Government of South Australia

SafeWork SA

Respirable Crystalline Silica Compliance Program

2019 Audit Report

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Executive Summary

SafeWork SA performed a two-stage proactive compliance campaign for Respirable Crystalline Silica (RCS) exposure risks and controls in accordance with the *Work Health and Safety Act (SA) 2012* ('the Act') and Work Health and Safety Regulations (SA) 2012 ('the Regulations').

- Stage one: compliance audits that focused on fabricators and installers of engineered stone products (26 businesses)
- Stage two: compliance audits that focused on businesses in the construction industry with the potential for a high level of RCS exposure (12 businesses).

Work Health and Safety (WHS) Inspectors conducted audits across these two industry groups resulting in 173 Statutory Notices issued to Persons Conducting a Business or Undertaking (PCBU) for non-compliances.

Common findings across both industry groups related to inadequate provision of worker information, training and instruction relating to RCS exposure. This included risks of exposure, suitable control measures (such as isolation and administrative controls) and specific training in the use and maintenance of Respiratory Protective Equipment (RPE). 74% of notices were for no evidence that health monitoring had been provided to relevant workers; 100% of PCBU's in the construction industry received notices for this reason.

In the fabrication and installation sector, there was a reliance on water suppression (or 'wet cutting') alone as a control measure. Numerous workers were observed wet cutting engineered stone without RPE, coinciding with a trend of inadequate information, training and instruction in the use of RPE. Additionally, 58% of PCBU's had no evidence of conducting air monitoring to determine the level of RCS exposure in their workplaces.

All 12 businesses audited in the construction industry received Improvement Notices for having no evidence of health monitoring for workers, RPE fit testing or adequate RCS hazard identification and risk control measures.

It was identified that there is an opportunity to increase industry education on RCS exposure risks and available control measures, along with SafeWork SA continuing to monitor and enforce compliance for Work Health and Safety requirements. Additionally, it is suggested that SafeWork SA continues to inform Government on RCS trends and research, and continue to collaborate at a national level.

Background

The use of engineered stone for benchtops in domestic and commercial premises has increased in the last 10 to 15 years. Engineered stone products generally contain exponentially higher levels of silica than natural stone and in some cases may contain a silica content of up to 95%. In comparison, the silica content of natural stone such as granite

may contain from 20% to 60%. This change in product usage has increased RCS exposure for workers fabricating engineered stone benchtops by cutting, drilling or polishing. These dust-generating activities can introduce RCS into the work environment, which presents a health and safety risk to all persons exposed.

RCS is a hazardous substance to which a workplace exposure standard applies.[1] Consequently, adequate risk identification and control measures are required, in addition to air monitoring of workplaces and health monitoring of workers.

In Australia, respiratory specialists have reported cases of accelerated acute lung disease in stone benchtop fabricators. In September 2016, The Thoracic Society of Australia and New Zealand (TSANZ) wrote to the South Australian Minister for Health raising respiratory health issues in the stonemasonry and stone cutting industries, and argued for a more detailed understanding of exposures in order to adequately control exposure to dust.

In April 2018, SafeWork SA commissioned Adelaide Exposure Science and Health, School of Public Health, University of Adelaide, to inquire and report on the exposure to RCS in a sample of South Australian benchtop fabrication workplaces. The report indicated that South Australia has similar exposure results compared to the findings from exposure studies in Queensland and Texas, United States of America (USA). To address the emerging RCS risk in South Australia, a partnership was established between SafeWork SA, ReturnToWorkSA and the Mining and Quarrying Occupational Health and Safety Committee (MAQOHSC).

The results from the Adelaide University report informed SafeWork SA on the second phase of the strategy, which included a proactive compliance campaign to educate and enforce compliance over a three-month period.

Scope

SafeWork SA performed proactive compliance audits in two stages.

