current assessment of the options outlined in Table 1 below, and again note that while some options may appear to rate higher than others, we do not currently have a preference on an option or set of options.

+ +	much better than the status quo
+	better than the status quo
0	about the same as the status quo
-	worse than the status quo
- -	much worse than the status quo.

Table 1 – Multi-criteria analysis of options presented in this discussion document.

Criterion	Option 1: No change	Option 2: Specific mandatory engineered stone requirements	Option 3: Licensing of workplaces	Option 4: General duties (4A) and mandatory monitoring of worker health (4B) and/or exposure (4C)	Option 5: Limiting supply or use of engineered stone through a full ban (5A) or partial ban (5B) on engineered stone
Effective	0 In cases where businesses follow best practice it is effective. However, evidence suggests this is not always the case.	+ + Enforcing more stringent regulations will force businesses acting in bad faith to comply or exit the affected industries.	+ Focuses compliance burden on engineered stone PCBUs and allows monitoring by, and closer relationship with the regulator.	+ 4A: Introducing a general duty is expected to be an effective tool. 4B+4C: Health or exposure monitoring as a stand-alone option will not prevent harm from occurring. However, monitoring could be used to support mandatory requirements as it provides useful information to determine whether those are working effectively.	+ + 5A: A total ban would remove risk regarding new imports but may still require additional measures for product already in the country "legacy products". 5B: A partial ban may still require additional measures as lower crystalline silica products may or may not be safer than high crystalline silica products.
Proportionate	0 Because there are businesses that do not follow best practice and take measures as required under the HSW Act, the current regulatory settings are not proportionate to the risks.	+ + The current measures are not considered to be enough, therefore increasing mandatory requirements would be proportionate to the level of risk.	0 May be required to support other options e.g. a partial ban.	+ + 4A: A general duty would encompass all industries and is proportionate to the level of risk. 4B: proportionate where workers are engaged in high-risk activities. 4C: more information is required to inform an assessment.	- A total or partial ban would target all engineered stone businesses regardless of risk level. We require more information as to whether it could be considered proportionate to the level of risk when other measures could be taken.

Clear	0 WorkSafe and NZESAG have received good feedback from industry on the guidance and good practice guide currently developed.	+ Regulations and appropriate guidance are clear and enforceable. We would expect a period of time is required to fully comply where businesses are not already doing so.	+ Sets clear requirements for PCBUs to meet. Would support other proposed duties.	+ 4A: A general duty would be clear. 4B + 4C: Requirements are clear and would be prescriptive where necessary. 4C: More information is required to understand how easy compliance will be.	+ A ban would be clear, a full ban (5A) would be easier to comply with than a partial ban (5B).
Cost-efficient	0 Due to inconsistent practices, there is not a level playing field in the costs being met by businesses and consumers to ensure healthy and safe working conditions.	0 It is assumed most businesses should be following best practice and therefore already absorbing costs. Mandatory requirements may add costs for businesses not following food practice.	- Expensive and resource intensive for regulator. A full cost benefit would need to be completed separately from the other options.	0 4A: Similar to option 2, no to minimal cost increase is expected from this option. 4B + 4C: Costs may be high and disproportionally so for smaller businesses for health and exposure monitoring. However, more information is required to inform this assumption.	- - A total or partial ban would have negative financial implications for businesses and workers. May create additional costs for businesses working with product already imported.
Adaptable	0 The status quo is the most adaptable option, but evidence suggests this flexibility is not leading to optimum outcomes.	+ Dependent on the level of prescription required, requirements would be expected to be continuously updated to reflect best practice.	+ Relatively adaptable as practices change over time.	+ All three options will be able to be updated to ensure regulations match international best practice.	- - A total or partial ban would not be able to respond and adapt to changes in risk, technology, or ways of working.
Overall Assessment	**0** **The status quo, while flexible and an appropriate lever for most businesses, is not currently considered the optimal choice. We welcome feedback from submitters on the status quo.**	**+ +** **Overall, option 2 is considered to meet or improve most of the criteria. However, more information is required to form a robust opinion.**	**+** **Option 3 may be a good addition to support other options. However, it could be a burden on the regulator.**	**+** **More information is required to inform a robust analysis of exposure monitoring (option 4C). Health monitoring and imposing a general duty (options 4A and 4C) is a positive step forward, we would be interested in understanding current practices in this space from submitters.**	**-** **There are positives and negatives to this option, however we currently do not have the evidence to suggest an overall positive impact due to the negatives associated with cost and adaptability. Submitters are encouraged to provide any information about the impacts of a ban.**

Option 1: Status quo – No changes to regulatory settings

The status quo is premised on the existence of the general duties on businesses and workers under the HSW Act. As a quick recap, these duties require PCBUs to eliminate or use controls to minimise worker exposure to the hazard and risks from RCS. PCBUs must:

Complete a risk assessment and review controls before starting work using engineered stone; and

- eliminate risks that arise from its work so far as is reasonably practicable, or
- minimise risks so far as reasonably practicable.

Therefore, in most instances when working with engineered stone, this will mean making use of wet-working control measures, dust control measures, and Personal Protective Equipment (PPE).

We see several issues with the status quo

Despite the obligations of PCBUs under the HSW Act and the amount of guidance material available on risks and controls for RCS, there is evidence that RCS risks are not always being managed as well as they could be.

The status quo effectively means that engineered stone fabricators must minimise RCS risks to workers and others in all cases. While the duty under the HSW Act is clear, the means of compliance required are not set out explicitly. The steps taken by different businesses varies considerably according to the resources of the business, the segment of the market they are competing in, and the operator's stance towards health and safety and worker wellbeing generally.

WorkSafe inspectors have conducted several rounds of inspections to the 157 engineered stone businesses since 2019.[18] Each round has had a different focus, and over time assessment practices have evolved, the range of matters assessed has expanded, and inspectors are increasingly firmer on ensuring risks are managed. Key observations from inspection rounds are:

- Although businesses are now more aware of the risks of exposure to RCS and overall are managing RCS risks more effectively than when inspectors first visited in 2019, …
- … businesses vary in how effectively they are implementing controls to manage the risks from RCS and even better-performing businesses can lapse in applying effective controls from time to time, and …
- … the matters that notices have been issued for have changed since 2019 e.g. inspectors have not issued a notice for dry cutting or dry sweeping since 2020. However, notices for housekeeping have continued, which indicates there are still issues regarding the level of understanding in some businesses around the risks that the presence of dust poses.

[18] The number of known businesses fabricating engineered stone has increased from 101 in 2019 to 157 in 2024.

During the last round of inspections, conducted between June 2023 and October 2024, inspectors revisited 102 businesses and issued 131 enforcement actions to 67 businesses. 107 of these actions were enforcement notices issued under the HSW Act:

- three prohibition notices[19] – all were for machine guarding, which is not an RCS risk management issue, and
- 104 improvement notices, most commonly for housekeeping[20] (25), machine guarding (17), fit testing of respiratory protective equipment (15), health monitoring (15) and exposure monitoring (9).

