

NIOSH Nanotechnology Metal Oxide Particle Exposure Assessment Study

Background: The National Institute for Occupational Safety and Health (NIOSH), part of the Centers for Disease Control and Prevention (CDC), is the leading federal agency conducting research and providing guidance on the occupational safety and health implications of exposure to engineered nanomaterials. As part of its nanotechnology research agenda, NIOSH initiated a study to investigate exposure to fine ($0.1\mu\text{m}$ to $2.5\mu\text{m}$ diameter) and ultrafine ($<0.1\mu\text{m}$ diameter) metal oxides.

Purpose: The purpose of the metal oxide study is to measure and characterize workplace exposure to fine and ultrafine metal oxides in both manufacturing and end-user facilities. The specific objectives are to: 1) characterize airborne metal oxides exposure metrics by job or process, 2) obtain quantitative estimates of exposure to fine and ultrafine metal oxides by particle size, and 3) evaluate a strategy for measuring workplace exposure to fine and ultrafine metal oxides. These objectives will allow NIOSH to determine which processes and job tasks pose the highest risk of exposure to workers. This study is specifically designed to conduct a detailed evaluation of exposures to fine and ultrafine metal oxides, and is *not* the same as the baseline assessment program offered by the NIOSH nanotechnology field research team. Information on that program is available at www.cdc.gov/niosh/topics/nanotech.

Who can participate: Manufacturers and end-users of fine and ultrafine metal oxides are being asked to participate in this study. More specifically, workers at these facilities who are involved in the production and use of metal oxides will be asked to participate.

Benefits: Since companies that participate in this research study will undergo a sampling survey to measure airborne metal oxides, sampling results may provide companies with a better understanding of metal oxide exposure occurring in their facility. Areas of contamination, if any, will be identified and recommendations to reduce exposure will be provided when possible. A report of the findings will be sent to each company that participates.

What is required of participating companies: NIOSH researchers will visit each facility once or twice to conduct a metal oxide exposure survey; each survey will take one or two days. The survey will involve placing several pieces of sampling equipment near sources of potential exposure. Workers involved in various tasks related to the production and end-use of metal oxides may be asked to wear a sampling pump. Collected samples will be analyzed for metal oxides.

Use of the data: The data collected in this study will be used to determine the extent to which metal oxide exposure is occurring in the nanotechnology industry. The information will be used for scientific research purposes only, and published study results will not identify participating companies. In addition, there are federal laws and regulations that provide protection for the proprietary and trade secret information of the participating companies.

For more information: To learn more about the *Metal Oxide Particle Exposure Assessment Study*, contact Brian Curwin, Project Manager, at (513) 841-4432, bcurwin@cdc.gov, or by mail at 4676 Columbia Parkway, Mail Stop R-14, Cincinnati, OH 45226. For information about other nanotechnology research efforts underway at NIOSH (such as the field research effort), contact NIOSH toll-free at 1-800-CDC-INFO (800-232-46360 [press 1 to speak to an operator]), or visit the NIOSH Web site at www.cdc.gov/niosh.

Nanotechnology has many benefits that could be overshadowed if the risks are ignored. As a non-regulatory research agency, NIOSH focuses on effective approaches to reducing occupational health and safety risks from exposure to nanomaterials, as well as conducting research and making recommendations to prevent work-related injury and illness for all workers.



Comprehensive aerosols measurements conducted at different production processes within a primary nanoscale metal oxide production facility. A number of aerosol sampling methods and instruments are used simultaneously to better understand particle characteristics.

To receive other documents or other information about occupational safety and health topics, contact NIOSH at

Telephone: 1-800-CDC-INFO (1-800-232-4636)

TTY: 1-888-232-6348 ■ E-mail: cdcinfo@cdc.gov

or visit the NIOSH Web site at www.cdc.gov/niosh

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As part of the Centers for Disease Control and Prevention, NIOSH is the Federal agency responsible for conducting research and making recommendations to prevent work-related illnesses and injuries. Fact sheets describe how worker exposures to hazardous agents or activities can be reduced.

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