Stage one targeted South Australian fabricators and installers of engineered stone benchtops, focussing on:

- air monitoring
- dry cutting, grinding and polishing (dry cutting)
- the use of water suppression

1 Work Health and Safety Regulations 2012 (SA) reg 49, 50; Safe Work Australia, *Workplace Exposure Standards for Airborne Contaminants* (27 April 2018).

- isolation of workers from dust generating activities
- the use of local exhaust ventilation (LEV)
- work area ventilation, both natural and mechanical
- cleaning and housekeeping
- the use, storage and maintenance of respiratory protection equipment (RPE)
- adequacy and maintenance of risk control measures
- the provision of information, training, instruction and supervision
- consultation with workers in developing and implementing risk control measures
- health monitoring.

Stage two targeted businesses in the construction industry who cut, grind and shape concrete, and who regularly work on South Australian construction projects.[2] These workers are likely to have higher levels of exposure to RCS due to the close proximity of hand tools when undertaking the above activities.[3]

Stage two audits focused on addressing compliance in the following areas:

- hazard identification and management (including safe work method statements)
- adequacy and maintenance of risk control measures
- health monitoring
- the use and maintenance of respiratory protective equipment (RPE)
- the provision of information, training, instruction and supervision.

2 *Work Health and Safety Regulations 2012* (SA) reg 292: a project that involves construction work where the cost of the construction work is $450,000 or more.

3 Workplace Health and Safety Queensland, *Occupational dust and silica conditions in some Queensland construction and related industries* (Department of Justice and Attorney-General, Version 1, August 2013).

Stage One: Fabricators and Installers of Engineered Stone

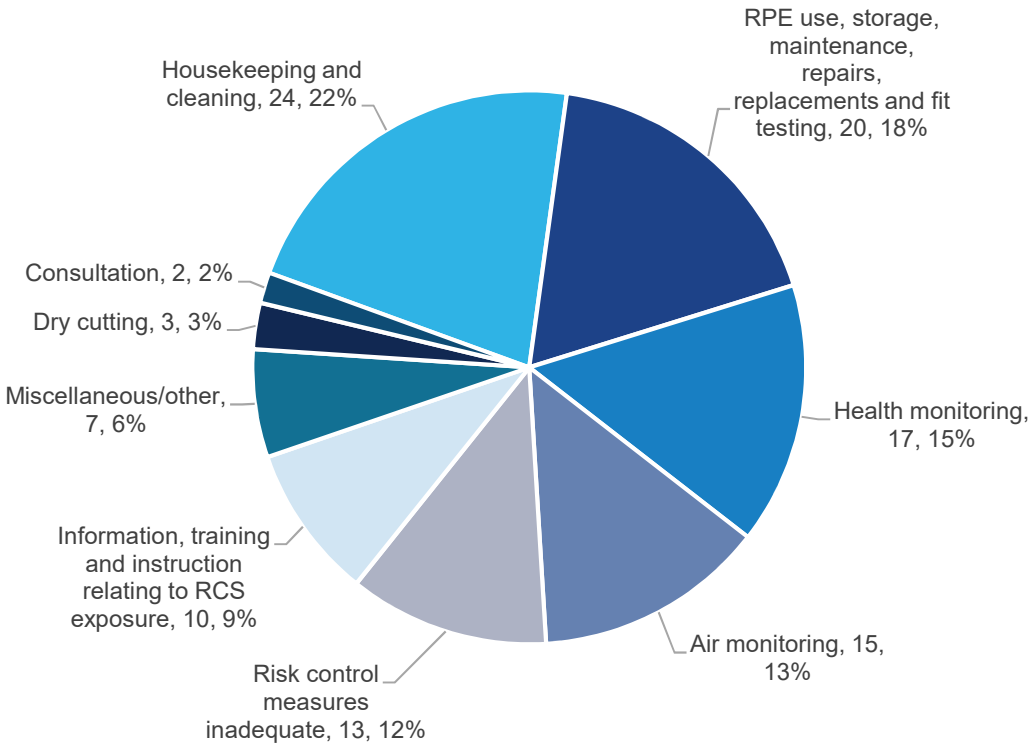
SafeWork SA performed audits on stage one PCBU's from 25 February 2019 to 21 May 2019.