With regards to NZESAG's voluntary accreditation programme, uptake and completion rates of the programme were lower than expected at commencement. However, there has been a significant increase in participation from May 2023 after increased media coverage of both the risks associated with RCS and the Australian decisions. The increase was also supported by two key suppliers of engineered stone requiring programme accreditation by fabricators they supply.

The current settings are predicated on being flexible and proportionate to the PCBU's obligations to keep workers safe. We are interested in the extent that this is being achieved

The lack of prescribed regulation means that businesses should be able to respond to changes in risks and technology quickly and in a cost-effective manner. We are interested in understanding whether this is the case, or whether more prescriptive regulatory settings may be required.

Due to the underlying risk, inconsistent compliance with good practice, and scientific uncertainty about what drives harm from work with engineered stone, the current regulatory settings for working with engineered stone may not be sufficient to ensure that risks from RCS are eliminated or minimised by PCBUs so far as is reasonably practicable. In aggregate, this means that workers continue to be at risk of harm.

Questions about Option 1: the status quo – no change

2. Do you think the status quo is adequate or inadequate to address the risks involved in work where RCS may be present? Tell us why.

3. What, if anything, could the regulator do within the status quo to support businesses to address the risks without needing to change current laws and regulations?

[19] Prohibition notices prevent a specific activity from occurring until the situation is rectified.

[20] Housekeeping notices require a work area to be cleaned (and maintained) to ensure dust is not building up on equipment or in the fabrication area so the business can readily see if a dust control starts to become ineffective.

Additional questions for businesses

19. What controls do you have in place to manage risks of RCS to your workers and how effective do you consider these controls to be?

20. If you are able to quantify the cost, can you please provide figures for the costs of the controls you currently use? Do you see these as being reasonable?

21. Do you face any barriers to meet the current expected practices to manage risk? If yes, please explain.

22. Would you describe your interactions with the regulator as useful, reasonable, and timely? Please tell us why.

Option 2: Specific mandatory requirements to reduce RCS exposures from work with engineered stone

Option 2 would introduce measures to require that PCBUs must not process, direct or allow workers to process engineered stone, unless the processing and housekeeping are controlled.

This would mean any cutting, grinding, trimming, sanding, abrasive polishing and drilling of engineered stone using power tools or other mechanical plant must be controlled using one or more of the following systems:

- a water suppression (wet cutting) system
- an on-tool dust extraction system
- local exhaust ventilation system
- other effective controls e.g. separation of workers from processes that generate RCS.

In addition, all workers who process engineered stone must be provided with and wear respiratory protective equipment that is of suitable size and fit.[21]

PCBUs must also adopt good housekeeping practices, such as using low water pressure wet sweeping or an H class rated vacuum cleaner to clean floors, walls, and other surfaces, and have processes in place for management of RCS slurry.

Specific requirements for working with engineered stone could be further supported by licensing of fabricators (see option 3), and exposure and health monitoring requirements (see option 4B and 4C) to monitor the effectiveness of controls over time.

[21] These controls had either already been introduced or agreed to by all Australian state jurisdictions before the ban was imposed.

Option 2 provides for greater certainty over flexibility. We would expect higher costs, but also better safety outcomes and operational efficiencies for the regulator

In instances where PCBUs are not already using effective controls, mandatory requirements are expected to add additional costs. However, we do not currently have enough information on these costs. We are interested in understanding from submitters what potential costs would be and whether this could be prohibitive to entering or remaining in the market. We are also interested in whether submitters consider that creating mandatory requirements would be of benefit where there are PCBUs not controlling risks at the accepted standard.

Mandatory requirements clarify the requirements that must be met by duty holders and the regulator. We would expect that bad actors are recognised and are forced to adapt. We would also expect that this will be more operationally efficient for the regulator to enforce.

Questions about Option 2: Specific mandatory requirements to reduce RCS exposures from work with engineered stone

4. Do you support or oppose requiring specific requirements for working with engineered stone? Tell us why.

Additional questions for businesses

23. What do you expect the cost to your business to be to implement any outlined requirements, such as water suppression (wet cutting) systems or local exhaust ventilation systems?

24. How long would you or your business require to implement any outlined requirements?

25. Are there any controls on workplace practices that would not be practicable?

26. Do you believe that the controls you have in place are adequate without mandatory controls? Please explain.

27. How does option 2 compare with what you are already doing?

Option 3: Licensing of workplaces that cut, grind, drill or polish engineered stone

Option 3 would introduce licensing of workplaces that cut, grind, drill or polish engineered stone.[22]

The voluntary NZESAG accreditation scheme described earlier in option 1 (the status quo, see also Annex IV) provides a framework for businesses to demonstrate their

[22] Work on 'legacy' products (engineered stone benchtops that has already been installed) involves shorter exposure periods than in fabrication or installation.

management of RCS exposure risk, and is based on the Australian approved code of practice.

A regulatory requirement for fabrication businesses to be licensed would, potentially, provide assurance that businesses are using appropriate controls. It would reduce the level of WorkSafe inspectorate resource currently directed at engaging directly with the sector, while still allowing regulatory oversight of the sector and individual businesses.[23]

Licensing could include the implementation of mandatory requirements and monitoring as part of the requirements for obtaining a license, therefore integrating options 2 and 4.

Option 3 increases the level of regulatory oversight and the effectiveness of the current duties, but would lead to higher costs

Implementing a licensing regime would create certainty that specific standards of risk management are being achieved. However, there would be expectations of increased costs to businesses to obtain and maintain a license. We are interested in understanding from businesses how a licensing regime would impact them and whether it could be prohibitive to entering (or staying in) the market.

Questions about Option 3: Licensing of workplaces that cut, grind, drill or polish engineered stone

5. Do you support or oppose a regulatory requirement for licencing of workplaces that cut, grind, or polish engineered stone? Tell us why.

6. What should be the conditions of gaining and maintaining a licence?

7. In your view, what are the benefits and costs of operating under a licencing system?

8. Do you consider a licencing system would be effective in reducing harm?

Additional questions for businesses

28. Do you believe that the current optional accreditation scheme is adequate without mandatory licensing? Please explain.

29. Have you already joined the accreditation scheme? If so, how did you find it? If not, why?

[23] While Australia has chosen not to impose a national licensing requirement, Victoria established a licensing scheme for engineered stone businesses, by regulations, from November 2022. Licensing was considered again for businesses to work with legacy engineered stone products after the ban was imposed in Australia. It was decided to instead require businesses to notify the regulator of any such work, and to follow the general requirements for the management of RCS risk described as option 2.

Option 4: Increased general duties and monitoring in all workplaces exposing workers to RCS

Option 4 increases the general duties of PCBUs in all industries where workers are likely to be exposed to RCS, including but not limited to engineered stone fabrication.

For engineered stone fabrication, it can be deemed similar to option 2, as the outlined specific requirements in option 2 will likely need to be applied by businesses under option 4. However, option 4 also applies to other industries in which workers are likely to be exposed to RCS. This option is premised on the idea that regulatory requirements would create certainty for businesses, health and safety professionals, and workers that work with materials containing crystalline silica, therefore creating clear and effective requirements. This option may improve standards in a more durable and consistent way than can be achieved under option 1 (the status quo).

