11 August 2022

Safe Work Australia

Consultation Regulation Impact Statement: Managing the risks of respirable crystalline silica at work

Submission from Cancer Council Australia, Occupational & Environmental Cancer Committee

Cancer Council Australia is the nation's peak non-government cancer control organisation. Cancer Council's Occupational and Environmental Cancer Committee (the Committee) includes members with national standing in relevant disciplines including epidemiology, molecular biology, occupational health, occupational hygiene, clinical oncology, and public health. Comments from the Committee form the basis of this submission and their contribution is acknowledged. Cancer Council Australia welcomes the opportunity to provide comment on the Safe Work Australia's *Consultation Regulation Impact Statement: Managing the risks of respirable crystalline silica at work*.

Submission endorsed by:
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GENERAL COMMENTS

We commend the policy measures that have been implemented by both Safe Work Australia and the states and territories to combat the re-emergence of silicosis and address the risks of exposure to respirable crystalline silica (RCS) in Australian workplaces. This includes reviewing the workplace exposure standard (WES) for RCS, agreeing to include a specific regulation in the model WHS Regulations to expressly prohibit the uncontrolled processing of engineered stone, publishing a revised version of the national guide: Working with silica and silica containing products, and the range of education and awareness, health screening and registries, and other measures undertaken at the state and territory level.

Despite these measures, it is evident that further and stronger reforms are required. It is becoming increasingly clear that it is not safe to work with engineered stone products – silicosis caused by engineered stone occurs earlier than with natural stone, it progresses faster than would be expected given previous experience with silica exposure in other

workplace settings, and it progresses even after removal from exposure.[1,2] Exposure to RCS in engineered stone workers was the impetus for the establishment of the National Dust Diseases Taskforce (NDDT) and forms an important part of the Consultation Regulation Impact Statement (CRIS).

However, engineered stone is not the only source of exposure to RCS. The prevention of silicosis and lung cancer requires the minimisation of silica exposure in workers involved in tunnelling, construction, demolition, quarrying, manufacturing silica powder, and other tasks. Therefore, we support a regulatory approach that removes all doubt and provides duty holders with clarity about the risk control measures necessary for high-risk silica processes. We recommend governments adopt consistent regulation across all jurisdictions so that the hierarchy of controls are employed to reduce exposure to RCS below 0.02mg/m^3 8-hour time-weighted average (TWA), across all industries. To ensure continued improvements in the response to silica dust exposure in the engineered stone industry and other relevant industries, we present our positions for your consideration below.

Cancer Council believes the problem should be addressed by adopting a combination of the regulatory and non-regulatory options presented in the CRIS. The options that should be considered together are **Option 2** (Awareness and behaviour change initiatives), **Option 4** (National licensing framework for PCBUs working with engineered stone), and **Option 5b** (Additional regulation of defined high risk crystalline silica process, excluding engineered stone).

We are concerned with some of the assumptions underlying the cost-benefit and breakeven analyses, particularly the potential undervaluing of a human life or life-year. However, for the sake of comment here, we have accepted the data as presented. Assuming the figures from the cost-benefit analysis and breakeven analysis presented in the CRIS are additive, then these three options undertaken in conjunction would have a net present cost of $222.8m and 54.74 silicosis cases would need to be prevented to breakeven over a 10-year period. We believe it is very achievable for this combination of options to breakeven over 10 years, considering that it equates to needing to prevent only ~5.5 silicosis cases annually in Australia. With respect to Option 5b, we note that the CRIS states, *"To breakeven, around 48 cases of silicosis would need to be prevented over this period. This represents around 10 per cent of the total number of accepted workers' compensation cases accepted in Australia (excluding Victoria) over the 10 year period from 2010-11 to 2019-20."* (p.7). Workers' compensation data often underestimates/underrepresents the actual burden of work-related disease in the community, and this is likely the case for silicosis.[3,4,5] Therefore, the number

[1] León-Jiménez A, Hidalgo-Molina A, Conde-Sánchez MÁ, Pérez-Alonso A, Morales-Morales JM, García-Gámez EM, Córdoba-Doña JA. Artificial Stone Silicosis: Rapid Progression Following Exposure Cessation. *Chest*, 2020;158(3): 1060–1068. doi: 10.1016/j.chest.2020.03.026

[2] Leso V, Fontana L, Romano R, Gervetti P, Iavicoli I. Artificial Stone Associated Silicosis: A Systematic Review. *International Journal of Environmental Research and Public Health*, 2019;16(4):568. doi: 10.3390/ijerph16040568.

