AUSTRALIAN INSTITUTE OF OCCUPATIONAL HYGIENISTS ® 40 YEARS

CELEBRATING OVER 40 YEARS OF PROTECTING AUSTRALIAN WORKER'S HEALTH

AIOH submission

2022 Improving demolition licensing in NSW

Association number: A0017462L

ABN: 50 423 289 752

Approved by Council: 1 May 2022

Prepared by: AIOH External Affairs Committee

Introduction

Occupational hygienists are the main frontline professionals who assess the degree of worker exposure to health hazards such as toxic chemicals and dusts and work to prevent ill health through investigation and testing the efficacy of control mechanisms in industry.

The Australian Institute of Occupational Hygienists Inc (AIOH), https://www.aioh.org.au/, is the largest organisation representing professionals working in occupational hygiene in Australia. Established in 1980, membership is open to both professional occupational hygienists and to those with an interest in worker health protection and a healthier work environment. The AIOH is the certifying body for professional hygienists and maintains registers of professional members and Certified Occupational Hygienists (COH)®, to assist organisations seeking to engage occupational hygienists.

Our mission is to promote healthy workplaces and protect the health of workers through the advancement of knowledge, practice and standing of occupational health and occupational hygiene. The AIOH is a founding member of the International Occupational Hygiene Association, and many Australian occupational hygienists are engaged in occupational hygiene research with international collaborators. As such, AIOH brings worldwide experience and insights on a range of occupational hygiene issues.

As many occupational diseases are serious and irreversible, the focus must be on prevention of harm. Thus, the need for assessing the degree of exposure and associated risk to health, tailored interventions with layered controls, health monitoring and effective regulation all make a difference to protect our workers. The incorporation of good occupational hygiene and the engagement of competent occupational hygienists are fundamental to making such improvements in the health and safety of our workplaces.

ACKNOWLEDGEMENTS

The AIOH Council acknowledges the work of Peter Knott and the External Affairs Committee who contributed to this submission.

2022 Council: President – Kate Cole, President Elect – Tracey Bence, Treasurer – Aleks Todorovic, Secretary – Neil Goulding, Councillor – Kelly Johnstone, Councillor – Melanie Windust, Councillor – Candice Dix.

AIOH - Consolidated Recommendations

The following priority recommendations by the AIOH are made in this submission:

1. The AIOH recommends that a Health Control Plan is provided as a required document for obtaining a demolition license in NSW that addresses the implementation, maintenance and verification of controls which will effectively manage the risks to the health of their employees and sub-contractors during the period of time the license is valid.
2. The AIOH recommends that greater focus be placed towards education of workers and employers in high-risk industries to complement awareness-raising activities. The AIOH recommends that nationally accredited silica awareness courses e.g. 10830NAT – Course in Crystalline Silica Exposure Prevention[1] should be mandatory for all construction trades and should be delivered as part of the general construction industry training.

1. Introduction

The AIOH thanks the NSW Government for the opportunity to make a submission to improving the demolition licensing in NSW. We note that the review is primarily to bring the licensing in line with other high-risk activities established under the NSW WHS Act (2011) to protect workers and the community from risks arising from demolition activities.

In making this submission, AIOH will not be providing commentary on the administration of licenses, as these matters are outside of the area of our expertise. However, there are a number of issues related to prevention of occupational disease which should attract the attention of regulators in the granting, renewing, suspension or cancelling of a demolition license. We believe these issues are relevant to this review and these form the basis of this submission.

Q4: Are there any other additional relevant matters that you think should be taken into account when SafeWork NSW is considering a licence application, renewal, suspension or cancellation? If so, what are they and why should they be considered?

There are many agents that demolition workers are exposed to that impact not only their health, but also the health of those in the immediate surroundings of a demolition worksite. These include hazardous materials (e.g. asbestos, lead paint), occupational noise, welding and cutting fume, diesel exhaust emissions, and dusts, specifically respirable crystalline silica. For some of these agents specific OHS and environmental regulatory requirements are in place i.e. Asbestos and Lead. The AIOH has previously commented on the Upper House Review of the Dust Diseases Scheme which were focussed on the prevention of dust diseases across all industry sectors. Within our submission were elements which are directly relevant to the health risks present in the NSW demolition industry which should be an integral part of the requirements to hold a NSW demolition licence. In particular, the prevention of uncontrolled dry processing of crystalline silica containing materials such as concrete, bricks and other construction materials and the reduction in the 8-hour time weighted exposure standard to 0.02 mg/m^3.

