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EXTENDED ABSTRACT

Compliance with control measures to prevent silicosis in the infrastructure sector

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Objectives
Sydney Metro is Australia's biggest public transport project and offers a unique opportunity to leave not only a world class transportation system, but also a legacy for future generations. A strategic element of that legacy is the development of a client-led system to positively influence better outcomes for worker health protection.

The primary objective of this study was to review control measures nominated by contractors across Sydney Metro to mitigate exposures to respirable crystalline silica (RCS) and to rank the effectiveness of compliance with their implementation. This study aims to support those who service this sector in disseminating information on practical control measures for RCS, such that the incidence of silicosis in this sector can be reduced.

Methods
Sydney Metro contractors were required to engage the services of a Certified Occupational Hygienist (COH)®, perform health risk assessments, document control plans where RCS was assessed to present a significant risk to health, and then monitor and report monthly on compliance with those controls as part of occupational health contractual requirements. A review of compliance with measures nominated as 'critical' by contractors to control RCS exposure was conducted from a review of reports submitted to Sydney Metro over an 18-month period to June 2020. Critical controls were those that required ongoing assessment of compliance and were categorised into engineering, administrative or personal protective equipment (PPE) control categories.

Results
Numerous control measures were nominated to eliminate or otherwise mitigate RCS exposures. Measures followed the hierarchy of controls and included those that involved elimination, isolation, engineering, administration and personal protective equipment.

Control measures were ranked starting with those most consistently reported to be compliant and included:

1. Delineation of safe work areas and exclusion zones
2. Installation of boot wash facilities to prevent RCS-laden mud being transferred into clean work areas
3. Routine recording of ventilation measurements
4. Installation of signage clearly identifying RCS as a risk and denoting the need to use respiratory protection
5. Workers utilising close face fitting respiratory protection were clean shaven
6. Workers utilising close face fitting respiratory protection were fit tested
7. Heavy plant cabins were routinely cleaned to mitigate the build-up of RCS-laden dust
8. Respiratory protection was observed to be used correctly
9. Dust extraction at the source of generation was observed to be sufficient

10. Engineering controls were used for dust suppression (i.e., 'spotters on hoses' were prohibited)
11. Cleaning was performed using wet methods
12. Dust suppression was observed to be effective
13. Heavy plant cabin windows and doors were kept closed
14. Temporary ventilation in areas where workers may be located was observed to be sufficient

A trend of the compliance of critical controls within the categories of engineering, administration and PPE reported by the contractors COH demonstrated improvements over an 18-month period (Figure 1).

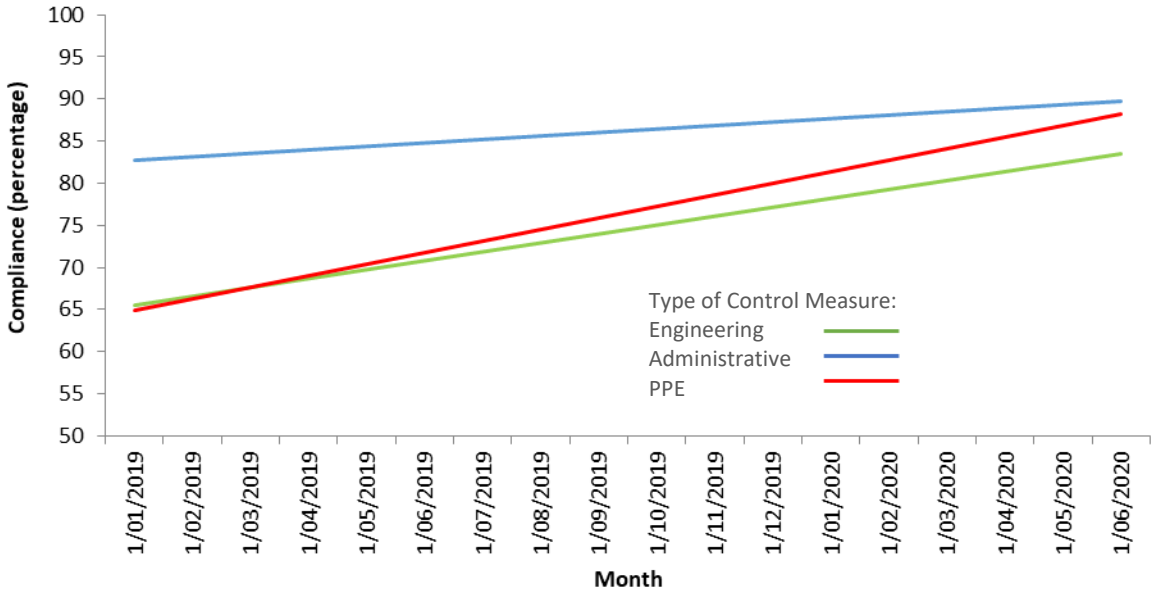

Figure 1: Compliance with critical control measures (trend)

Conclusions and Recommendations

Numerous control measures were implemented to eliminate or otherwise mitigate RCS exposures across Sydney Metro. The program has enabled the collection of information to highlight areas of excellence in addition to informing areas that would benefit from future intervention and engineering solutions. While improvements in control compliance were observed over time, further work in improving the compliance of engineering controls is anticipated to benefit this sector.

Key words

Respirable crystalline silica, infrastructure, construction, silicosis