[3] Lyons G, Keegel T, Palmer A, Nixon R. Occupational dermatitis in hairdressers: do they claim workers' compensation? Contact Dermatitis 2013; 68(3): 163-8. doi: 10.1111/j.1600-0536.2012.02152.x.

[4] Driscoll T, Mitchell R, Mandryk J, Healey S, Hendrie L, Hull B. Coverage of work related fatalities in Australia by compensation and occupational health and safety agencies. Occup Environ Med 2003; 60(3): 195-200. doi: 10.1136/oem.60.3.195.

[5] Azaroff LS, Levenstein C, Wegman DH. Occupational injury and illness surveillance: conceptual filters explain underreporting. Am J Public Health 2002; 92(9):1421-9. doi: 10.2105/ajph.92.9.1421.

of cases needed to be prevented to break even represents a lower percentage of the current total number of silicosis cases in Australia than the 10 per cent quoted above. It must also be emphasised that silicosis, lung cancer and other silica-related diseases caused by exposure in the workplace are all preventable. Given the burden of silica-related disease in Australia, that every case is preventable, and the likelihood Government and Industry breakeven, it is both justifiable and necessary to implement all three options at a minimum.

Although these options would help contribute towards addressing the problem, we believe there are three additional regulatory options that should be considered in conjunction with Options 2, 4 and 5b.

1. A national ban on the importation of engineered stone products.

Silica dust is classified as a Group 1 carcinogen by the International Agency for Research on Cancer, because prolonged exposure to respirable crystalline silica (RCS) increases the risk of lung cancer. An estimated 230 people develop lung cancer each year in Australia due to past exposure to silica dust at work[6], but this number may well rise as a result of workers' exposure to very high levels of silica dust in the engineered stone industry since the early 2000s. Studies have reported ratios for the number of lung cancer deaths to silicosis cases in cohorts of silica-exposed workers of approximately 1:8 and 1:10.[7,8] The CRIS noted there were 436 silicosis cases diagnosed among 4743 workers screened (p.22). Therefore, based on this figure and the ratios, it can be expected there will also be between 44 and 55 lung cancers caused by silica dust exposure in that cohort. Furthermore, a recent report from Curtin University predicted 10,000 Australians will develop lung cancer and up to 103,000 workers will be diagnosed with silicosis as the result of their current exposure to silica dust at work, while 100 lung cancers and 770-960 silicosis cases will be diagnosed due to silica dust exposure from engineered stone.[9] We support the call for a ban on the importation of high silica content engineered stone because workers handling and processing this product have close to a one in four chance of developing silicosis[10] (a disease which is progressive, incurable, and can be fatal), in addition to an increased risk of developing lung cancer.

Preventing exposure to silica dust from engineered stone products is the most effective way to prevent lung cancer in the Australian engineered stone industry. High silica content engineered stone is not manufactured in Australia. Banning its importation is a practical solution. It has been predicted that banning engineered stone would save lives by preventing approximately 100 lung cancers and 1000 silicosis cases.[9] Although engineering controls such as mandatory wet cutting and on-tool dust extraction would also save lives, a complete ban of engineered stone is clearly the most effective intervention. We need to immediately identify the most effective ways to implement a ban on the use of high silica content engineered stone and to support industry acceptance and utilisation of safer substitutes. We

