

What are our priorities?

The Nanotechnology Research Center (NTRC) of the National Institute for Occupational Safety and Health (NIOSH) conducts research to understand the potential effects on human health of exposure to engineered nanomaterials and develops methods to control or eliminate exposures. Nanoparticles are extremely small particles (between 1 and 100 nanometers) designed to have certain new or unique characteristics, like strength, elasticity, or reactivity. These new properties make advanced materials and products possible. NTRC focuses on these areas to help industry move safely and responsibly into the future:

- Increasing understanding of potential health risks to workers making and using nanomaterials.
- Preventing occupational exposures to nanomaterials.
- Evaluating potential worker health risks from advanced material and manufacturing processes.

What do we do?

- Identify engineered nanomaterials emerging into commerce through market forecasting and research, technology surveillance, and partner and stakeholder input.
- Prioritize the growing number of engineered nanomaterials for lab and field research, focusing on the ones that have the greatest potential for exposure and harm to workers.
- Conduct laboratory research to expand our understanding of the underlying biological mechanisms and the effects of exposure over time and across the life cycle.
- Conduct field investigations and epidemiological studies for a realistic understanding of exposure and risks to nanomaterial workers.
- Issue recommendations on how to use engineering controls and personal protective equipment to mitigate exposure to engineered nanomaterials.
- Provide critical input into the U.S. cross-agency National Nanotechnology Initiative and other international organizations' strategies to address health and safety of nanomaterials.
- Provide nanomaterial businesses with guidance they can use to keep their workers safe, develop public trust, and in turn accelerate their commercialization.
- Help companies function in the face of uncertainty about potential adverse effects of engineered nanomaterials.

What have we accomplished?

- Published 93 journal articles in the peer-reviewed scientific literature during 2018.
- Completed peer and stakeholder review of draft 2 of *Current Intelligence Bulletin: Health Effects from Occupational Exposure to Silver Nanomaterials*.
- Published a Science Blog on *Characterizing 3D Printing Emissions and Controls in an Office Environment*.
- Designed and fabricated an engineering control that reduced a widely used 3D printer model's emissions by >98%.
- Published *Continuing to Protect the Nanomaterial Workforce, NIOSH Nanotechnology Research Plan for 2018-2025*.

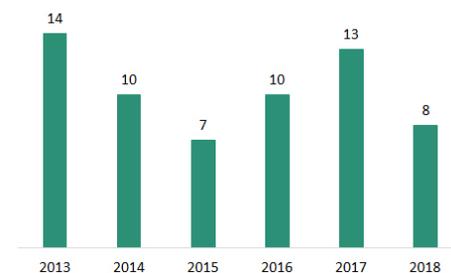
What's next?

- Publish *Current Intelligence Bulletin: Health Effects from Occupational Exposure to Silver Nanomaterials*.
- Evaluate biomarkers of exposure and disease using proteomic, metabolomics, and bioinformatics approaches.
- Work with industry to develop practical, "real world" evaluation of hazard and risk represented by nanomaterials through their life cycles.
- Participate in development of international standards with the Organisation for Economic Co-operation and Development (OECD) and the International Organization for Standardization (ISO) Technical Committee (TC) 229, such as:
 - Round Robin testing in support of the OECD Test Guideline 110 - Particle Size Distribution/ Fibre Length and Diameter Distributions
 - Identification and quantification of airborne nano-objects in a mixed dust industrial environment
 - Evaluation of methods for assessing the release of nanomaterials from commercial, nanomaterial containing polymer composites
 - Lung burden measurement of nanomaterials for inhalation toxicity studies

At-A-Glance

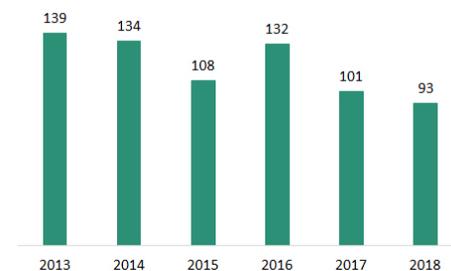
The Nanotechnology Research Center (NTRC) leads the federal government's effort in conducting occupational safety and health research, a key component of the U.S. National Nanotechnology Initiative. The NTRC develops recommendations that support responsible development of nanotechnology. This snapshot shows recent accomplishments and upcoming work.

Number of field assessments in nanomaterial manufacturer and user facilities



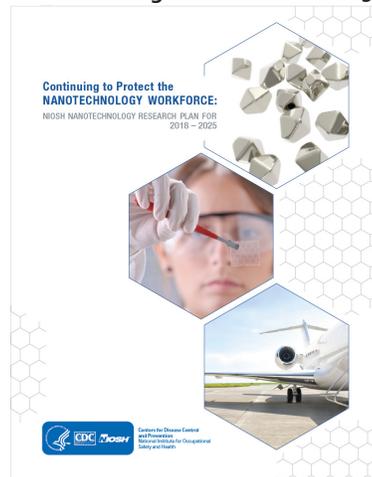
Source: NIOSH program records

Number of NIOSH Nanotechnology Publications



Source: NIOSH program records

Publication Spotlight: NTRC Strategic Plan for 2018-2025



To learn more, visit www.cdc.gov/niosh/programs/nano/

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