New Zealand Journal of Health and Safety Practice; Vol 2, ed 1. April 2025

Submission to the Ministry of Business, Innovation and Employment on the discussion document 'work with engineered stone and materials containing crystalline silica'

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DOI: https://doi.org/10.26686/nzjhsp.v2i1.9776

Editors Note. This article was a joint submission to the Ministry of Business, Innovation and Employment (MBIE) in March 2025. Although under the names of Jeff Sissons and Jon Harper-Slade it reflects the views of views of members of NZISM and was approved by the Board of CHASNZ. This version has been copy edited to meet Journal formatting and referencing but the content does not differ from the version submitted to MBIE.

Introduction

This submission has been written by NZISM and CHASNZ with input from senior health and safety practitioners and occupational physicians. It outlines the background, discusses the problems with the status quo, and sets out our recommendations for change.

About NZISM

The New Zealand Institute of Safety Management (NZISM) is the largest member association within the Health and Safety Association of New Zealand (HASANZ). We recently celebrated our 52nd anniversary. We are the professional body for occupational health and safety managers, advisors and consultants, with 2,900 members, around 70% of the total OHS workforce.

NZISM operates a nationwide network of 14 branches from Northland to Southland. Our members work across all industries and with all sizes of business, including manufacturing, construction, tunnelling, mining and quarries. We provide our members with internationally recognised professional accreditation and a comprehensive programme of continuing professional development and learning.

About CHASNZ

Construction Health and Safety New Zealand (CHASNZ) is an industry-led charitable trust working to improve the lives of construction workers by raising the standard of health, safety and wellbeing in construction.

CHASNZ is dedicated to addressing the need for sustainable change, identifying areas of risk, providing guidance on best practice health and safety and ensuring health and safety is an intrinsic part of doing better business.

Background

Silica

Silica is natural and makes up 60% of the Earth's crust. Silica is everywhere, in our air, soil, sand, and water. Silica has been used for thousands of years to build and make things – homes, roof tiles, roads, railways, cars, buses, computers, phones, electricity lines, fibre-optic cables, paints, plastics, and rubber. Silica is safe when it's inert and doesn't react with any chemicals.

Respirable crystalline silica (RCS)

Silica's problems occur when silica is ground, cut, drilled, or crushed into very fine dust particles, called respirable crystalline silica (RCS) which gets deep inside our lungs. RCS is invisible to the naked eye, a hundred times smaller than a grain of sand.

Exposure to RCS is a common occupational hazard; Hoy & Chambers (2020) listed the following activities which may cause silica exposure:

- construction involving bricklaying, concrete cutting, paving and demolition
- road and highway construction and repair
- mining and quarries
- blasting and drilling tunnels
- cement and brick use and manufacture
- handling raw materials during paint manufacture
- mixing, glazing or sculpting of ceramics and pottery
- working with and polishing dental materials
- waste incineration.

Engineered stone

Engineered stone first became available as a construction material in New Zealand in the late 1980s. It is popular, especially for kitchen countertops, and MBIE estimates that New Zealand currently imports around 60,000 engineered stone slabs annually.

Engineered stone contains up to 90% silica. Health risks associated with work with engineered stone have only recently come to light with the first case of silicosis related to engineered stone reported in major studies emerging in the late 2010s.

As SafeWork Australia (2023) has noted, engineered stone has several characteristics which make it far more harmful than other sources of RCS:

- Engineered stone often has significantly higher RCS content.
- Engineered stone is quite soft, so more engineered stone can be processed in one shift, leading to higher dust exposures, and requiring a less skilled workforce.
- RCS produced from engineered stone has different physical properties which penetrate deeper into the lungs.
- The other components of engineered stone, such as resins and pigments combine with the RCS for the toxic effects.

The statistics don't tell the whole story

The 2019 Global Burden of Disease study (Chen et al., 2022) estimated 12,900 deaths worldwide from silicosis (all exposures). The Australian Bureau of Statistics estimated that 270,000 Australians were exposed daily to RCS.

Australian research cited by MBIE indicates that between 20% and 30% of engineered stone workers will suffer a silica-related disease. WorkSafe New Zealand estimates that there are 600 engineered stone workers active in New Zealand and another 400 workers who have worked in the industry since 2001 and since left. If the Australian evidence holds here, 200 to 300 New Zealand workers would be expected to contract a silica-related disease. There is no reason to think that New Zealand has been better at controlling exposure to RCS for engineered stone workers.