Option 4 is made up of several sub-options, all of which can be considered separately but all fall into the category of mandatory requirements. We could consider only setting more stringent requirements for work with engineered stone (options 2, 3, and 5) and allow the status quo to continue in other industries, or apply requirements more evenly across all industries in which workers are likely exposed to RCS. Therefore, option 4 could apply solely to engineered stone. We welcome feedback on all three sub-options individually and as a group.

Sub-option 4A introduces a general duty to reduce RCS exposures from work in all workplaces, while sub-option 4B and 4C would introduce mandatory requirements for worker exposure and health monitoring for workers in all industries where there is a likelihood of exposure to RCS. This would follow recent amendments to the Australian model WHS laws, and set performance expectations for all workers that are at risk of exposure to RCS, not only those working with engineered stone.

Any monitoring option in itself will not prevent harm from occurring. However, option 4 could work particularly well in combination with option 2, discussed above, to ensure that controls are effective in reducing harm to workers.

We recommend reading Annexes III and IV before considering the below sub-options. These Annexes outline the background and current exposure limits relevant to understand the options outlined below.

Sub-option 4A: General duty to reduce RCS exposures from work in all other workplaces

Sub-option 4A would introduce a general duty to reduce RCS exposures from work in all other workplaces. It has broad application and would apply to workplaces that work with any crystalline silica containing materials, including engineered stone.

This option would introduce measures to strengthen requirements for all workers processing crystalline silica-containing materials and products. It would prohibit the uncontrolled processing of all crystalline silica containing materials, across all industries in New Zealand. This means that all crystalline silica processes are to be

considered high risk unless determined otherwise by a PCBU through a risk assessment.

This option arises from risks to workers from the broad range of stone, masonry and ceramic materials that contain crystalline silica and that have historically been a cause of silicosis in mine and quarry workers, stonemasons working with natural stone, and the construction sector, predominantly when working with concrete products, but others as well. WorkSafe estimate that up to 80,000 workers in these sectors are working in conditions where the Workplace Exposure Standard (WES) for RCS is regularly exceeded.

Australian regulations could provide an example

The Model Work Health and Safety Regulations (Crystalline Silica Substances) Amendment 2024[24] in Australia has specific requirements for businesses carrying out high risk crystalline silica processes to:

- develop a Silica Risk Control Plan aimed at identifying hazards associated with crystalline silica processes and measures to control these risks,
- provide additional training for workers or others likely exposed to the risks associated with high-risk crystalline silica processes,
- undertake exposure and health monitoring for workers, and
- report workplace exposure standard exceedances to the relevant WHS regulator.

This option would impose regulatory requirements to monitor worker health, and workplace exposure to RCS. These are discussed in options 4B and 4C below.

Sub-option 4B: Mandatory worker health monitoring for workers in all industries where there is a likelihood of exposure to RCS

Sub-option 4B would make mandatory worker health monitoring for workers in all industries, including engineered stone fabrication, where there is a likelihood of exposure to RCS.

Such a regulatory provision could be given effect to by sector specific guidelines or requirements in a safe work instrument, on who is covered by the monitoring requirement, and the nature of the health assessment required.

Health monitoring, particularly for respiratory disease is a requirement of the Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016. It has been a feature of the mining and quarrying sector for decades and is also a feature of the current NZESAG Accreditation Programme for engineered stone fabrication businesses.

Sub-option 4B would require health monitoring of all workers in a workplace that is assessed as being likely to exceed the WES for RCS, e.g. workplaces that manipulate

[24] See the Amendment (Crystalline Silica Substances) 2024 and the Explanatory Statement - Amendment (Crystalline Silica Substances) 2024 by Safe Work Australia.

products with high crystalline silica content in which dust is produced, for example tunnelling, mining, quarrying, and production of engineered stone.

Ongoing health monitoring differs in nature and purpose from the ACC Accelerated Silicosis Assessment Pathway, which is being carried out to check whether engineered stone workers have silicosis and to ensure they get the treatment and care they need (see Annex I). Instead, worker health monitoring by a PCBU is to provide assurance that controls are in place and working, and workers are not being harmed. It has application to chronic, accelerated, and acute forms of silicosis and other silica-related diseases.

For the engineered stone sector, specific tests and investigations are needed to detect accelerated silicosis. WorkSafe currently requires engineered stone businesses to provide evidence that they are undertaking health monitoring. However, there is no specific guidelines on what sort of health monitoring is required. Current costs have been estimated by the occupational health sector as between $150–500 per worker per annum for each worker, plus $800–1,800 per worker biannually for engineered stone workers (both costs met by the business) depending on the provider and the tests needed. The higher charges relate to low resolution computed tomography (CT) scans.

WorkSafe has been working with health professional groups to develop more specific health monitoring requirements for engineered stone businesses that use appropriate, and available, diagnostic technologies. More information is required to inform this option.

Sub-option 4C: Exposure monitoring of all workplaces where there is a likelihood of exposure to RCS

Sub-option 4C would require businesses to ensure the workplace conditions are monitored by a competent person (such as an occupational hygienist) who can ensure that effective controls are in place. That person may determine that exposure monitoring is necessary depending in the workplace. This would apply to all workplaces where there is a likelihood of exposure to RCS. Exposure monitoring is used to assess the level of exposure to a substance and is used as part of assessment of controls to determine whether they are effective.

In New Zealand there is evidence of inconsistent risk identification and use of appropriate controls,[25] resulting in a significant proportion of workers at risk of exposures at or above the exposure standard. While the risk profile for RCS exposure in other industries is different from engineered stone, the number of workers exposed is much larger.

Section 36(3)(g) of the HSW Act clarifies that the primary duty of care that PCBUs have includes monitoring the conditions at the workplace (including exposure monitoring) and the health of workers. So, while it is not an explicit requirement there is a general duty that PCBUs are expected to meet. We understand that monitoring is already

[25] See Annex IV on further information on the status quo.

required in Australian states, but that observance is lower than Safe Work Australia would like.

Exposure monitoring may be made mandatory by regulations which could have application in subsectors within the construction, manufacturing and mining and quarrying sectors.

We require more information to determine whether option 4 would be effective and how the costs involved influence current uptake

While we can infer that the costs imposed on duty holders to ensure appropriate health monitoring, especially in the engineered stone sector, are relatively high, we need more evidence as to the impact this has.

Exposure and health monitoring are likely the best tools to determine the effectiveness of option 2, and a general duty would expand the focus to other industries who would also be required to undertake health and exposure monitoring. Monitoring alone does not manage the risk or exposure. Mandatory monitoring could be used to support mandatory requirements as it provides useful information to determine whether those controls are working effectively.

We note that exposure monitoring in small businesses is problematic and costly as it is difficult to get enough samples to provide meaningful results if there are only two or three workers. We welcome feedback on this point.

