

REAL-TIME MONITORING HELPS FOUNDRY CUSTOMER IDENTIFY SILICA EXPOSURE

APPLICATION NOTE EXPMN-020 (A4)

Introduction

Foundries present a broad range of both safety and health concerns that are challenging to control. These hazards include heat, infrared radiation, molten metal, metal fume and respirable silica from breaking apart the sand-based molds.

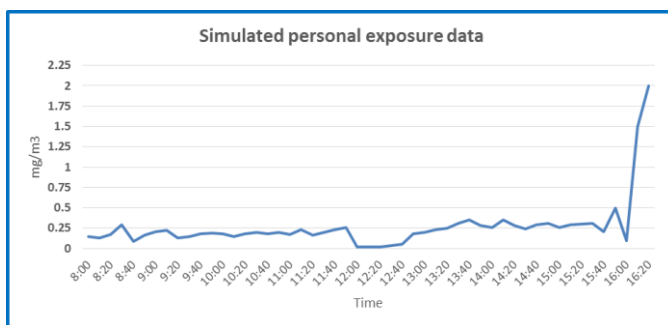


Situation

A foundry in the United States invested significant capital to install a ventilation system designed specifically to control worker exposure to airborne respirable crystalline silica. After the ventilation system was installed, personal air sampling was conducted on the workers. **One sample indicated exposure above the OSHA Permissible Exposure Limit.** Management was concerned that the new ventilation system was not properly designed.

Further Investigation

A consultant was brought in to perform additional air monitoring. This time the TSI SidePak™ AM510, a real-time, personal aerosol monitor, was used alongside the traditional sample pump and filter cassette. For legal reason, we do not have the actual data collected by the SidePak AM510 Personal Aerosol Monitor. The customer explained the graphical data looked like the example shown below.



The average exposure was below the level of concern. However, the graph clearly shows high concentration levels measured at the end of the shift that put the full shift exposure above the Permissible Exposure Limit. **Further investigation found this high concentration was caused when the workers used compressed air to clean their workstations at the end of the shift.**

The consultant recommended using a HEPA filtered vacuum to clean up the workstations and stop the practice of using compressed air which creates high levels of airborne silica.

The varying aerosol concentration levels cannot be measured using only filter-based gravimetric sampling. A direct reading instrument that logs data for graphical analysis is the fastest way to find this type of exposure.

Conclusion

Light scattering, photometric aerosol mass concentration instruments, like the SidePak AM510, are valuable tools for quickly identifying personal aerosol exposures. These instruments provide aerosol mass concentration levels during the activity, instead of waiting several days for lab results. The graphical display of logged data adds a level of detail not achieved with a single data point from a gravimetric sample.



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