[6] Institute for Health Metrics and Evaluation (IHME). GBD Compare. Seattle, WA: IHME, University of Washington, 2015. Available from http://vizhub.healthdata.org/gbd-compare. (Population attributable fraction calculated by T. Driscoll; Accessed 20 Sept 2017).
[7] Keil AP, Richardson DB, Westreich D, et al. Estimating the impact of changes to occupational standards for silica exposure on lung cancer mortality. Epidemiology 2018; 29: 658-665. DOI: 10.1097/EDE.0000000000000867.
[8] Liu Y, Steenland K, Rong Y, et al. Exposure-response analysis and risk assessment for lung cancer in relationship to silica exposure: A 44-year cohort study of 34,018 workers. *Am J Epidemiol* 2013; 178: 1424-1433. DOI: 10.1093/aje/kwt139.
[9] Carey RN, Fritschi L. *The future burden of lung cancer and silicosis from occupational silica exposure in Australia: A preliminary analysis*, April 2022. Available at: https://www.curtin.edu.au/about/wp-content/uploads/sites/5/2022/07/FEFreport_formatted.pdf
[10] National Dust Disease Taskforce, *Final Report to Minister for Health and Aged Care*, June 2021, p.7

support a three-year phase out of engineered stone, with a total ban in July 2024 or sooner. We believe this is feasible, and further delays of this decision is increasing the number and likelihood of Australians being exposed to this carcinogen and experiencing a debilitating and life-limiting lung disease.

Therefore, we strongly encourage Safe Work Australia (SWA) to conduct modelling to predict the costs and benefits of banning the use of engineered stone and include this as a regulatory option in the RIS.

2. A health-based workplace exposure standard

Cancer Council supports adopting a health-based exposure standard for RCS of 0.02 mg/m^3 measured over an 8-hour period and enforcing the exposure limit. The WES should be adopted in every jurisdiction and enforced via a rigorous workplace inspection program. This will help provide Australian workers with the level of protection they deserve. The current WES of 0.05mg/m^3 is not a health-based standard. A similar standard (of 0.025mg/m^3) has been proposed elsewhere.[11] Implementing this health-based standard will provide better protection for workers than the current WES.

The measurement issues being raised as an argument against lowering the WES to 0.02mg/m^3 must be addressed as a matter of priority, with research funding being provided for the development of new sampling/analytical techniques if necessary. There is evidence that the proposed exposure limit of 0.02mg/m^3 can be measured with minimum detectable concentrations ranging from 0.005 to 0.01mg/m^3 over an 8-hour period.[12,13,14]

3. Updating existing health surveillance requirements for silica-exposed workers.

For silica-exposed workers, low-dose high-resolution computed tomography (CT) scans are more effective than chest X-rays in detecting early lung changes indicative of silicosis.[15,16,17] Based on this evidence, on 15 January 2021, the Western Australia Government passed legislation making low-dose high-resolution CT scans mandatory for workers whose health is at risk following exposure to RCS.[18,19] Western Australia is currently the only state in Australia where it is mandatory for workers exposed to silica dust to be provided with a low-dose high-resolution CT scan as part of their health surveillance. All other states require chest X-rays. Cancer Council recommends nationally consistent legislation for the health

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[11]American Conference of Governmental Industrial Hygienists, *Silica, Crystalline – alpha-Quartz and Cristobalite: TLV® Chemical Substances*, 2010, ACGIH: Cincinnati, OH.
[12]HSE (Health and Safety Executive) MDHS101/2 2015, *Measurement of Quartz in Respirable Airborne Dust by Infrared Spectroscopy and X-Ray Diffractometry*. Available from http://www.hse.gov.uk/pubns/mdhs/pdfs/mdhs101.pdf
[13]Stacey P, Thorpe A, Echt A. Performance of High Flow Rate Personal Respirable Samplers When Challenged with Mineral Aerosols of Different Particle Size Distributions. *The Annals of Occupational Hygiene*, 2016;60(4):479-92.
[14]NIOSH (National Institute for Occupational Safety and Health) (2003) *Manual of Analytical Methods (NMAM). Silica, Crystalline, by XRD (filter redeposition) Method 7500.* Issue 4. Available from https://www.cdc.gov/niosh/docs/2003-154/pdfs/7500.pdf
[15]Hoy RF, Glass DC, Dimitriadis C, Hansen J, Hore-Lacy F, Sim MR. Identification of early-stage silicosis through health screening of stone benchtop industry workers in Victoria, Australia. Occup Environ Med 2021; 78: 296–302.
[16] Guarnieri G, Salasnich M, Lucernoni P, Sbaraglia M, Putzu MG, Zuliani P, et al. Silicosis in finishing workers in quartz conglomerates processing. Med Lav 2020; 111(2): 99-106.
[17]Government of Western Australia, WorkSafe WA, *WorkSafe Western Australia silica compliance project*, July 2021. Available from: https://www.commerce.wa.gov.au/sites/default/files/atoms/files/silica_compliance_report.pdf
[18] Johnston, B. *Health surveillance requirements for silica strengthened*, 15 January 2021 (Media statement). Available from: https://www.mediastatements.wa.gov.au/Pages/McGowan/2021/01/Health-surveillance-requirements-for-silica-strengthened.aspx
[19]Government of Western Australia, WorkSafe WA, *Silica Dust (respirable crystalline) – Health Surveillance – Guide for medical practitioners*, May 2021. Available at: https://www.commerce.wa.gov.au/worksafe/silica-dust-respirable-crystalline-health-surveillance-guide-medical-practitioners