Questions about Option 4: Increased general duties and workers' exposure and health monitoring

Option 4A

9. Do you support or oppose the introduction of a general duty to reduce RCS exposures from work in all workplaces where there is a likelihood of exposure to RCS? Tell us why.

Option 4B

10. Do you undertake worker health monitoring currently? If so, what and how often?

11. Do you support or oppose mandatory worker health monitoring for workers in all workplaces where there is a likelihood of exposure to RCS? Tell us why.

Option 4C

12. Do you support or oppose mandatory worker exposure monitoring for workers in all workplaces where there is a likelihood of exposure to RCS? Tell us why.

Additional questions for businesses

30. Do you or does your business currently monitor workers' exposure or health in relation to RCS? Please explain.

31. If you currently monitor workers' exposure or health, what is the current cost to the business of this?

32. Do you think the current Workplace Exposure Standard (WES) of 0.025 mg/m^3 is reasonably practicable to detect and adhere to in your business?

33. Are there any practical constraints to your business which could limit your ability to monitor workers' exposure or health?

34. Do you believe that current practices around health and exposure monitoring is adequate without making it mandatory? Please explain.

35. How does option 4 compare with what you are already doing?

Option 5: Limit supply to, or use in workplaces of engineered stone

Option 5 would consist of establishing restrictions on the import, supply, or use of engineered stone in workplaces in New Zealand, similar to Australia's decision to adopt a national ban on engineered stone (please refer to Annex V).

We do not yet consider there is evidence or community consensus that would be required to adopt the Australian decisions in a New Zealand context. However, it is sensible to consider a full range of options for public consultation to ensure that submissions are thorough and focused.

There is uncertainty about why exposure to duct from engineered stone leads to more rapid and severe disease. Therefore, MBIE has also commissioned an independent scientific review in order to gather available scientific evidence for known risks and impacts of working with engineered stone. Option 5 may only be considered in relation to fabrication and installation of new engineered stone products, however we welcome feedback on this point.[26]

Based on the current evidence we have available to us, we would not have evidence to recommend a full or partial ban. However, we are interested in submitters views on this option.

Sub-option 5A: Prohibition on the importation, use or supply of all engineered stone

Sub-option 5A would place a total ban on the importation or use and work on engineered stone in New Zealand, similar to Australia's approach (refer to Annex V).

In principle, ceasing imports, manufacture, or use, of all engineered stone would provide the most effective reduction in harm to workers. Such a ban would eliminate the risk or potential risk of exposure for all new stone products, and would limit the

[26] Work on 'legacy' products (engineered stone kitchenware that has already been installed) involves shorter exposure periods than in fabrication or installation.

potential for harm from products already in place by restricting the work that could be done on or with them, and by whom. Over time, the residual pool of risk would reduce as existing products are replaced and disposed of. Although it is important to note that the products only present RCS risks to those who cut, grind, drill, or polish the stone, not others who use them in homes or elsewhere.

However, a complete or partial ban on importation on its own could create uncertainty for consumers, trades, and other businesses, and have considerable financial impacts on businesses. Consideration would need to be given to the transition to alternative materials, and the impacts on businesses that may need to stop trading. Any ban would need to be clear on the definition of "engineered stone," and contain a robust system for verifying whether a specific product is permitted at the point of importation.

This option would require further consideration of the risks of *legacy products*, specifically existing engineered stone benchtops already installed in New Zealand homes and what controls or requirements are set for them (e.g. option 3 – licencing of workplaces that manipulate engineered stone).

Sub-option 5B: Prohibition on the importation, use or supply of engineered stone containing 40 percent or more crystalline silica (i.e. partial ban)

Sub-option 5B comprises a partial ban on the import, use, and supply of engineered stone, and would prohibit the importation or use of engineered stone containing 40 per cent or more crystalline silica.

Some manufacturers, responding to concerns internationally, are moving towards product lines with 40 per cent or less crystalline silica content, this is comparable with natural stone products.

A full or partial ban would be effective in reducing harm; however, it is not considered proportionate to the risks

A full ban would essentially remove the risk associated with any new imports, and would therefore be an effective option in reducing harm. Unlike asbestos, RCS risks are contained to a smaller pool of individuals who work with the material. Defining where the line is to consider what is and is not proportionate to the risks to those individuals is something we are interested in hearing submitters views on.

Australia's ban on engineered stone is a precautionary approach and based on continued scientific uncertainty about the reasons for high levels of harm from work with engineered stone (e.g. whether the risk primarily relates to the crystalline silica content or also to other features of engineered stone such as particle size, shape, and chemistry) and whether the risks to workers can be adequately managed.

A full or partial ban would be clear regarding imports but may not account completely for the risks associated with product already in the country

While implementing a ban may remove risks associated with new product it does not account for the product already in New Zealand. A combination of other options, as

presented above, is likely still required. A ban would also not be considered adaptable as it does not account for improvements in safety technology or advancements in the manufacturing of stone.

Questions about Option 5: Limiting supply to or use of engineered stone in workplaces

Option 5A

13. Do you support or oppose a full ban on import, supply, and use of engineered stone? Tell us why.

14. How would a full ban on import, supply, and use of engineered stone impact you or the industry you work in/support?

Option 5B

15. Do you support or oppose a partial ban on import, supply, and use of engineered stone, applying to engineered stone with crystalline silica content of 40 per cent or more? Tell us why.

16. How would a partial ban impact you or the industry you work in/support?

Additional questions for businesses

36. Do you currently use alternative materials to engineered stone or engineered stone with lower crystalline silica content? If so, why?

37. Has the ban in Australia and other measures taken overseas had any impact on your ability to import stone, or in the level of crystalline silica present in the stone you import?

38. How long would it take you to transition your supply of engineered stone products to lower crystalline silica content containing products, or alternative benchtop materials (if possible for your business)?

39. What would you expect costs to be of a full or partial ban?

40. How does option 5 compare with what you are already doing?

Closing remarks

This discussion document has outlined several options to further regulate the risk management of workers exposure to RCS. We seek your views on your preferred package of options.

The options outlined in this discussion document are preliminary only. Their inclusion in this document does not imply that changes will be made, and we note that new options may be developed based on submissions received.

We asked a series of questions through this document. Your answers and any additional information that you can provide will help us determine what is the best option to ensure workers' health and safety in engineered stone and other RCS-generative industries.

Following consultation, a summary of submissions will be made and publicly released. The submissions will help inform options to the Minister and whether or not regulatory change is required to meet the objectives of the policy problem. Once decisions have been taken, announcements will be made about any changes to the public.

