



Local Exhaust Ventilation Reduces Construction Worker Exposure to Zinc Oxide Nanoparticles

Inhalation Exposure during Spray Application and Subsequent Sanding of a Wood Sealant Containing Zinc Oxide Nanoparticles

Michael R. Cooper, Gavin H. West, Leonard G. Burrelli, Daniel Dresser, Kelsey N. Griffin, Alan M. Segrave, Jon Perrenoud and Bruce E. Lippy. Journal of Occupational and Environmental Hygiene, 2017.

Overview

Nano-enabled construction products have entered into commerce, and exposure assessments are needed to determine if manufactured nanomaterials used in these products pose a health risk to workers. Studies of laboratory animals suggest that some manufactured nanomaterials could be harmful to humans. This study assessed inhalation exposure to zinc oxide (ZnO) nanoparticles during spray application and power sanding of a commercially available wood sealant, and evaluated the effectiveness of local exhaust ventilation in reducing exposure. Filter-based sampling, electron microscopy, and real-time particle counters provided measures of exposure.

Key Findings

- Nanoparticle exposures were similar when sanding either the treated or untreated wood.
- Very few unbound nanoparticles were detected in air samples; rather, nano-ZnO was contained within or on the surface of larger airborne particles.
- Local exhaust ventilation was effective, reducing exposure to nanoparticles by up to 92%.
- Further research is needed to understand risks to construction workers exposed to manufactured nanomaterials; until these risks are better understood, local exhaust ventilation can reduce worker exposure.

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See abstract:

<http://bit.ly/2qwquMu>

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