

## **Respirable Crystalline Silica**

### **UQ Project Feedback by Jason Nguyen and John Hwang & Outcomes**

#### **Date & Venue:**

Friday 29 November 2019 1:30pm to 3:30pm  
11 Hi Tech Court, Eight Mile Plains, Qld 4113

#### **Documents:**

available at <https://drive.google.com/open?id=1JfEwjgSPYeHFrttKRufn0xQbSvu8SGmJ>

1. Presentation “An Investigation of Respirable Crystalline Silica Dust Exposure with in the Asphalt Industry” by Jason Nguyen & John Hwang
2. Recording of presentations 1. Above
3. Complete presentation of the event including photographs
4. Recording of complete presentation and discussion of 3. Above
5. Hand out “Guide to control Silica Dust” in profiling
6. Hand out “Qualitative data table – additional data required” on the recodered exposure levels for construction operations.

#### **Key Findings – Exposure Study**

1. Nomenclature varied amongst different organisations
2. Starting point for a standardised taxonomy of activities to alleviate the SEG issue
3. Various mechanical features affected industry generation but are difficult to manipulate
4. Operators and level-hand at higher risk
5. Profiler and Brooming process → main focus area due to duration / frequency of use.

#### **Key Findings – Controls Study (Existing Controls)**

1. Profiler (full-size) → Adequate control measures:
  - Exhaust ventilation on profiling drum enclosure
  - Water sprays for dust suppression in drum enclosure and conveyer
  - Water tanks sometimes ran out → left unfilled

2. Tractor Broom → Minimal control measures
  - Revs directly influence the rotary speed of the broom
  - Dust/debris dispersed outward via broom
  - Enclosed operator cabins
3. Skid Steer w/ Bucket Broom
  - Some dust/debris deposited in bucket bin
  - Enclosed operator cabins
4. Loop Cutting
  - Independent vacuum used to clean up the excess debris/dust
  - No wet-cutting used → Compromised the chemical seal
5. Core Cutting
  - Local exhaust ventilation system
  - Wet-cutting utilizes universally

## Recommendations / Additional Controls

Plant/Equipment	Recommended Engineering Control Measures by <i>National Asphalt Pavement Association (NAPA)</i>	Currently Used by QLD Asphaltting Organisations (YES/NO/PARTIAL)
Profiler (full-size)	<ul style="list-style-type: none"> <li>• Exhaust ventilation on drum enclosure</li> <li>• Supplemental water sprays for dust suppression               <ul style="list-style-type: none"> <li>• <b>Factors:</b> Water pressure, quantity/flow, distribution/spray pattern</li> </ul> </li> <li>• Ensuring constant supply of water</li> <li>• Water combined with surfactant</li> </ul>	<ul style="list-style-type: none"> <li>• YES</li> <li>• YES</li> <li>• PARTIAL</li> <li>• YES</li> </ul>
Mini-Profiler	<ul style="list-style-type: none"> <li>• Exhaust ventilation on drum enclosure</li> <li>• Supplemental water sprays for dust suppression</li> <li>• Water combined with surfactant</li> <li>• Enclosed cabins (see below)</li> </ul>	<ul style="list-style-type: none"> <li>• NO</li> <li>• NO</li> <li>• PARTIAL</li> <li>• YES</li> </ul>
Jackhammer	<ul style="list-style-type: none"> <li>• Water delivery system that supplies a continuous stream or spray of water at the point of impact OR</li> <li>• Equipped with commercially available shroud and dust collection system.</li> </ul>	<ul style="list-style-type: none"> <li>• NO</li> <li>• NO</li> </ul>
Tractor Broom	<ul style="list-style-type: none"> <li>• Maintenance of enclosed cabins (see below)</li> </ul>	<ul style="list-style-type: none"> <li>• YES</li> </ul>
Skid Steer w/ Bucket Broom	<ul style="list-style-type: none"> <li>• Maintenance of enclosed cabins (see below)</li> </ul>	<ul style="list-style-type: none"> <li>• YES</li> </ul>
Loop Cutting walk-behind saws	<ul style="list-style-type: none"> <li>• Integrated water dust suppression system that continuously feeds water to the blade.</li> </ul>	<ul style="list-style-type: none"> <li>• NO</li> </ul>
Enclosed cabins	<ul style="list-style-type: none"> <li>• General housekeeping to minimise settled dust</li> <li>• Cabin door has an effective seal</li> <li>• Under positive pressure maintained through continuous delivery of fresh air</li> <li>• Intake air is filtered through a 95% efficient filter (in 0.3 – 10 µm range).</li> <li>• Heating and cooling capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• PARTIAL</li> <li>• YES</li> <li>• YES</li> <li>• PARTIAL</li> <li>• YES</li> </ul>



Mandatory use of water sprays and exhaust ventilation systems on profiling plant



Encapsulation of brooming heads and implementation of bucket bins during the design phase of brooming heads → Provides a better seal



Ensuring water tanks (e.g. profiler, suction sweeper) are kept filled throughout the resurfacing project



Ensuring proper sealing of enclosed operator cabins and good filtration systems (Good/safe cleaning processes for cabins)



Reducing the rev speed of tractor and skid-steer brooming processes



Enforcement of proper respirator fit and standards



Continual usage of wet-cutting and local exhaust ventilation systems during core cutting



Use of wet cutting during loop cutting processes

## Recommendations going forward

1. Build upon these findings through continued research
2. Populate the table with quantitative data
3. Collation of sampling data
4. Finalise the table
5. Implement measures to improve dust management on site
6. Create a code of practice

## Key outcomes from the meeting

1. Get data – the fringe areas are key (*refer additional project recommendations*)
2. Take action on the obvious high exposure SEG
  - Code of practice for high risk areas and profiling
  - Work practice change, equipment improvement vs more data
3. Engage with funders in Roads Sector NACoE, Austroads
4. Plan to transition to the reduced exposure benchmark
5. Training the operators to understand the hazard / risk
6. Guides for the inspectors to know what's important – evidence based

## Actions

- A. Engage with stakeholders to extend the project (Austroads, TMR – NACoE/RoadTek, WHSQ, AAPA)
  1. Data
    - Develop common descriptors for work activities
    - Develop data collection process against gaps in matrix & marginally compliant SEGs
    - Extension for national data collection
  2. Communications
    - Prepare communications package for stakeholders on findings and actions
    - Make training, reference material & Best Practice guides available
  3. Operational
    - Develop a transition plan of action and implementation strategy for over limit SEG – time frames, regulation
    - Review of alternative & improved operations available locally & internationally.
    - Prepare training and reference material & guides for inspectors
- B. AAPA to engage with Profiling Group to draft “Best Practice Guidelines for Profiling”

Draft prepared by Robert Vos AAPA Q/NT