Should regulations be required to implement the preferred option(s), this will follow the standard secondary legislation process.[27]

Closing questions

17. Do you have a preferred option or package of options? Which option(s) and why?

18. Are there any other options to control RCS risks that we have not presented in this paper?

[27] https://www.dpmc.govt.nz/publications/developing-and-making-secondary-legislation

Summary of all consultation questions

Primary consultation questions

Multi-criteria analysis	
1	Do you consider we have outlined the correct criteria and do you think any weighting should be applied? If so, why?
Option 1: The status quo – no change	
2	Do you think the status quo is adequate or inadequate to address the risks involved in work where RCS may be present? Tell us why.
3	What, if anything, could the regulator do within the status quo to support businesses to address the risks without needing to change current laws and regulations?
Option 2: Specific mandatory requirements for engineered stone	
4	Do you support or oppose implementing specific requirements for working with engineered stone? Tell us why.
Option 3: Licencing of engineered stone workplaces	
5	Do you support or oppose a regulatory requirement for licencing of workplaces that cut, grind, or polish engineered stone? Tell us why.
6	What should be the conditions of gaining and maintaining a licence?
7	In your view, what are the benefits and costs of operating under a licencing system?
8	Do you consider a licencing system would be effective in reducing harm?
Option 4: Increased general duties and workers' exposure and health monitoring	
9	Do you support or oppose the introduction of a general duty to reduce RCS exposures from work in all workplaces where there is a likelihood of exposure to RCS? Tell us why.
10	Do you undertake worker health monitoring currently? If so, what and how often?
11	Do you support or oppose mandatory worker health monitoring for workers in all workplaces where there is a likelihood of exposure to RCS? Tell us why.
12	Do you support or oppose mandatory worker exposure monitoring for workers in all workplaces where there is a likelihood of exposure to RCS? Tell us why.
Option 5: Limiting supply to or use of engineered stone in workplaces	
13	Do you support or oppose a full ban on import, supply, and use of engineered stone? Tell us why.
14	How would a full ban on import, supply, and use of engineered stone impact you or the industry you work in/support?
15	Do you support or oppose a partial ban on import, supply, and use of engineered stone, applying to engineered stone with crystalline silica content of 40 per cent or more? Tell us why.
16	How would a partial ban impact you or the industry you work in/support?
Closing questions	
17	Do you have a preferred option or package of options? Which option(s) and why?
18	Are there any other options to control RCS risks that we have not presented in this paper?

Additional questions for businesses

Option 1: the status quo – no change	
19	What controls do you have in place to manage risks of RCS to your workers and how effective do you consider these controls to be?
20	If you are able to quantify the cost, can you please provide figures for the costs of the controls you currently use? Do you see these as being reasonable?
21	Do you face any barriers to meet the current expected practices to manage risk? If yes, please explain.
22	Would you describe your interactions with the regulator as useful, reasonable, and timely? Please tell us why.
Option 2: Specific mandatory requirements for engineered stone	
23	What do you expect the cost to your business to be to implement any outlined requirements, such as water suppression (wet cutting) systems or local exhaust ventilation systems?
24	How long would you or your business require to implement any outlined requirements?
25	Are there any controls on workplace practices that would not be practicable?
26	Do you believe that the controls you have in place are adequate without mandatory controls? Please explain.
27	How does option 2 compare with what you are already doing?
Option 3: Licensing of engineered stone workplaces	
28	Do you believe that the current optional accreditation scheme is adequate without mandatory licensing? Please explain.
29	Have you already joined the accreditation scheme? If so, how did you find it? If not, why?
Option 4: Increased general duties and workers' exposure and health monitoring	
30	Do you or does your business currently monitor workers' exposure or health in relation to RCS? Please explain.
31	If you currently monitor workers' exposure or health, what is the current cost to the business of this?
32	Do you think the current Workplace Exposure Standard (WES) of 0.025 mg/m^3 is reasonably practicable to detect and adhere to in your business?
33	Are there any practical constraints to your business which could limit your ability to monitor workers' exposure or health?
34	Do you believe that current practices around health and exposure monitoring is adequate without making it mandatory? Please explain.
35	How does option 4 compare with what you are already doing?
Option 5: Limiting supply to or use of engineered stone in workplaces	
36	Do you currently use alternative materials to engineered stone or engineered stone with lower crystalline silica content? If so, why?
37	Has the ban in Australia and other measures taken overseas had any impact on your ability to import stone, or in the level of crystalline silica present in the stone you import?
38	How long would it take you to transition your supply of engineered stone products to lower crystalline silica content containing products, or alternative benchtop materials (if possible for your business)?
39	What would you expect costs to be of a full or partial ban?
40	How does option 5 compare with what you are already doing?

Glossary

ACC	Accident Compensation Corporation
ASAP	Accelerated Silicosis Assessment Pathway
CT	Computed Tomography
Good Practice Guide	Good Practice Guide for the Control of Respirable Crystalline Silica in the Fabrication of Engineered Stone
HSW Act	Health and Safety at Work Act 2015
IMPAC	Impac Services Limited
MBIE	Ministry of Business, Innovation and Employment
NZESAG	New Zealand Engineered Stone Advisory Group
PES	Prescribed Exposure Standard
PCBU	Person Conducting a Business or Undertaking
PPE	Personal Protective Equipment
RCS	Respirable Crystalline Silica
WES	Workplace Exposure Standard
WHS	Work Health and Safety
WorkSafe	WorkSafe New Zealand

Annex I: Silicosis and Engineered Stone Background

All workers in engineered stone fabrication businesses are potentially at risk of exposure to respirable crystalline silica (RCS). This risk results from the extremely fine dusts created while engineered stone products are being cut, ground or polished, usually during fabrication as benchtops and other bathroom and kitchen benches and furnishings.

Crystalline silica dust, particularly RCS, is an occupational hazard that has been known about, and managed to some extent, for hundreds of years or longer. It has been known as a cause of silicosis, a chronic fibrotic lung disease.[28]

There are three types of silicosis:

- **Acute silicosis**: may occur after exposure of less than a year to very large amounts of RCS.
- **Accelerated silicosis**: may occur after exposure to large amounts of RCS over a shorter period of time, typically 3 to 10 years, and has been seen in workers from the engineered stone kitchen benchtop industry.
- **Chronic silicosis**: typically results from exposure to RCS over more than 20 years, and is usually seen in miners, tunnellers, and stonemasons and others working with stone and cement products.

Developed countries have regulated for the management of RCS risks for at least a century, and until recently, RCS risks had been considered well managed, and generally a reduced threat to workers. Each time there has been a significant change in technology or work methods there has needed to be changes to the management of risks to workers. When hand tools and traditional crafts were replaced by pneumatic cutting and hammering equipment a century or more ago, worker output and exposures to dust increased greatly and there were resulting changes to ventilation, dust suppression, and personal protective equipment (PPE) requirements for workers. Where these controls weren't in place there were inevitably increases in the incidence of disease among workers.

There is increasing evidence that workers remain at risk of harm from exposures to RCS.[29] In recent years this has led many countries to revise the Workplace Exposure Standard (WES) for RCS that are set under health and safety legislation (See Annex IV).

[28] The term 'silicosis' was first used in the 1870s, and the condition was recognised by the International Labour Organization (ILO) in 1930. An ILO convention was introduced in 1934, and in 1958, an ILO agreement defined the chest radiograph features of the disease. Later, in 1995, an ILO/World Health Organization (WHO) Global Programme for the Elimination of Silicosis was established and subsequently reaffirmed.

