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## **From the Director's Desk**

**--Christine M. Branche, Ph.D., Acting Director, NIOSH  
April eNews 2009**

You know the saying, "Good things come in small packages." The old adage seems to apply to nanotechnology, where many technological advances are altering the size and application of many things. Researchers, however, are trying to determine whether those good things also come with unintended strings attached that could have a negative impact on human and environmental health, including worker health and safety. Nanotechnology is the manipulation of matter on a near-atomic scale to produce structures, materials, and devices that have new or unique properties; nanoparticles are a subset of these new materials that have at least one dimension less than 100 nanometers.

Research in this area is growing rapidly worldwide. It has the ability to transform materials science used in many industries and will have numerous, potentially revolutionary, applications in areas ranging from medicine to manufacturing. The National Science Foundation estimates that nanotechnology will have a \$1 trillion impact on the global economy by 2015 and will employ two million workers, one million of whom may be in the United States.

As with any new technology, the earliest and most extensive exposures to hazards are likely to occur in the workplace. In 2004, NIOSH created its Nanotechnology Research Center (NTRC), a strategic internal group of researchers from diverse disciplines whose mission is to provide national and international leadership in investigating the implications and potential applications of nanomaterials in workplace safety and health.

The NTRC is striving to achieve its mission by engaging in a comprehensive research effort to fill gaps in the scientific knowledge and understanding of engineered nanomaterials. Efforts include determining whether exposure to these materials poses occupational hazards to workers; conducting research and making recommendations on effective methods to manage nanomaterials safely; promoting healthy workplaces through interventions, recommendations, and capacity building; and enhancing global workplace safety and health through national and international collaborations.

Recent NIOSH activities, research findings, and accomplishments in the area of nanotechnology include

- Releasing preliminary findings from an animal study on whether multi-walled carbon nanotubes

(MWCNT) pose health risks similar to those from asbestos exposure. The findings offer significant new evidence of MWCNT appearing to behave like durable fibers in that they migrate to the pleura (tissue that surrounds the lungs) and provide additional justification for further research. Findings were presented at the Society of Toxicology conference in March to begin the process of addressing this important research question.

- Publishing a series of articles that describe ways to sharpen the focus on workplace safety and health in nanotechnology and provide a framework for occupational risk management of engineered nanoparticles. The articles were developed in collaboration with key external partners and published in the *Scandinavian Journal of Work, Environment & Health* and the *Journal of Occupational and Environmental Hygiene*.
- Publishing interim guidance on medical screening and hazard surveillance for workers potentially exposed to engineered nanoparticles, *Current Intelligence Bulletin 60: Interim Guidance for Medical Screening and Hazard Surveillance for Workers Potentially Exposed to Engineered Nanoparticles* (DHHS (NIOSH) Publication No. 2009-116), February 2009.
- Updating *Approaches to Safe Nanotechnology: Managing the Health and Safety Concerns Associated with Engineered Nanomaterials* (DHHS (NIOSH) Publication No. 2009-125), March 2009. This document has received global recognition for its scientific contribution to identifying and addressing key risk management issues in the field of nanotechnology, including recent citation by the U.S. Environmental Protection Agency and the International Organization for Standardization.
- Conducting worksite assessments among leaders in the nanotechnology industry. NIOSH is partnering with companies who manufacture, produce, and distribute nanomaterials to better understand potential workplace exposure during these processes.
- Cosponsoring a “Human and Environmental Exposure Assessment” workshop with the U.S. National Nanotechnology Initiative (NNI) to stimulate and advance research on the critical issues of health, safety, and the environment in nanotechnology.

- Publishing considerations needed in designing sound epidemiological studies of workers possibly exposed to engineered nanoparticles in the manufacturing and commercial use of nanomaterials. The article was developed in collaboration with Emory University and published online, ahead of print, February 21 in the *Journal of Occupational and Environmental Medicine*.

Over the past five years, NIOSH has made great strides in advancing the scientific knowledge of nanomaterials. We have found that these materials, which have novel characteristics unlike larger particles, may present new challenges to understanding, predicting, and managing potential health risks to workers. Still, many knowledge gaps remain to be filled before we fully understand whether new safeguards are needed in the workplace to ensure safe handling of nanomaterials.

Through strategic planning, research, partnering with others, and making information widely available, NIOSH is working in parallel with the development and implementation of nanotechnology and will be better able to anticipate challenges and provide sound scientific recommendations to prevent work-related illness and injury.