Australia has officially recorded 55 deaths from silicosis from 2015 to 2022, but some experts and organisations believe the real number is much higher and will increase as engineered stone practices of the past decade begin to show their effects (Kirby, 2024). In New Zealand, up to August 2024, there were 222 ACC claims and 26 accepted claims for accelerated silicosis; our experts note this does not reflect the true burden.

Health risks and burden of harm

Silicosis (dust lung disease) is the most common disease associated with RCS. Tiny RCS particles cause lung inflammation and scarring, leading to breathing difficulties and sometimes long-term lung damage and death. Exposure to RCS can also cause diseases of the kidneys, immune system, heart and some cancers.

Silicosis is an ancient occupational disease but work with engineered stone has seen the emergence of accelerated silicosis. Accelerated silicosis develops quickly (typically over 3 to 10 years or 1 year with intense exposure. Although there are supportive treatments, silicosis currently has no cure.

Silica is different to asbestos. Asbestos takes up to 40 years before the disease is apparent. Accelerated silicosis has been affecting and killing mainly males under 35 years old within a few years of exposure.

Australian approach

From 2019 onwards, the Australian States and Federal Government progressively tightened the rules around use of engineered stone. The WHS laws were amended to remove any doubt in relation to the applicable control measures when working with engineered stone, for example, the prohibiting dry cutting.

The workplace exposure level for RCS was also reduced from 0.1 mg/m^3 to 0.05 mg/m^3 (8-hour time weighted average), with States agreeing to recommend a further reduction to WHS ministers (to 0.025 mg/m^3).

Safe Work Australia and Commonwealth, state and territory governments undertook compliance activities, education, awareness campaigns, and health screening programs to prevent further unlawful exposure to RCS.

Despite this activity, Australia's conclusion was that there was insufficient compliance (by PCBUs and workers) with the controls and standards and insufficient compliance activities by the regulators. As a result, from 1 July 2024, the Australian government banned nationwide manufacturing, supply, processing, and installation of engineered stone benchtops, panels, and slabs. From 1 January 2025, Australia banned importation of engineered stone.

Impact on vulnerable workers globally

Bans such as the Australian approach have far-reaching global implications including protecting workers in countries where engineered stone is processed. Many engineered stone products are manufactured in countries with lower labour protections, where workers are exposed to silica dust with few if any protective measures. Workers in these locations often suffer from accelerated silicosis and other diseases due to prolonged exposure to silica dust.

Our view

The status quo is unsustainable. There is a significant burden of harm from poorly controlled risks associated with engineered stone. As noted above, Australian research indicates 20-30% of engineered stone workers contracted respiratory disease as a result of this work despite strict mandated controls.

We appreciate the work that has gone into the voluntary New Zealand Engineered Stone Advisory Group accreditation programme and Good Practice Guide. There have also been some good examples of industry initiatives. The New Zealand Kitchen & Bathroom Association (NKBA) has raised awareness among its members about the risks of working with engineered stone. Caesarstone committed to updating their entire engineered stone range to low silica content in 2024 and AGB Stone introduced 0% silica stone into the market and announced a transition away from engineered stone containing silica. We

acknowledge that some employers believe they can manage the risks effectively and have invested in systems and training to do so.

Without downplaying this work, we consider the severity of this risk warrants a more significant response. We believe that we should learn from the Australian experience that stricter regulatory and compliance settings were insufficient to protect workers.

We are discouraged by the results of WorkSafe New Zealand's ongoing inspection programme. Two-thirds of businesses visited from June 2023 to October 2024 were issued enforcement actions with an average of nearly two actions per business. This means that current business practices are still exposing workers to RCS. We understand this included some businesses who were in an industry accreditation programme.

Our recommendations

Staged restrictions on engineered stone

We recommend the Government **bans the manufacture, use, import and export of engineered stone products with a high silica content** (40%+ as recommended in the MBIE discussion document as a partial ban option).