surveillance of workers in the engineered stone industry and supports a similar change in the model WHS Regulations so that low-dose high-resolution CT scans are used instead of chest X-rays whenever lung imaging is undertaken of workers in the engineered stone industry.

We note that SWA assessed the inclusion of low dose HRCT as a mandatory minimum regulatory requirement for health monitoring as infeasible and presented its reasoning in section 4.8.2 of the CRIS (p.35). However, we continue to support Recommendation 1c of the NDDT that states, "*The RIA must consider…Strengthening the health monitoring requirements include contemporary methodologies such as low dose high resolution computerised tomography (HRCT) scans, and to cover all workers at risk of exposure to respirable crystalline silica.*"[20]. Therefore, we ask SWA to reconsider this as a feasible regulatory option warranting its inclusion in the analysis and RIS.

CONSULTATION QUESTIONS

In addition, please find below our comments relating to select questions from the Consultation Paper.

Statement of the problem (Chapter 2)

2.1 Do you agree with the identified problem? Has the entirety of the problem been identified? Please provide evidence to support your position.

It is important that lung cancer arising from silica exposure is added to the description of the problem. As already noted, it is estimated 230 people develop lung cancer each year in Australia due to past exposure to silica dust at work[21], and that 10,000 Australians will develop lung cancer as the result of their current exposure to silica dust at work.[22]

Why is Government action needed? (Chapter 3)

3.1 Do you agree with the case for government intervention? Please provide evidence to support your position.

Yes, we agree with the case for urgent government intervention. The alternative of government action would be industry 'self-regulation' which has proven ineffective at addressing a broad range of health issues in other industries. Cigarettes, meat inspection, alcohol advertising restrictions, obesogenic food in Australia, and coal mines in the US are just some of the examples where it is clear that self-regulation has resulted in deleterious results for the public. Therefore, we urge SWA to support strong approaches to regulating silica dust exposure in the engineered stone industry and other relevant industries.

[20] National Dust Disease Taskforce, *Final Report to Minister for Health and Aged Care*, June 2021, p.11

[21] Institute for Health Metrics and Evaluation (IHME). GBD Compare. Seattle, WA: IHME, University of Washington, 2015. Available from http://vizhub.healthdata.org/gbd-compare. (Population attributable fraction calculated by T. Driscoll; Accessed 20 Sept 2017).

[22] Carey RN, Fritschi L. *The future burden of lung cancer and silicosis from occupational silica exposure in Australia: A preliminary analysis*, April 2022. Available at: https://www.curtin.edu.au/about/wp-content/uploads/sites/5/2022/07/FEEreport_formatted.pdf

What policy options are being considered? (Chapter 4)

4.1 Do these options address the problem? Please provide evidence to support your position.

As noted in our general comments, although implementing a combination of Options 2, 4 and 5b would help address the problem, we believe there are three additional regulatory options that should be considered in conjunction with these.