The current process for obtaining a licence to conduct demolition activities requires the accompaniment of two SafeWork Method Statements (SWMS) to the application, along with other business and training documentation, demonstrating the applicant's competency in identification and control of workplace risks. In view of the demonstrated excessive exposures to dusts and crystalline silica in demolition, which are on

[1] Training.gov.au, National Register on Vocational Education and Training (VET), 10830NAT – Course in Crystalline Silica Exposure Prevention, https://training.gov.au/Training/Details/10830NAT, Accessed 25 April 2022.

average considerably higher than those in the NSW Mining industry[2], the AIOH recommend the application should be accompanied by a Health Control Plan which outlines the steps the PCBU shall make during the period of holding the license to implement, maintain and verify controls which will effectively manage the risks to the health of their employees and sub-contractors. The health control plan can be modelled on existing NSW guidance provided by the NSW Resources Regulator[3], and be available by SafeWork NSW to audit the compliance to the plan at any time, in a manner similar to the Resources Regulator[4]. Non-compliance to the plan can be acted upon as necessary within the existing regulatory framework.

The Code of Practice for Demolition Work in NSW[5] is currently silent on the nature of the risks posed by exposure to respirable crystalline silica. The inclusion of a requirement of a health control plan would both raise awareness of the risks posed by such hazards and provide documented evidence of how the PCBU would appropriately control such risks.

This approach would enable the license holder to devise and implement a plan commensurate with their activities and size in relation to the identified health risks. It would also facilitate monitoring activities by suitably qualified occupational health personnel in the fields of occupational hygiene and occupational medicine in relation to exposure assessment and health surveillance respectively.

Why do we feel this is necessary step? Within the demolition industry, there are a number of processes where worker exposures to mineral dusts, crystalline silica and other hazardous materials are inherently difficult to control and one of these is the demolition sector. Table 1 contains peer-reviewed evidence from overseas and Australian experiences on the exposure of demolition workers to dusts containing respirable crystalline silica (as quartz) where average time weighted exposures are reported to be consistently in excess of twice the current NSW WES of 0.05mg/m^3 and over five times the proposed SafeWork Australia WES of 0.02mg/m^3.

The results of these exposures are likely to result in significant disease among demolition workers. In a pooled exposure-response analysis of six occupational cohorts, t Mannetje et al[6] estimated the risk of death up to age 65 from silicosis after 45 years of crystalline silica exposure at 0.1 mg/m^3 at 13 per 1000, while the estimated risk at exposure of 0.05 mg/m^3 was 6 per 1000.

[2] https://www.coalservices.com.au/wp-content/uploads/2018/10/2017-Airborne-Dust-Results-.pdf

[3] https://www.resourcesregulator.nsw.gov.au/sites/default/files/documents/health-control-plan-guide.pdf

[4] https://www.resourcesregulator.nsw.gov.au/sites/default/files/2021-09/DOC21-320519-NSW-Resources-Regulator-Consolidated-Report-PP0001636-1637-Metex-Air-quality_F.pdf

[5] NSW Government Code of Practice Demolition Work August 2019, https://www.safework.nsw.gov.au/__data/assets/pdf_file/0015/52161/Demolition-work-COP.pdf

[6] t Mannetje, A., Steenland, K., Attfield, M., Boffetta, P., Checkoway, H., DeKlerk, N., & Koskela, R. S. (2002). Exposure-response analysis and risk assessment for silica and silicosis mortality in a pooled analysis of six cohorts. *Occup Environ Med, 59*(11), 723-728. doi:10.1136/oem.59.11.723

Table 1: Demolition Exposure Studies

Source	Population	Respirable Dust Exposures	Respirable Crystalline Silica (Quartz) Exposures
Flanagan et al (2003)[7]	US Concrete Demolition Workers	Geometric Mean (GM) 0.96mg/m^3 (21% Exceedance of 3mg/m^3 TLV)	GM 0.1mg/m^3 (88% Exceedance of 0.05mg/m^3 TLV)
Flanagan et al (2006)[8]	Compilation of 13 data sources from private, research & regulatory groups	Handheld demolition: GM 1.63mg/m^3 Heavy Equipment Demolition GM 0.34mg/m^3	Handheld demolition: GM 0.14mg/m^3 Heavy Equipment Demolition GM 0.03mg/m^3
Bagschik et al. (2008)[9]	German Demolition Workers	The average concentration during mechanized demolition was 1.15 mg/m^3 (Range 0.25–2.67 mg/m^3)	Arithmetic Mean (AM) - Mechanized Demolition 0.12 mg/m^3 (Range 0.01–0.23 mg/m^3). For manual demolition the average concentration of RCS was 0.26 mg/m^3.
Radnoff et al. (2013)[10]	Alberta Construction Workers	GM 1.07mg/m^3	GM 0.027 mg/m^3. Reported OEL 0.025mg/m^3
Kirkeskov et al. (2016)[11]	Danish Demolition Workers	GM 1.06mg/m^3	GM 0.12mg/m^3 RCS (45% exceedance of 0.08mg/m^3 OEL)
Normohammadi et al (2016)[12]	Building Demolition workers in Tehran	Not Reported	GM 0.132mg/m^3
Bello et al. (2019)[13]	US Construction Workers	Demolition Labourers: GM 0.23mg/m^3 (0.14-0.36) Crushing Machine Operators: GM 0.74mg/m^3 (0.14-1.42mg/m^3)	Labourers: GM 0.017mg/m^3 (0.008-0.051) Crushing Machine Operators: GM 0.093 (0.021-0.22mg/m^3)
Cole & Fisher (2019)[14]	Sydney Demolition Workers (Allocated into different SEGs)	Not Reported	SEG AM range from 0.12mg/m^3 – 0.01mg/m^3

