



Worksafe New Zealand is consulting on a Workplace Exposure Standard (WES) for respirable quartz.

Responses close: 5pm on Friday 7 August 2015. **NZDF was granted an extension until 21 August.**

Via email to: jim.napier@worksafe.govt.nz

WORKPLACE EXPOSURE STANDARD (WES-TWA) FOR QUARTZ (CRYSTALLINE SILICA) AS RESPIRABLE DUST

Proposal:

Worksafe proposes to adopt an 8 hour time weighted average (WES-TWA) of $0.025\text{mg}/\text{m}^3$ (measured as respirable fraction).

A review was carried out to recommend a proposed WES value. This review was carried out by Toxicology Excellence for Risk Assessment (TERA) in the United States.

Feedback is invited on the following:

1. The proposed 8 hour TWA WES value of $0.025\text{mg}/\text{m}^3$ for respirable quartz (RCS)

NZDF believe that such a low proposed WES for RCS is potentially too conservative for the NZ extractive and construction industries today.

The proposed WES of $0.025\text{ mg}/\text{m}^3$ for RCS is based on a recommendation by a consultant TERA engaged by Worksafe in 2014. It is a dramatic (8-times) reduction in the current WES for RCS in NZ, and half of the level proposed, but, inexplicably, not implemented by OSH, back in 2003.

TERA's recommendation is based on epidemiological evidence of silicosis and lung cancer in US extractives industry workers (miners, granite and quarry workers) from the middle to late 1900s.

Given the time period from which the sample population is taken, it is likely that dust was not appropriately controlled and clearly at the time, the long term health effects were not well understood (the health issues took half a century to emerge) and controls or regulation of the exposure did not receive the focus it does today. TERA cite various studies in the area of RCS research but give no indication of the prevailing dust levels nor of the prevailing workplace controls in use at the time - if they were used at all - to manage ambient dust at the sample population work places.

In terms of the epidemiological basis of the WES, such long term (40-45 years) continuous work place exposure is very unlikely today. In the mid-20th century, this may have been a valid duration of continuous employment in mines, but continuous employment for this period of time at one or even

a number of sites where RCS is an uncontrolled hazard would be unlikely in 21st century NZ, particularly if this potential health hazard is being actively regulated.

The toxicology modelling involves extrapolation from rats to humans involves certain “fudge factors” and may not be reliable.

A number of recommendations were made in connection with RCS WES by OSH in 2003. These recommendations were informed by analysis of NZ data, but excluded mine site data. A WES of 0.05 mg/m³ was recommended. This work would seem to be a better start point for revising the current WES.

2. The feasibility of meeting the proposed WES value. If considered unfeasible to meet, provide further information to support that view such as:

- **current exposure levels and controls; and**

For drillers, such long term exposure in the order is not a credible scenario. Drilling contracts are typically short-term (weeks to, at most, months) and the majority of drilling in NZ uses water or foam based fluids as part of the drilling process which naturally suppresses dust. Drilling often undertaken in practically dust-free environments. So the likelihood of sustained, long term exposure to RCS is doubtful.

There are however, specific and general exceptions where short term exposure to RCS dust is a risk. One involves percussive compressed air-based drilling methods such as RC hammer. In general, RC hammer methods are not common in NZ given the high water table encountered through-out most of NZ. Drill and Blast drilling is one instance of RC drilling where high levels of dust may be created at the drillhole. In this situation the drilling contractor must determine if RCS is a hazard via risk assessment, and if it is, take all (reasonably) practicable steps to control it using the hierarchy of controls (eliminate, isolate, minimise - PPE).

A more common situation involves drilling in work environments where ambient dust may be present and thus represent a health hazard, such as mine sites, quarries, tunnels and some construction sites. Appropriate dust suppression, ventilation and PPE standards should be used by the owner or operator at these sites.

Furthermore while dust suppression is implemented at these sites, the driver has been mainly one of environmental compliance, not health exposure. The regulator has not been actively checking work site compliance with the RCS hazard, so doesn't have a feel for the RCS levels at contemporary NZ extractives and construction sites.

In work sites where RCS is a potential hazard, the exposure of the drilling contractor workers should be monitored. If a dust hazard is evident or suspected, the site owner/operator should be advised. As the controller of the activity creating the hazard, it is incumbent on the owner/operator to assess the risks and to put in place the necessary controls to manage ambient dust levels. For its part, the drilling contractor may need to take appropriate steps to ensure its workers are not exposed to the hazard until it is satisfied the hazard is being controlled. This may involve a combination of monitoring, cessation of work, “shielding” of workers, and PPE.

Respirators available today are very good, but the appropriate standards for filters need to be made available as part of some industry guidance.

- **levels considered feasible to achieve.**

Safe Work Australia revised their RCS WES from 0.2 mg/m³ to 0.1 mg/m³, but they did not report the source of this adopted value. Given the size of the extractives industry, and how it is regulated (i.e. it has become the model for NZ H&S legislation), it would be sensible to engage with Safe Work Australia to understand the basis of their WES.

In 2003 OSH recommended that the New Zealand standard for RCS for an 8 hour day exposure be reduced to 0.05 mg/m³ and that workplace monitoring be carried out three monthly. However the dataset used by OSH to inform their recommendation did not include mining. Industry Worker health awareness, work place standards, controls and PPE have improved in the last 15 years since the OSH study was undertaken and certainly since the mid-1900s.

NZDF would like to see Worksafe commission new industry sampling programme indicative of contemporary work site health standards in New Zealand, before setting the WES, rather than default to a value which may not be suitable today. Such information would allow the formulation of a more appropriate, and targeted, WES for RTCS

3. The sampling and or analytical methods and suitability of the methods in New Zealand

To determine compliance it is usually necessary to conduct a number of exposure measurements, often involving a number of workers. Compliance with an exposure standard can be demonstrated only when the exposure of individual workers or groups of workers is known, with an accepted degree of certainty, to be below the exposure standard.

Compliance with exposure standards can only be determined by commissioning an air monitoring programme. This implies considerable direct and indirect costs, but no information is provided on this aspect of the compliance with the proposed WES.

NZDF request that Worksafe provide guidance is required on an efficient but acceptable testing methodologies and practices for the workplace. Further information on costs and suppliers is also required. As far as can be determined, there is only one contractor in NZ (Capital Environmental Services) who have the testing capability.

4. Additional comments

The new RCS WES represents a significant change and the implications of this new level may not be fully understood. Whilst the change is well intended, in the context of compliance such a low WES may be impractical to achieve. In light of contemporary work place health, safety and environmental standards and work force employment trends in NZ today, NZDF would like to see further assessment of the need for such a low WES and practicality of achieving the proposed standard. Basically “a measure twice, cut once” approach.

Respectfully submitted

Steve Faulkner

President, NZ Driller's Federation Inc.

Date: 21 August 2015