This ban should be brought in after a staged transitional period for existing installations and contracts, to allow for the completion of projects and the safe removal or modification of engineered stone products as follows:

- **Stage 1 (6–12 months)**: Reenforce immediate mandatory controls (wet cutting, extraction ventilation, PPE, education and training) and ban imports of engineered stone above 40% RCS.
- **Stage 2 (12–24 months)**: Transition existing contracts and installations, mandating silica content testing and labelling to ensure compliance.
- **Stage 3 (24–36 months)**: Evaluate the partial ban's effectiveness and consider lowering the silica threshold further (such to a maximum of 20% silica threshold) or moving to a full ban if health risks persist, with exceptions for encapsulated uses.

To enforce the 40% silica threshold, we recommend mandatory testing of all engineered stone slabs prior to importation before permission to import is granted with results clearly labelled for transparency.[1] This ensures regulators and businesses can verify compliance, addressing the variability in silica content that complicates exposure control.

Ethical-sourcing standards

We recommend that the Government commits to Ethical Sourcing Standards: This would mean collaborating with international partners to promote ethical and sustainable practices in the engineered stone industry and support initiatives that advocate for safe working conditions in countries where these materials are manufactured.

To support the transition from high-silica engineered stone, **we recommend government-backed financial incentives and research grants are rolled out for businesses developing and adopting low-silica or silica-free alternatives**. This aligns with ethical sourcing goals and ensures a viable industry future.

Stronger controls, licensing and an end-to-end silica strategy

A partial ban would permit work to continue with engineered stone with lower silica content and engineered stone products also remain *in situ* around the country. Working around RCS (both engineered stone and other causes) will remain a fact of life.

[1] See for an example of how we do this for asbestos the Imports and Exports (Asbestos-containing Products) Prohibition Order (2016), https://www.legislation.govt.nz/regulation/public/2016/0218/10.0/whole.html

We recommend that the Government:

- **Develops a holistic silica strategy** covering all high-risk work with silica[2]
- **Establishes a licensing regime for high-risk work with silica** including work with low-silica engineered stone and other high-risk RCS work, such as construction, mining, quarrying, tunnelling and other work with high exposure to RCS.
- **Enhances training for General Practitioners and Medical Specialists** on diagnosing and testing for diseases associated with silica-exposure.
- To ensure timely diagnosis and support, we recommend establishing **dedicated occupational health clinics for silica-exposed workers,** supplemented by mobile worksite testing units for lung function and RCS exposure assessments. These services should be accessible without GP referral, addressing barriers for vulnerable workers.
- Works towards the introduction of a national Occupational Lung Disease Registry and development of a national occupational health service which provides treatment and support to all workers (regardless of their ACC cover status).
- **Improve worker protections** by:
    - **Mandating rigorous, standardised, periodic air quality monitoring by Occupational Hygienists**
    - **Enforcing wet-cutting techniques and local exhaust ventilation systems** (with enforced regular testing)
    - **Ensuring properly fit-tested and maintained personal protective equipment** for any processing of legacy or low-silica engineered stone.
    - **Enshrining these protections in regulations with a supporting WorkSafe approved code of practice** based on the Australian model code with any useful additions from the New Zealand industry-developed Good Practice Guide.
- **Develops WorkSafe-approved guidelines for safely removing, disposing, and demolishing existing engineered stone products**. These should mandate RCS controls (wet cutting, extraction ventilation, PPE, education and training) to protect workers and communities from legacy exposure risks.
- **Strengthens requirements and compliance activities relating to exposure monitoring**. This should include a standard to validate exposure control.
- **Mandates that local exhaust ventilation systems be tested regularly by competent persons**, as has been standard in the UK for over 40 years (see, for example, HSE, 2008), to validate their effectiveness in controlling RCS exposure. This should be enshrined in regulations and supported by a WorkSafe code of practice.

Ongoing research and monitoring

- We strongly recommend that **the Government works with industry and professionals to conduct ongoing Research and Monitoring**. This would include investment in medical research through an Occupational Lung Disease Registry to monitor trends and health outcomes of workers exposed to RCS, and to assess the effectiveness of the implemented measures. This data is crucial to

[2] See for example, the Australian Asbestos and Silica Safety and Eradication Council. (2023a). *Silica National Strategic Plan 2024–30*. Author, Canberra. https://www.asbestossafety.gov.au/find-out-about-silica and Asbestos and Silica Safety and Eradication Council. (2023b). *Silica National Strategic Plan 2024–30 Companion*. Author, Canberra. https://www.asbestossafety.gov.au/find-out-about-silica

inform future policy decisions and ensure continuous improvement in worker safety standards.

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