In moving forward, NIOSH is focusing its primary research efforts in developing more definitive exposure measurement techniques; actively investigating risk management methods, controls, and recommended exposure limit strategies; identifying exposure groups; providing targeted guidance; and establishing international collaborations to harmonize exposure methods and data interpretation. NIOSH remains committed to conducting exemplary research to inform actions for safe and healthy workplaces for all nanotechnology workers. NIOSH will continue to provide world leadership in research, guidance, partnership development, and emerging issues in nanotechnology.

If you wish to partner with NIOSH to advance the understanding of workplace exposure to engineered nanoparticles and protect the health and safety of workers, please contact NIOSH.

If your company would like to participate in the NIOSH worksite assessment (field investigation) program, contact Chuck Geraci ([CGeraci@cdc.gov](mailto:CGeraci@cdc.gov)); for partnership opportunities in nanotoxicology, contact Vince Castranova ([VCastranova@cdc.gov](mailto:VCastranova@cdc.gov)).

For more information about NIOSH research in the area of nanotechnology, visit <http://www.cdc.gov/niosh/topics/nanotech/>.

NIOSH and NNI recently cosponsored a workshop on exposure assessment. As NIOSH moves forward with research in this area, we would like to hear what you think are the critical needs in exposure assessment for nanomaterials in the workplace. Visit the NIOSH Science Blog to comment (<http://www.cdc.gov/niosh/blog/>)

## **NIOSH Science Blog Highlights NIOSH Leadership in Nanotechnology Research**

Two new entries to the NIOSH Science Blog highlight NIOSH's leadership in research on the occupational health and safety implications of nanotechnology. The March 19 entry highlights new preliminary findings from NIOSH lab research which provide first-ever data in a key area of scientific evidence that will be needed for determining if multi-walled carbon nanotubes pose asbestos-like health risks for workers ([http://www.cdc.gov/niosh/blog/nsb031909\\_mwcnt.html](http://www.cdc.gov/niosh/blog/nsb031909_mwcnt.html)). The March 30 entry discusses a February 2009 national workshop on assessing human and environmental exposures to nanomaterials, cosponsored by NIOSH and the U.S. Nanoscale Science, Engineering, and Technology Subcommittee ([http://www.cdc.gov/niosh/blog/nsb033009\\_nanoexpwrkshp.html](http://www.cdc.gov/niosh/blog/nsb033009_nanoexpwrkshp.html)).

## **Vice President Biden Highlights NIOSH Fire Fighter Program**

Vice President Joe Biden highlighted a NIOSH contribution to fire fighter safety on March 16 in a presentation to the International Association of Fire Fighters 2009 Legislative Conference: "I read another study, the National Institute of Occupational Safety and Health, which I referenced to you last time I spoke to you, that identified—and I want the public to hear this—the lack of staffing is the key cause of fire fighter fatality" ([http://www.whitehouse.gov/the\\_press\\_office/Remarks-by-the-Vice-President-to-the-International-Association-of-Firefighters-at-their-2009-Legislative-Conference/](http://www.whitehouse.gov/the_press_office/Remarks-by-the-Vice-President-to-the-International-Association-of-Firefighters-at-their-2009-Legislative-Conference/)). Ensuring that adequate staffing is provided for fighting a fire is one of 10 categories of recommendations most frequently made in reports from NIOSH's Fire Fighter Fatality Investigation and Prevention Program (<http://www.cdc.gov/niosh/docs/2009-100/>).

## **National Work Zone Awareness Week: Drive to Survive-Our Future is Riding on It**

The tenth annual National Work Zone Awareness Week (NWZAW) is April 6–10, 2009, with the theme "Drive to Survive—Our Future is Riding on It." The national kickoff on April 7 is near the Boundary Channel Humpback Bridge Replacement Project (George Washington Memorial Parkway & I-395). Roadway work zones are hazardous for motorists and workers. By slowing down, obeying posted speed limits, and exercising caution when driving through work zones, motorists make work zones safer for everyone. For more information on NWZAW, go to [http://www.ops.fhwa.dot.gov/wz/outreach/wz\\_awareness.htm](http://www.ops.fhwa.dot.gov/wz/outreach/wz_awareness.htm) or on NIOSH

work zone safety research go to <http://www.cdc.gov/niosh/topics/highwayworkzones>.

