

New Device Opens Door for Better Task-Based Monitoring of Aerosol Exposures

Comparison of the DiSCmini Aerosol Monitor to a Handheld Condensation Particle Counter and a Scanning Mobility Particle Sizer for Submicrometer Sodium Chloride and Metal Aerosols

Jessica B. Mills, Jae Hong Park, Thomas M. Peters. Journal of Occupational and Environmental Hygiene, May 2013.

Overview

For an accurate assessment of worker exposure to hazardous dusts and aerosols on the job, area measurements of particle size and concentration are not always enough. Personal air monitoring is necessary: samples taken near the nose and mouth during work tasks. Until recently, researchers had few options for real-time personal air monitoring of very fine particles.

The new DiSCmini aerosol monitor promises to change this. Researchers evaluated the DiSCmini's ability to measure the concentration and mean diameter of submicrometer aerosols, comparing the DiSCmini's measurements with those of the Scanning Mobility Particle Sizer or SMPS (normally used for area monitoring) and Condensation Particle Counter or CPC (which measures the concentration of particles but not their size).

Key Findings

- When measuring polydispersed (unevenly dispersed) particles, the DiSCmini produced measurements within 16% of those reported by the CPC. There was much less agreement when measuring monodispersed (evenly dispersed) particles.
- The mean particle diameters reported by the DiSCmini were within 30% of those produced by the SMPS, except when many particles larger than 300 nanometers were present.
- The results from this study suggest that the DiSCmini can be useful to measure metal aerosols, such as welding fume, for personal task-based exposure monitoring, as well as many other occupational settings where very fine particles of interest are present.

For more information, contact:

Peter Thomas: thomas-m-peters@uiowa.edu

See abstract:

<http://www.tandfonline.com/doi/full/10.1080/15459624.2013.769077#.UpyzleLz2wE>

©2013, CPWR – The Center for Construction Research and Training. CPWR, the research and training arm of the Building and Construction Trades Dept., AFL-CIO, is uniquely situated to serve construction workers, contractors, practitioners, and the scientific community. This card was made possible by a cooperative agreement with the National Institute for Occupational Safety and Health, NIOSH (OH009762). The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.



**THE CENTER FOR CONSTRUCTION
RESEARCH AND TRAINING**

WWW.CPWR.COM