[29] See https://bpac.org.nz/2023/silicosis.aspx.

Recent research on causation

It is well established that processing engineered stone gives rise to particularly high concentrations of crystalline silica as very fine dusts (less than 600 nm) that react with cells in the lungs and which the body is not able to remove, as with other exposures to RCS.

The most recent research has begun to examine more closely the effect of dust particle chemistry on the lung cell response. This research suggests that metallic elements present in addition to crystalline silica, volatile organic compounds in resins, and dust particle physical characteristics all combine to make engineered stone particularly toxic to lung cells.[30] It is, however, an emerging area of research that has been laboratory based. There are several key aspects of the physiology that will require further laboratory study and we would expect that the findings from the work will be further validated in a clinical setting, and extend into studies of workplace practices. This is an emerging area of research, MBIE has commissioned an independent scientific review in order to assess the available scientific evidence for known risks and impacts of working with engineered stone.

Current known incidence of silicosis in engineered stone workers in New Zealand

New Zealand has established an Accelerated Silicosis Assessment Pathway (ASAP). This assesses workers who may have been exposed to RCS from fabricating engineered stone in New Zealand for at least six months in the past ten years. The claim is first lodged by a medical practitioner if the exposure threshold and ACC eligibility criteria are met. The Assessment through the ASAP is then progressed. There is a health pathway still available through the ASAP for those who meet the exposure threshold but do not meet the ACC eligibility criteria.[31]

From a review of claims in March 2022, the ages of those assessed range from just under 20 years to mid-70s. The median age at lodgement is 42 years. The median age of claimants with a diagnosis of silicosis is 47 years, with 65 per cent aged 30–49. This is also broadly consistent with international findings.

Silicosis is not restricted to working with engineered stone. There are risks to workers from a broad range of stone, masonry and ceramic materials that contain crystalline silica and that have historically been a cause of silicosis in mine and quarry workers, stonemasons in natural stone, and the construction sector, predominantly with concrete products, but others as well. WorkSafe estimate that up to 80,000 workers in

[30] Ramkissoon C, Song Y, Yen S, Southam K, Page S, Pisaniello D, Gaskin S, Zosky GR. Understanding the pathogenesis of engineered stone-associated silicosis: The effect of particle chemistry on the lung cell response. Respirology. 2024 Mar;29(3):217-227. doi: 10.1111/resp.14625. Epub 2023 Dec 3. PMID: 38043119.

[31] The Assessment Pathway was created by ACC, Ministry of Health and WorkSafe in September 2020. The Assessment Pathway involves an initial assessment by a GP who can lodge a work-related gradual process claim with ACC for further specialised tests and investigations funded by ACC based on exposure. The health assessment is voluntary, but workers who may have been exposed to RCS are strongly encouraged to be assessed so any dust-related health condition can be managed appropriately.

these sectors are working in conditions where the Workplace Exposure Standard (WES) for RCS is regularly exceeded. Table I.1 shows the crystalline silica content of some of the materials involved, however, caution must be applied as the risk does not relate directly to the crystalline silica content, but rather to how well the workers' exposure is controlled.

Table I.1 – Crystalline silica content of different types of building material. From: Safe Work Australia.[32]

Material	Crystalline silica content (%)
Marble	2
Limestone	2
Slate	25 to 40
Shale	22
Granite	20 to 45 (typically 30)
Natural sandstone	70 to 95
Engineered stone	Up to 97
Aggregates, mortar and concrete	Various; 25 to 70[33]

[32] Safe Work Australia: Crystalline silica and silicosis. From: https://www.safeworkaustralia.gov.au/safety-topic/hazards/crystalline-silica-and-silicosis.
[33] The Health and Safety Executive (United Kingdom), May 2024. From: https://www.hse.gov.uk/pubns/indg463.pdf.

Annex II: Overview of the health and safety regulatory regime

Health and Safety at Work Act 2015

The Health and Safety at Work Act 2015 (HSW Act) provides a balanced framework to secure the health and safety of workers and workplaces. A guiding principle of the HSW Act is that workers and others should be given the highest level of protection against harm to their health, safety and welfare from work risks so far as is reasonably practicable.

The HSW Act places a primary duty on a person conducting a business or undertaking (PCBU) to ensure, so far as is reasonably practicable, the health and safety of workers who work for the PCBU, and workers whose activities in carrying out the work are influenced or directed by the PCBU while carrying out the work.

It also requires PCBUs to follow a hierarchy of controls when managing risks to health and safety. Where reasonably practicable, the risks must be eliminated, and where it is not reasonably practicable to eliminate the risks, they must be minimised.

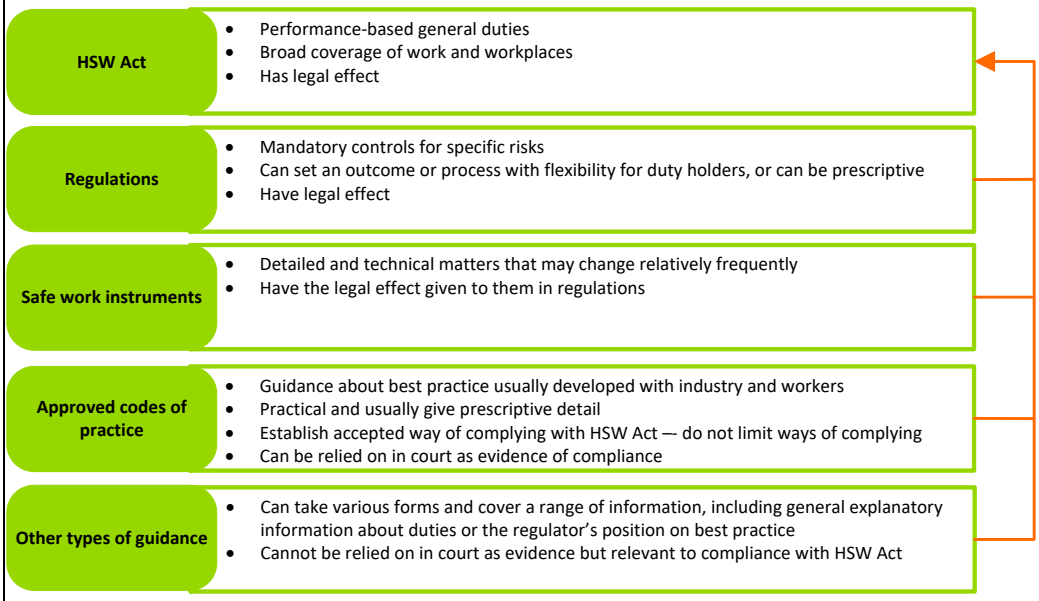
The HSW Act and supporting regulations include a range of subordinate duties and processes to ensure PCBUs manage risks to workers and others. These may apply to practices in all workplaces, specific types of workplaces or sectors, and particular risks.

The HSW Act is designed to be supported by regulations and other legislative tools to provide any necessary additional detail on how duty holders can meet their duties (see Error! Reference source not found. below).