Compared to other States and Territories, South Australia's engineered stone manufacturing and installing industry is relatively small. SafeWork SA initially identified 67 businesses potentially in scope for stage one. However, inquiries and site visits confirmed 26 businesses work with engineered stone material. These were subjected to audits for compliance with the Act and Regulations.

Statutory Notices

SafeWork SA issued 111 Statutory Notices within stage one, comprising of 103 Improvement Notices and 8 Prohibition Notices. A breakdown of notice reasons is below at **figure 1**.

Figure 1: Reasons for notices issued (stage one)



Discussion

Air monitoring

It was identified that 69% of businesses had not previously conducted air monitoring. SafeWork SA issued 15 Improvement Notices requiring air monitoring to be conducted to ensure PCBU's are operating within safe exposure limits or are adequately controlling exposure through the implementation of effective control measures.

Air monitoring results can inform risk management practices and controls. The current workplace exposure standard for RCS is an eight-hour time weighted average of 0.1mg/m3.[4] Without air monitoring, the effectiveness of dust suppression control measures to eliminate or minimise exposure to RCS is unknown.

Uncontrolled dry cutting of engineered stone

Dry cutting without controls appears to be an infrequent practice. SafeWork SA issued one Improvement Notice and two Prohibition Notices.

The Improvement Notice related to an admission by both the PCBU and workers that dry cutting occasionally occurs during edging and installation, despite having a 'no dry cutting' policy in place.

The two Prohibition Notices were due to evidence of routine dry cutting. WHS Inspectors observed two saws that were used to dry cut engineered stone without suitable controls.

Use of water suppression, and worker isolation from mist containing silica

Water suppression is a common control used to minimise dust exposure in the workplace. Nine Improvement Notices and two Prohibition Notices were issued relating to the use of water suppression to control dust.

Most notices related to workers not being isolated from mist generated by plant and equipment fitted with water suppression. The use of water suppression on saws, drills, polishers and grinders when cutting engineered stone can create water mist contaminated with silica, increasing the risk of exposure to workers. This risk is not limited to equipment operators as nearby workers are potentially at risk of exposure due to their proximity to wet cutting.

In some circumstances, there was a reliance on water suppression to control RCS dust, with numerous workers observed operating water-suppressed equipment without RPE.

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4 Safe Work Australia, *Workplace Exposure Standards for Airborne Contaminants* (27 April 2018).

Two Prohibition Notices were issued relating to workers observed using tools not designed for wet use, creating a risk of electric shock.

Local Exhaust Ventilation (LEV)

LEV was a control used by approximately one third of businesses. In most cases, LEV was used in addition to other controls depending on the task being undertaken.

One Improvement Notice was issued relating to LEV, as no evidence could be provided demonstrating that the dust extraction unit was adequately controlling the concentration of RCS in the work area.

Ventilation

58% of businesses received notices requiring air monitoring to be undertaken, which is necessary to determine whether exposure levels exceed the Workplace Exposure Standard (WES). Without air monitoring results, the effectiveness of current ventilation systems cannot be determined.

Over 50% of businesses utilised both mechanical and natural ventilation in their work areas, whereas 23% used natural ventilation only. One business used mechanical ventilation only.

Ventilation is important when undertaking dust-generating activities, with natural and mechanical ventilation helping to reduce the concentration of dust in work areas. Mechanical ventilation involves the use of plant or equipment to remove particles and contaminants from the work area, whereas natural ventilation involves open workspaces where dust can naturally disperse into the outside atmosphere. The most common form of natural ventilation observed was the use of open roller doors while work was being undertaken.

Cleaning and housekeeping

The majority of Statutory Notices were issued for cleaning and housekeeping. 50% of PCBU's received at least one notice for cleaning and housekeeping, with 20 Improvement Notices and four Prohibition Notices issued. Over 80% of notices in this area related to no, or inadequate, cleaning regimes and improper management of dust slurry generated from wet cutting.