[7] Flanagan, M. E., Seixas, N., Majar, M., Camp, J., & Morgan, M. (2003). Silica dust exposures during selected construction activities. *AIHA J (Fairfax, Va), 64*(3), 319-328. doi:10.1080/15428110308984823

[8] Flanagan, M. E., Seixas, N., Becker, P., Takacs, B., & Camp, J. (2006). Silica exposure on construction sites: results of an exposure monitoring data compilation project. *J Occup Environ Hyg, 3*(3), 144-152. doi:10.1080/15459620500526552

[9] Bagschik, U., Böckler, M., Chromy, W., Dahmann, D., Gabriel, S., Gese, H., . . . Van Gelder, R. (2008). *Exposure to Quartz at the Workplace* (978-3-88383-767-3). Retrieved from Berlin: https://www.dguv.de/ifa/publikationen/reports-download/bgia-reports-2005-bis-2006/bgia-report-8-2006/index-2.jsp

[10] Radnoff, D., Todor, M. S., & Beach, J. (2014). Occupational exposure to crystalline silica at Alberta work sites. *J Occup Environ Hyg, 11*(9), 557-570. doi:10.1080/15459624.2014.887205

[11] Kirkeskov, L., Hanskov, D. J., & Brauer, C. (2016). Total and respirable dust exposures among carpenters and demolition workers during indoor work in Denmark. *J Occup Med Toxicol, 11*, 45. doi:10.1186/s12995-016-0134-5

[12] Normohammadi, M., Kakooei, H., Omidi, L., Yari, S., & Alimi, R. (2016). Risk Assessment of Exposure to Silica Dust in Building Demolition Sites. *Safety and Health at Work, 7*(3), 251-255. doi:https://doi.org/10.1016/j.shaw.2015.12.006

[13] Bello, A., Mugford, C., Murray, A., Shepherd, S., & Woskie, S. R. (2019). Characterization of Occupational Exposures to Respirable Silica and Dust in Demolition, Crushing, and Chipping Activities. *Ann Work Expo Health, 63*(1), 34-44. doi:10.1093/annweh/wxy089

[14] Cole, K., Fisher, M. (2019) Controlling exposure to respirable crystalline silica in Sydney demolition workers: a client-led intervention. Paper presented at Australian Institute of Occupational Hygienists Inc, 37th Annual Conference & Exhibition. Perth WA

Source	Population	Respirable Dust Exposures	Respirable Crystalline Silica (Quartz) Exposures
Mastrantonio et al. (2021)[15]	Italian Manual demolition workers	GM 0.34mg/m^3 0.031-5.86mg/m^3) (12.5% Exceedance of 3mg/m^3 OEL)	GM 0.004mg/m^3

Whilst crystalline silica most notably has a high profile due to the recent tragedies among engineered stone workers, exposure to other mineral dusts, previously thought of as nuisance dust, is associated with the development of chronic obstructive pulmonary disease (COPD)[16] and chronic bronchitis[17], even among non-smokers[18]. OSHA[19] estimated the lifetime risk of non-malignant respiratory disease mortality at 85 deaths per 1000 following a 45-year exposure of 0.1mg/m^3. Additionally, crystalline silica is a known human carcinogen[20] and estimates of lung cancer by OSHA following a 45-year exposure to 0.1mg/m^3 ranged from 11-54 deaths / 1000.

Safe Work Australia reported a 2020 fatality rate in the construction sector of 3.1 / 100,000 workers[21], by applying the same logic as OSHA this would roughly translate to a 45-year risk of 1.4 deaths / 1000. The results provide a useful frame of reference for considering the *relative risk from chronic exposure to crystalline silica containing dusts as being comparable to or greater than the expected risk of fatal injuries* over a working life in high-risk occupations. It should also be noted that despite the recent reductions in the NSW exposure standard, the effects of such a change will not alter lung cancer incidence for at least 20-30 years[22], and even less so if regulatory efforts at reducing actual exposures are limited[23] despite further reductions in the exposure standard.

