

Monday, 15 May 2023

## Get involved! Expression of interest in research project comparing exposure monitoring techniques

**Background:** It is well known in the mining industry that there are many hazards related to the exposure and effects of hazardous substances such as metals, metalloids, silica, coal dust, etc. The methods for measuring workers' exposure are classified based upon the measurement strategy and require separate sampling campaigns. "Screening" measurements are used to identify the time-weighted average concentration and to identify variation of concentration in time and/or space. Separately "compliance" measurements are used to perform measurements for comparison with legally binding limit values and to perform periodic repeating measurements for follow up. All these measurement strategy schemes are expensive, so it is known that most resources are used to perform compliance measurements to identify workers' exposure compared with limit values. Contrary to this strategy, it is clear that the use of screening measurements give the best results in mapping exposure and reducing workers' exposure.

**Aims:** The aim is to develop a strategy for measuring airborne aerosols and constituents with real time monitors to obtain compliance measurements in Australian mining operations, and, eventually worldwide, by:

- Generating critical data on the behaviour of conventional sampling techniques and real time monitors in mining operations when sampling aerosols and constituents.
- Generating specific factors for alignment of measured exposure data with real time monitors for direct comparison with Australia Workplace Exposure Standards (WES).
- Understanding the specific behaviour of real time aerosol monitors and conventional sampling techniques compared with the convention on particle size fraction definitions for health-related sampling at workplaces.

This project is part of an international project, developed by Dr Steven Verpaele, Nickel Institute, Belgium. Dr. Marcus Cattani at ECU is the Australian Manager.

**Outcomes:** The results of this study will provide data to improve exposure assessment strategies to assess both exposure to hazardous substances at workplaces and the identification of critical

control measures. Also technical specifications for the effective use of real time monitors in workplace exposure assessment will be developed. Those outcomes will be used to:

- Inform the industry and government about the performance of different aerosol assessment methodologies and their ability to assess workers' exposure and about how to control exposure in an efficient manner.
- Inform health and safety professionals within the industry on the correct workplace monitoring strategy for measuring airborne aerosols with real-time monitors.

Provide comparative data between samplers to determine whether low-cost alternatives are accurate.

***What do we need: hosts, sponsors and experts!***

The project needs:

- Workplaces and Mines sites with an Occupational Hygienist to host and use the sampling equipment, and who have a need to monitor, and preferably experience, in monitoring:
  - Metals and metalloids (IOM, DIS, Nanozen DustCount, TSI AM 520, TSI Dusttrak, and real time sensors)
  - Silica (Cyclone, PPI, Nanozen DustCount, TSI AM 520, TSI Dusttrak, and real time sensors)
  - DPM (Cyclone, TSI AM 520, TSI Dusttrak, and real time sensors)
- Equipment owners who have equipment they can provide to the project
- Laboratories to analyse the samples
- Subject Matter experts to assist with the data analysis
- Funding: The project is funded from industry.

The "WAM" rotating carousel is used to collect 12 samples simultaneously.  
Six pairs of samples are taken over 4 or more hours.



If you are interested, please contact:

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