35% of all PCBU's audited had no formal cleaning regime in place, and 15% had inadequate cleaning processes that did not effectively minimise dust. Common issues included:

- businesses conducting cleaning weekly, instead of daily
- workers cleaning plant and equipment, but not adjacent walls, walkways and surfaces
- dust slurry clogging drains and/or pooling and drying around plant and equipment (a dust slurry pool can dry and create dust piles, which can reintroduce RCS into work areas when disturbed).

Two PCBU's received Prohibition Notices for using high pressure water cleaners to hose down plant and equipment. The use of high pressure water to remove dust can reintroduce respirable dust particles into the work area, increasing exposure to workers.

Respiratory Protective Equipment (RPE)

20 Improvement Notices were issued relating to RPE, with several notices addressing multiple safety breaches at once, including RPE use, storage, maintenance and fit testing.

There were six instances where WHS Inspectors observed workers wet cutting engineered stone without RPE. This included one case where management informed the WHS Inspector that they supply RPE to workers but do not enforce its use. This PCBU expressed a belief that water suppression is sufficient to control RCS exposure.

Eight notices were issued to PCBU's that were unable to provide evidence that workers had been fit tested for RPE. In some circumstances, workers were not clean-shaven, creating inadequate face seals that further increased the risk of exposure to RCS.

Inappropriate storage of RPE was observed in 12% of stage one audits. Examples included storing RPE in work bags and near active work areas. One WHS Inspector observed a respirator hanging from a bridge saw's control unit.

One Improvement Notices was issued where it was identified that RPE had been sourced from overseas and contained information and instructions in a foreign language, with the mask's rating unable to be determined.

Health Monitoring

16 PCBU's were issued Improvement Notices for the provision of health monitoring to relevant workers with an ongoing risk of RCS exposure.

Under the regulations, a PCBU must ensure that health monitoring is provided to workers if there is a significant risk to the worker's health because of exposure to certain hazardous chemicals, including crystalline silica.[5]

Information, training and instruction

Almost one third of PCBU's received Improvement Notices directly relating to the provision of information, training and instruction to workers. SafeWork SA issued eight Improvement Notices addressing educational gaps relating to risks of RCS exposure and available control measures. A further two Improvement Notices were issued relating to safe systems of work for plant and equipment.

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5 *Work Health and Safety Regulations 2012* (SA) reg 368.

Further issues relating to information, training and instruction were also identified within notices primarily issued for other reasons, such as inadequate cleaning regimes and RPE use when wet cutting. The evidence gathered supports an initial hypothesis that there is a relationship between the prevalence of observed RCS safety breaches and the provision of information, training and instruction to workers.

It was identified that PCBU's misunderstood the adequacy of control measures, and this information lead to the development of potentially unsafe work practices. Furthermore, the prevalence of inadequate cleaning regimes and processes reflects an educational gap in post-processing risks of engineered stone.

Prior to undertaking compliance audits, SafeWork SA held three industry forums where PCBUs were provided with current information on RCS exposure risks and control measures.

Consultation

Two Improvement Notices were issued to PCBUs unable to provide evidence that workers were able to raise work health and safety issues or contribute to the decision-making processes relating to RCS exposure hazards and risks.

Miscellaneous/other

Five Improvement Notices were issued for safety breaches unrelated to RCS exposure risk. The issues included electrical testing of equipment, machine guarding, safe load limits of pallet racking, and plant and equipment maintenance.

Stage Two: Construction industry (high RCS exposure risk)

SafeWork SA performed audits on stage 2 of PCBUs within the construction industry from 9 April 2019 to 14 May 2019.