4.2 Are there any other non-regulatory or regulatory options you think should be considered to address the problem?

The other options that should be considered include:

1. A national ban on the importation of high silica content engineered stone products.
2. Adopting a health-based exposure standard for RCS of 0.02 mg/m^3 measured over an 8-hour period and enforcing the exposure limit.
3. Implementing nationally consistent legislation for the health surveillance requirements of workers in the engineered stone industry so that low-dose high-resolution CT scans are used instead of chest X-rays whenever lung imaging is undertaken of workers in the engineered stone industry.

What is the likely impact of each option? (Chapter 6)

6.1 Is the cost modelling methodology appropriate to estimate the costs to industry and governments (Appendix D)? Please provide evidence to support your position.

The cost modelling methodology in Chapter 6 does not include any other silica-related diseases such as lung cancer or factor in the costs to government of treating these diseases. Consequently, the average value of life saved and illness avoided per person is an underestimate. Therefore, in Section 6.6 Benefits assessment, we recommend SWA include lung cancer and factor in health system costs of lung cancer care in Australia. The costs of lung cancer care are substantial. For instance, the mean excess cost for each case of lung cancer from one year prior to until three years after diagnosis has been estimated at $51,944.[23]

6.3 Are there other factors that should be considered in the assessment of the effectiveness of each option (Section 6.5)? Please provide evidence to support your position.

The impact on preventing lung cancer should be factored into the assessment of the effectiveness of each option.

[23] Goldsbury DE, Weber MF, Yap S, Rankin NM, Ngo P, et al. Health services costs for lung cancer care in Australia: Estimates from the 45 and Up Study. PLOS ONE 202; 15(8): e0238018. https://doi.org/10.1371/journal.pone.0238018

Discussion of options (Chapter 7)

7.1 Which option or combination of the options presented is most likely to address the identified problem? Please provide evidence to support your position.

Despite the measures that have already been implemented, it is evident that further and stronger reforms are required. It is becoming increasingly clear that it is not safe to work with engineered stone products – silicosis caused by engineered stone occurs earlier than with natural stone, it progresses faster than would be expected given previous experience with silica exposure in other workplace settings, and it progresses even after removal from exposure.[24,25] Exposure to RCS in engineered stone workers was the impetus for the establishment of the National Dust Diseases Taskforce (NDDT) and forms an important part of the Consultation Regulation Impact Statement (CRIS).

However, engineered stone is not the only source of exposure to RCS. The prevention of silicosis and lung cancer requires the minimisation of silica exposure in workers involved in tunnelling, construction, demolition, quarrying, manufacturing silica powder, and other tasks. Therefore, we support a regulatory approach that removes all doubt and provides duty holders with clarity about the risk control measures necessary for high-risk silica processes. We recommend governments adopt consistent regulation across all jurisdictions so that the hierarchy of controls are employed to reduce exposure to RCS below 0.02mg/m^3 8-hour time-weighted average (TWA), across all industries. To ensure continued improvements in the response to silica dust exposure in the engineered stone industry and other relevant industries, we present our positions for your consideration below.

Cancer Council believes the problem should be addressed by adopting a combination of the regulatory and non-regulatory options presented in the CRIS (as well as the additional options we have presented earlier in this document). The options that should be considered together are **Option 2** (Awareness and behaviour change initiatives), **Option 4** (National licensing framework for PCBUs working with engineered stone), and **Option 5b** (Additional regulation of defined high risk crystalline silica process, excluding engineered stone).

Given the burden of silica-related disease in Australia, that every case is preventable, and the likelihood Government and Industry break even, it is both justifiable and necessary to implement all three options at a minimum.

[24] León-Jiménez A, Hidalgo-Molina A, Conde-Sánchez MÁ, Pérez-Alonso A, Morales-Morales JM, García-Gámez EM, Córdoba-Doña JA. Artificial Stone Silicosis: Rapid Progression Following Exposure Cessation. *Chest*, 2020;158(3): 1060–1068. doi: 10.1016/j.chest.2020.03.026

[25] Leso V, Fontana L, Romano R, Gervetti P, Iavicoli I. Artificial Stone Associated Silicosis: A Systematic Review. *International Journal of Environmental Research and Public Health*, 2019;16(4):568. doi: 10.3390/ijerph16040568.