Strong regulatory enforcement of WHS regulations is crucial to the prevention of occupational diseases. The tightening of regulations around licensing should be followed by a commensurate increase in inspection activities to licensees. The AIOH recommend that these activities are reflected in the SafeWork NSW Silica Dashboard.

[15] Mastrantonio, R., Civisca, A., Siciliano, E., Inglese, E., Lippolis, T., Pompei, D., . . . Fabiani, L. (2021). Exposure assessment to inhalable and respirable dust in the post - earthquake construction sites in the city of l'Aquila. *J Occup Health, 63*(1), e12296. doi:10.1002/1348-9585.12296

[16] Lytras, T., Kogevinas, M., Kromhout, H., Carsin, A. E., Anto, J. M., Bentouhami, H., . . . Zock, J. P. (2018). Occupational exposures and 20-year incidence of COPD: the European Community Respiratory Health Survey. *Thorax, 73*(11), 1008-1015. doi:10.1136/thoraxjnl-2017-211158

[17] Lytras, T., Kogevinas, M., Kromhout, H., Carsin, A. E., Anto, J. M., Bentouhami, H., . . . Zock, J. P. (2019). Occupational exposures and incidence of chronic bronchitis and related symptoms over two decades: the European Community Respiratory Health Survey. *Occup Environ Med, 76*(4), 222-229. doi:10.1136/oemed-2018-105274

[18] Rushton, L. (2007). Chronic obstructive pulmonary disease and occupational exposure to silica. *Rev Environ Health, 22*(4), 255-272. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/18351226

[19] OSHA CFR 29 Parts 1910, 1915, and 1926 Occupational Exposure to Respirable Crystalline Silica, https://www.govinfo.gov/content/pkg/FR-2016-03-25/pdf/2016-04800.pdf

[20] Guha, N., Straif, K., & Benbrahim-Tallaa, L. (2011). The IARC Monographs on the carcinogenicity of crystalline silica. *Med Lav, 102*(4), 310-320. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21834268

[21] SafeWork Austalia Key Work Health and Safety statistics, Australia 2021. https://www.safeworkaustralia.gov.au/resources-and-publications/statistical-reports/key-work-health-and-safety-statistics-australia-2021

[22] Tompa, E., Mofidi, A., Song, C., Arrandale, V., Jardine, K. J., Davies, H., . . . Demers, P. A. (2021). Break-even Analysis of Respirable Crystalline Silica (RCS) Exposure Interventions in the Construction Sector. *J Occup Environ Med, 63*(11), e792-e800. doi:10.1097/JOM.0000000000002375

[23] Hutchings, S., & Rushton, L. (2011). Toward risk reduction: predicting the future burden of occupational cancer. *Am J Epidemiol, 173*(9), 1069-1077. doi:10.1093/aje/kwq434

Q7. Is the training unit CPCCDE3016: Identify Hazards on Demolition Sites and Apply Risk Management Strategies, a suitable course? Or should there be other or additional courses mandated?

In relation to the training of demolition license holders, the AIOH has developed a substantial body of useful information relevant to crystalline silica exposure from engineered stone, as Breathe Freely Australia, and has made this freely available online[24]. Breathe Freely Australia is aimed at reducing occupational lung disease and also provides information relevant to construction, mining and welding.

The work to date by SafeWork NSW is acknowledged in helping to raise awareness of the hazardous nature of respirable crystalline silica. However, the long-term impact of advertising and awareness campaigns for occupational disease is variable. In a large-scale scoping review[25] the effectiveness of educational interventions was found to be context-dependent and influenced by the manner of delivery. In light of these findings, for long term chronic diseases, extended periods of time are used for post-evaluation review and these reviews are published in the peer-reviewed literature for the benefit of the wider community.

The AIOH recommends that greater focus be placed towards education and training of workers in high-risk industries to complement awareness-raising activities. The AIOH is supportive of registered training organisations (RTOs) such as those that provide nationally accredited silica awareness courses e.g. 10830NAT – Course in Crystalline Silica Exposure Prevention[26]. The AIOH considers that this represents an effective and efficient means of ensuring that nationally consistent information is accessible to all people who are potentially exposed to crystalline silica. As the people in question include building trades and apprentices, the AIOH recommends that this course should be mandatory for all demolition trades.

[24] https://www.breathefreelyaustralia.org.au

[25] Keefe, A. R., Demers, P. A., Neis, B., Arrandale, V. H., Davies, H. W., Gao, Z., Bornstein, S. (2020). A scoping review to identify strategies that work to prevent four important occupational diseases. *Am J Ind Med, 63*(6), 490-516. doi:10.1002/ajim.23107

[26] Training.gov.au, National Register on Vocational Education and Training (VET), 10830NAT – _Course in Crystalline Silica Exposure Prevention, https://training.gov.au/Training/Details/10830NAT, Accessed 18 April 2021.