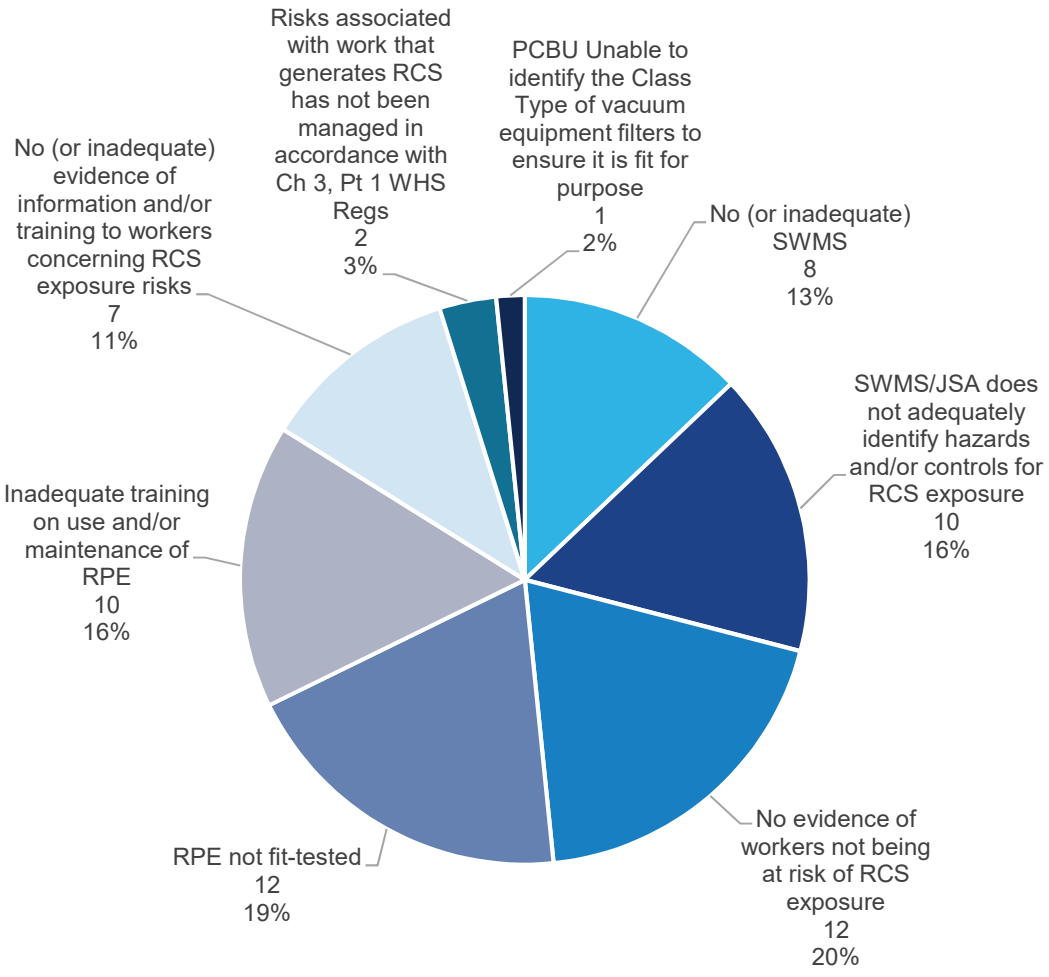
Concrete products commonly contain approximately half the silica content of engineered stone products. However, regular and ongoing concrete dust generating activities can expose workers to RCS; particularly concerning the use of close proximity hand tools.

SafeWork SA randomly selected 12 businesses for auditing. The selected businesses cut, grind and shape concrete products and regularly work on South Australian construction projects.

Statutory Notices

SafeWork SA enforced compliance by issuing 62 Improvement Notices. A Breakdown of notice reasons is below at figure 2.

Figure 2: Reasons for noticed issued (stage two)



Discussion

Safe Work Method Statements (SWMS) and hazard identification and control

Eight Improvement Notices were issued to PCBU's where no SWMS was prepared for the high risk construction work being undertaken, or in instances where a prepared SWMS did not meet the requirements of regulation 299.[6]

Similarly, 10 Improvement Notices were issued relating to SWMS, Job Safety and Environment Analyses (JSEA) and/or documented safe work practices that did not adequately identify RCS hazards or control measures.