Figure 1 - The HSW Act legislative framework.

HSW Act legislative framework

- The HSW Act provides for a range of tools that can specify controls for managing work-related risks, as shown below.



- In practice these tools are not mutually exclusive, but work together to ensure duty holders have the appropriate obligations underpinned and supported by the necessary detail and guidance at the right level, so they can effectively manage the risks arising from work:
- The **HSW Act** has performance-based general duties – these specify the outcome required, that duty holders must protect workers and others from work-related harm, rather than specifying the specific actions duty holders must take. This provides both flexibility for duty holders and broad coverage of New Zealand work and workplaces.
- Industry- or risk-specific **regulations**, **approved codes of practice** and **guidance** underpin the general duties in the HSW Act when further clarity is required.
- **Regulations** are most appropriately used where they are needed to effectively address risks – the riskier something is the more likely it is to need mandatory controls through regulations.
- **Safe Work Instruments** are most effective where prescribing controls for more detailed requirements, or technical matters that may change frequently. They do not have legal effect on their own, but only to the extent they are referred to in regulations.
- **Approved codes of practice** and **guidance** do not provide mandatory controls. They provide further support to duty holders in meeting their general duties, and are appropriate, for example, where there might be a range of effective ways of managing a particular risk.

Annex III: Revised Workplace Exposure Standard

As part of eliminating risks or minimising risks to workers from RCS so far as is reasonably practicable, PBCUs can consider and use Workplace Exposure Standards (WES).

A WES refers to the airborne concentration of a substance, at which it is found that nearly all workers can be repeatedly exposed to, day after day, without coming to harm. The values are normally calculated on work schedules of five shifts of eight hours duration over a 40-hour week. A WES thus aims to avoid adverse health effects for most workers. These WESs are set by WorkSafe based on toxicological effects of the substance.[34]

A WES is an advisory standard. It is not a mandatory occupational exposure level that must not be exceeded, unless it is prescribed as a "prescribed exposure standard" (PES)[35] in a safe work instrument made under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 or by specific regulations. This contrasts with, for example, Australia, where all WESs are mandatory, and with the United States requirements referred to below.

The WorkSafe WES for RCS has been set at 0.025 mg/m^3.[36] This is consistent with what has happened in most jurisdictions overseas, but not all. Some, such as the United Sates, have set a permissible exposure limit (PEL) at 0.05 mg/m^3. A PEL set by the federal agency Occupational Safety and Health Administration is mandatory and had to be established as both measurable and achievable for businesses before it could be prescribed by regulation in 2016.

[34] See: https://www.worksafe.govt.nz/laws-and-regulations/operational-policy-framework/operational-policies/how-we-set-workplace-exposure-standards-and-biological-exposure-indices/.

[35] At present only one substance in New Zealand has a PES (a fumigation chemical).

[36] The WES for RCS was changed from 0.1 mg/m^3 to 0.05 mg/m^3 in November 2019. After consultation, WorkSafe changed it from 0.05 mg/m^3 to 0.025 mg/m^3 in November 2023.

Annex IV: Further information on the status quo

Since 2019, WorkSafe has worked to educate and engage with the industry on the risks to worker health from high concentrations of RCS and the controls needed to manage the risks effectively.

Inspectors have made it clear that uncontrolled cutting, grinding, sanding, drilling, and polishing of engineered stone is not acceptable. Inspectors have prioritised inspections of businesses known to have poor work practices such as ineffective dust extraction systems, poor dust control practices, or where they believe information on managing risks has not got to the workers concerned.

As of 1 June 2024, WorkSafe was aware of 157 businesses fabricating engineered stone with an estimated 600 workers currently fabricating engineered stone.

WorkSafe estimate that approximately 1000 current and former workers are eligible for health assessment under the Accelerated Silicosis Assessment Pathway (ASAP).

WorkSafe note that inspectors have conducted four rounds of inspections since 2019 (see Table IV.1).[37] During inspection visits, inspectors check risk management and control processes, and since September 2020 they have also provided information to workers on the health check available to them under the ACC Accelerated Silicosis Assessment Pathway.

Table IV.1 – Enforcement actions issued since 2019.

Timeframe	***Number of businesses visited***	***Number of enforcement actions issued***	***Number of businesses issued an enforcement action***	***Notes***
2019	101	113	64	Initial visit to known businesses
September 2020 to June 2022	138	200	90	Revisit to known businesses, plus first visit to any newly identified businesses
May 2022 to February 2023	21	44	18	First visit to newly identified businesses
June 2023 to October 2024	102	131	67	Revisit to businesses based on their compliance history, plus first visit to newly identified businesses

[37] Each round of inspections has had a different focus, assessment practices have evolved, the range of matters assessed has expanded and inspectors are increasingly firmer on ensuring risks are managed. Caution is therefore needed when comparing enforcement action numbers between inspection rounds.

WorkSafe has observed that:

- businesses are now more aware of the risks of exposure to RCS and, overall, are managing RCS risks more effectively than when inspectors first visited in 2019,
- businesses vary in how effectively they are implementing controls to manage the risks from RCS, and even better-performing businesses can lapse in applying effective controls from time to time, and
- the matters that notices have been issued for have changed since 2019; for example, inspectors have not issued a notice for dry cutting or dry sweeping since 2020.

During the fourth round of inspections conducted between June 2023 and October 2024, inspectors visited 102 businesses and issued 131 enforcement actions to 67 businesses. 107 of these actions were enforcement notices issued under the HSW Act:[38]

- three prohibition notices[39] – all were for machine guarding, which is not an RCS management issue,
- 104 improvement notices, most commonly for housekeeping[40] (25), machine guarding (17), fit testing of respiratory protective equipment (15), health monitoring (15) and exposure monitoring (9).

Overall, engineered stone businesses have improved their management of RCS. However, inspectors continue to issue enforcement actions to businesses where risks are not being controlled effectively.

In addition to WorkSafe's inspections, the following initiatives are currently being undertaken:

Industry accreditation programme

The New Zealand Engineered Stone Advisory Group (NZESAG) was established in July 2019 by importers and suppliers of products to respond to the occupational health risk to workers of accelerated silicosis when fabricating, manufacturing, or installing engineered stone products. NZESAG represents the main importers and suppliers of engineered stone in New Zealand.

In 2020, the NZESAG partnered with IMPAC to establish and implement the voluntary RCS Accreditation Programme to reduce the risk of silicosis across the engineered stone fabrication sector in New Zealand. The RCS Accreditation Programme has been supported by NZESAG members and ACC.

[38] 107 prohibition notices (3) and improvement notices (104) notices were issued under the HSW Act. The remainder of the 131 enforcement actions were sustained compliance notices, directive letters, or verbal directions that are not issued under a legislative provision.
[39] Prohibition notices prevent a specific activity from occurring until the situation is rectified.
[40] Housekeeping notices require a work area to be cleaned (and maintained) to ensure dust is not building up on equipment or in the fabrication area so the business can readily see if a dust control starts to become ineffective.

