

**A case study in partnering to develop a nanotechnology occupational safety program  
in a nanotechnology manufacturing environment**

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Evaluating worker exposure monitoring methods and developing safe work practice guidelines are significant areas of need for creating effective worker protection programs in the rapidly growing manufacturing field of nanotechnology. This presentation describes collaborative work being conducted by Altairnano, a nanotechnology materials and controlled particles manufacturer, and the University of Nevada, Reno (UNR) in cooperation with the National Institute for Occupational Safety and Health (NIOSH).

The focus of UNR is on developing a framework for addressing occupational safety needs of new technological industries in the Northern Nevada area by identifying campus resources to assist unique needs of new technologies (e.g., engineering, computer sciences, public health, cooperative extension, and legal), providing opportunities for UNR students to gain experience in working with and in new technological industries, arranging support and funding for student participation (e.g., research internships, work study, and training programs, and assisting in joint venture opportunities (e.g., grant funding and the small business innovative research program).

The focus of Altairnano is on a better understanding of the emission sources and the migration and behavior of its engineered nanoparticles throughout its manufacturing facility. In addition the company will conduct nanoparticle exposure measurements, develop a series of best practices for handling nanomaterials, and develop an employee health monitoring system. Initially this will take the form of background lung function tests to create a baseline to evaluate future pulmonary monitoring.

The focus of NIOSH is on performing research in the areas of instrumentation for nanoparticle measurement and characterization, measurement of worker exposure to nanoparticles, containment and control of nanomaterials, and the development and documentation of best practices for the safe handling of nanomaterials. The Altairnano/UNR/NIOSH collaboration provides NIOSH with a valuable opportunity to view industrial processes involving the manufacture and use of nanomaterials, and to evaluate programs developed by employers to govern those processes in their establishments from an occupational health perspective.

This presentation describes how the manufacturing processes and associated control practices are being assessed at Altairnano, as well as the goals and design of NIOSH's informal review of the Altairnano work processes and occupational health program. The program demonstrates how entities engaged in nanotechnology-related enterprises, particularly small manufacturers, can proactively manage human and environmental health and safety issues, based on the circumstances of their particular operations.

(Disclaimer: The findings and conclusions of this abstract have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy.)



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