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Working towards a better understanding and control of diesel exhaust emission products (DEEP) for underground mines in Western Australia.

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ABSTRACT

Western Australian underground mines are currently heavily dependent on diesel equipment to drill, load and haul ore and waste rock and to transport the workforce and equipment. Underground mine atmospheres are controlled via a combination of mechanical ventilation, dust suppression and vehicle exhaust controls to maintain contaminant levels below exposure standards and as low as practical. Ongoing large scale mechanisation in Australia presents the potential for increased vehicle emissions.

The presentation will describe the changing technologies utilised to control underground atmospheres, evolving exposure standards and sampling method developments with particular emphasis on those relating to diesel exhaust emissions and its impact on workforce exposures.

Historical and current workforce Diesel Engine Exhaust Emissions (DEEP) exposure data will be presented along with an update on a current study on Nano-Diesel Particulate (nDP) exposures in WA underground mines as a result of the IARC classification of diesel particulate as a human carcinogen and the impact that proposed exposure standard changes may make on the viability of current mining techniques.

The presentation will include:

1. Monitoring nDP results based on Particle Number (PN) and Particle Size (PS) using the Discmini.
2. Comparing these results to the Airtec FLIR which measures Particle Mass (PM).
3. Comparing these results to busy streets in Perth, CAFÉ, Office, Home
4. How do we compare to NEPM standard/guideline