The RCS Accreditation Programme was launched in February 2021 with the intention that all fabricators would undertake an initial accreditation audit within 12 months.

To obtain accreditation, fabricators must comply with the requirements set out in the Good Practice Guide. This is checked by an audit of the fabricator's manufacturing facility, and their processes to identify and manage RCS exposure risk. By September 2023, 55 of the approximately 130 fabrication businesses then identified by WorkSafe have engaged with the accreditation process and about half of those had met the audit standard in place at the time of "gold" or "silver".

The Accreditation Programme has been based on an Australian code of practice and includes workplace controls and practices, including personal protective equipment (PPE), worker exposure monitoring, and some worker health monitoring.

WorkSafe inspectors encourage engineered stone fabrication businesses to register with the NZESAG Accreditation Programme, where they are audited and followed up by a qualified occupational hygienist to ensure they maintain good practices to keep their accreditation status.

The cost to individual businesses to complete an annual audit is now $6,378.75, excluding travel and accommodation costs. Previously up to $2,300 had been met by an ACC subsidy (withdrawn from 1 April 2024).

The New Zealand Stone Fabricators Alliance has recently been established to act as a focal point for fabricator response to the issues surrounding the use of engineered stone in New Zealand. They have attracted 51 members who have committed to using low crystalline silica content (below 40 per cent) engineered stone only.

Development of a Good Practice Guide

As part of the voluntary accreditation programme, a *Good Practice Guide for the Control of Respirable Crystalline Silica in the Fabrication of Engineered Stone*[41] (Good Practice Guide) has been developed. It sets out the minimum steps required and a risk management process to manage the health risks associated with RCS from working with engineered stone products. It forms the basis of the audit standard used for accreditation of businesses.

The good practice guide was developed by NZESAG with ACC funding to the sector. Although it describes a standard of practice that will meet the HSW Act general duties, and gain accreditation, it is not enforceable as such, and it has not undergone the consultation and approval processes of an approved code of practice made under the HSW Act.

Because not all businesses are choosing to seek accreditation, the application of the guidance in different businesses is mixed, and it is not leading to the same levels of risk management and conformity.

[41] From NZESAG, 2021: https://impac.co.nz/assets/file-attachment/Good-Practice-Guide-for-web.pdf.

It could be expected that, in future, an approved code of practice is developed and approved after public consultation. It would likely be based on the SafeWork Australia code that is in place in Australian states. Compliance with the code would be evidence of practice meeting the HSW Act general duties, but it would not be mandatory or enforceable in the manner of regulatory requirements.

Uptake of the Accreditation Programme

Uptake and completion rates for the programme were lower than expected at commencement, but there has been a significant increase in participation from May 2023 after increased media coverage of both the risks associated with RCS and the Australian decisions. The increase was also supported by two key suppliers of engineered stone requiring programme accreditation by fabricators they supply.

By March 2024, 83 fabricators have gone through the programme and currently there are 74 active accreditations. Of these, 10 are Fully Accredited, 49 hold provisional accreditation, and 15 did not met the accreditation standard. Despite this increase in participation and accreditation, IMPAC and NZESAG advise that engagement with the more problematic one-third of fabrication businesses remains difficult and their participation is low.

Health and exposure monitoring

Health monitoring involves measuring and evaluating workers' exposure to a health hazard, such as toxic aerosols. Health monitoring provides assurance that the controls that are in place are working, and workers are not being harmed. It has application to respiratory disease, such as silicosis, chronic obstructive pulmonary disease (COPD), and lung cancer, and all sectors where workers are at risk of exposure to RCS.

Ongoing health monitoring differs in nature and purpose from the ACC Accelerated Silicosis Assessment Pathway (ASAP; See Annex I), which provides a process to assess people who have potentially been exposed to high concentrations of RCS through work with engineered stone in a New Zealand workplace.

WorkSafe has been working with health professional groups to develop more specific health monitoring requirements for businesses to provide to their workers. The emphasis has been on approaches that are effective and practicable, and how that monitoring could be provided given reliance on the private provision of occupational health services in New Zealand and potentially limited access to appropriate diagnostic technologies.

Currently, monitoring workers' exposure levels to RCS or monitoring workers' health impacts are not required for New Zealand businesses. We understand that this is already required in Australian states, but that observance is lower than Safe Work Australia would like.

To make this mandatory (i.e. directly enforceable) under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 a Prescribed Exposure Standard (PES) may be set by regulations, or a safe work instrument. We

expect this would have application in subsectors within the construction, manufacturing and mining and quarrying sectors.

While prescribing a WES would send a signal to businesses about the need to maintain RCS exposures below that level, further work is needed to determine if this intervention would be effective, including whether the health and safety system has the maturity, capability and capacity to implement a PES.

Annex V: Australia's amendments to its regulatory settings in response to the risks posed by RCS

In Australia, under the model Work Health and Safety (WHS) laws, PCBUs, including designers, importers and manufacturers, are required to eliminate or minimise the risks to workers and others from respirable crystalline silica (RCS) so far as is reasonably practicable, including that generated from engineered stone.

In response to the diagnoses of silicosis in Australian engineered stone workers, several Australian states amended their regulatory settings to remove any doubt in relation to the applicable control measures when working with engineered stone. This includes:

- Most states implemented screening programmes for workers who have historically been exposed to RCS from engineered stone. They have been partly or fully supported through public funding.
- In 2019, Queensland released the Managing respirable crystalline silica dust exposure in the stone-benchtop industry code of practice. It sets out enforceable standards that must be met to minimise the risk of worker exposure to RCS in the stone benchtop industry. In 2021, Safe Work Australia published a model code of practice based on Queensland's, and this has since been implemented by other states.
- The Model WHS Regulations were amended to expressly prohibit the uncontrolled processing of engineered stone. This included a ban on dry cutting unless stringent dust control and personal protective equipment (PPE) requirements were met. The workplace exposure standard for RCS was also reduced.[42]
- Victoria (which does not use the model WHS laws) established a licencing scheme for engineered stone businesses from November 2022. Victoria also established duties for businesses undertaking high-risk work involving other materials containing silica.

However, despite the development of these regulations, there was evidence of continued non-compliance with the obligations imposed by WHS laws, by both PCBUs and workers,[43] meaning that workers were still put at risk from exposure to RCS. This led to Australia shifting to a national approach, updating the model WHS laws to implement a ban on the importation, use, and supply of engineered stone from 1 July 2024. All Australian states have adopted this ban.

[42] From 0.1 mg/m^3 to 0.05 mg/m^3 (8-hour time weighted average).

[43] See https://www.safeworkaustralia.gov.au/sites/default/files/2023-10/decision_ris_-_prohibition_on_the_use_of_engineered_stone_-_27_october_2023.pdf

Australia's approach has been described as a precautionary approach. It is based on continued scientific uncertainty about the reasons for high levels of harm from work with engineered stone and whether the risks to workers can be adequately managed.

Te Kāwanatanga o Aotearoa
New Zealand Government

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