There was some cross over in the reasoning for the above notices. Half of stage two PCBU's received a notice for both the above notice reasons, often when a SWMS had not been developed and where additional safety guidance procedures did not adequately identify RCS exposure risks and controls. In other cases, a SWMS had been developed but did not address RCS exposure risks.

Additionally, two Improvement Notices were issued in relation to identifying and managing risks associated with RCS exposure in accordance with Chapter 3, Part 1 of the Work Health and Safety Regulations 2012.[7] Specifically, the notices referred PCBUs to the hierarchy of controls to manage RCS exposure risks.

Analysis of issued notices in this category showed that all audited PCBUs did not adequately addressed RCS exposure risks and controls.

Health monitoring and evidence of effective RCS controls

12 Improvement Notices were issued to PCBUs who were unable to provide evidence that their workers were not at risk of unsafe RCS exposure. All PCBUs in stage two received a notice for this reason.

Notices in this category included directions for PCBUs to provide health monitoring to workers and referred to MAQOHSC to arrange health assessments. In all cases, there was no evidence that workers had previously undergone health monitoring.

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6 *Work Health and Safety Regulations 2012* (SA) reg 299 specifies the requirement for a SWMS and its contents.

7 Chapter 3, Part 1 of the Work Health and Safety Regulations outlines the general duty on PCBUs to identify hazards, and to manage, maintain and review hazard and risk controls in accordance with a hierarchy of control measures.

Respiratory Protective Equipment (RPE)

12 Improvement Notices were issued to PCBUs regarding fit testing of RPE. All PCBUs received a notice for RPE. Additionally, 10 Improvement Notices were issued to PCBUs who could not provide evidence that workers had been trained in the use and maintenance of RPE.

No (or inadequate) evidence of information and/or training to workers concerning RCS exposure risks

Seven Improvement Notices were issued to PCBUs who could not provide evidence that workers had been provided information and/or had been adequately trained regarding RCS exposure risks.

Miscellaneous

One Improvement Notice was issued to a PCBU that was unable to identify the class type of vacuum filter used for vacuuming RCS dust.

Summary

The provision of information, training and instruction on the risks associated with RCS exposure requires attention in both industries audited.

The evidence gathered indicates that the majority of PCBUs audited have implemented control measures to reduce dust-generating activities. However, PCBUs were generally unable to determine the effectiveness of their control measures, with significant gaps observed in air and health monitoring in a majority of workplaces audited. This has led to PCBUs implementing control measures to address dust generation, without testing the effectiveness of the controls to ensure they are achieving the intended outcome – the protection of workers from unsafe RCS exposure.

In the fabrication and installation sector, wet cutting without RPE was a prominent issue that demonstrated an overreliance on water suppression to control RCS. In addition, cleaning and housekeeping regimes require a higher degree of frequency and thoroughness.

In the construction industry, identification and documentation of RCS hazards and controls needs improvement. This was demonstrated through inadequate identification of RCS hazards on SWMS, JSEAs and risk assessments. Additionally, there was no evidence that any PCBUs in this industry had fit tested their workers for RPE.

Recommendations

It is recommended that:

1) Communication of the outcome of the compliance campaign is provided to internal and external stakeholders.

2) Unannounced follow-up audits are conducted in the next 6 to 12 months to confirm ongoing compliance has been maintained and issues rectified.

3) Public information resources are made available and developed if necessary, covering RCS dust generating activities, exposure risks, PCBU and worker responsibilities, and available control measures through:

   - Post-campaign industry forums
   - Regular updates to the RCS webpage on the SafeWork SA website
   - The development of educational materials, such as safety alerts or industry FAQ's.

4) The results of this compliance audit are used to inform Government about the current state of RCS risk and exposure in South Australia.