## **Registration Extended: Symposium on Radiology of the Pneumoconioses**

Registration has been extended through April 23 for the Symposium on Radiology of the Pneumoconioses which will be held April 24–27 near Washington, D.C. in Chantilly, Virginia. On-site registration will also be accepted, space permitting. The Symposium, co-sponsored by the American College of Radiology and NIOSH, offers a unique opportunity for hands-on training in use of the International Labour Office (ILO) system for classification of radiographs of the pneumoconioses. It is an excellent opportunity to prepare for or to take the NIOSH B Reader certification and recertification examinations that are normally offered only in Morgantown, West Virginia. For more information or to register, go to [http://www.acr.org/SecondaryMainMenuCategories/MeetingsandEvents/FeaturedCategories/acr\\_meetings/Pneumoconiosis042409.aspx](http://www.acr.org/SecondaryMainMenuCategories/MeetingsandEvents/FeaturedCategories/acr_meetings/Pneumoconiosis042409.aspx).

## **Partners Wanted for New NIOSH Research Project!**

NIOSH researchers want to hear from manufacturers of nail salon work tables that are vented to reduce attendants' occupational exposures to chemical vapors and dusts from nail treatments. Nail salons are staffed by a predominantly female and minority workforce. More details appear in the March 10 NIOSH Science Blog ([http://www.cdc.gov/niosh/blog/nsb031009\\_nails.html](http://www.cdc.gov/niosh/blog/nsb031009_nails.html)).

## **Have NIOSH WorkLife Updates Sent Straight to Your Inbox**

The NIOSH [WorkLife](#) Initiative has launched its first electronic WorkLife newsletter. The newsletter provides information about new developments in research and practice, includes updates from our Centers for Excellence, and serves as a focal point for the many other activities taking place in connection with the WorkLife Initiative. To view the newsletter and/or to subscribe, go to <http://www.cdc.gov/niosh/worklife/newsletter/>.

## **NIOSH Employee Receives CDC Employee of the Month Recognition**

Zaida Burgos, Committee Management Specialist in the NIOSH Office of Compensation Analysis & Support (OCAS), was selected as the CDC's Employee of the Month for March 2009. Zaida was recognized for her

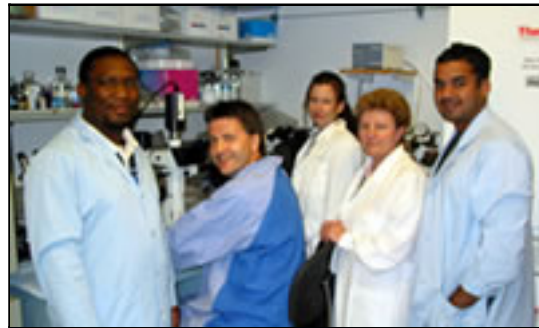
commitment to support the work of the OCAS Advisory Board on Radiation and Worker Health. By effectively managing both complex and essential, routine tasks, Zaida immediately made a noticeable impact among the board and its staff members.

### **Kimberly Reeves Receives Award for Workplace Diversity**

On March 25, Kimberly (Kim) Reeves, Public Health Analyst for DSHEFS, was awarded NIOSH's Dr. Marvin D. Mills Award for Workplace Diversity in a ceremony at the Alice Hamilton Laboratory in Cincinnati, Ohio. Ms. Reeves works tirelessly to improve the recruitment, hiring, promotion, and retention of a diverse workforce. Her efforts encourage the growth and development of diversity within DSHEFS and within the Agency overall. She continually works diligently to enhance integrity and fairness in all interactions that affect Division staff.

### **Diversity at NIOSH Morgantown**

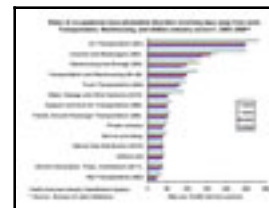
Diversity enriches research. In this photograph, NIOSH employees and fellows from five countries collaborate on advanced research in NIOSH's Health Effects Laboratory Division in Morgantown, West Virginia, to develop new and better ways to identify and measure occupational allergens. Detlef Schmechel (Germany), Tinashe Ruwona (Zimbabwe), and Erika Janotka (Slovakia) produce monoclonal antibodies which are used to measure allergen levels in different samples. Francoise Blachere (USA) and Ajay Nayak (India) work on identifying allergens in fungi and markers of fungal exposure.



*Photo by Kimberly Clough Thomas*

### **MSDs in the Transportation, Warehousing, and Utilities NORA Program Sector**

The rate of musculoskeletal disorders (MSDs) across all U.S. private industry decreased from 49.6 per 10,000 in 2003 to 38.6 in 2006. The Transportation and Warehousing (NAICS 48–49) sector rates were consistently higher by more than two-fold, with very high rates reported by employers for two subsectors: Air Transportation (NAICS 481), with a rate more than five times greater than the U.S. private industry rate; and Couriers and Messengers (NAICS 492), with a rate more than 3.6 times greater than the U.S. private industry rate. The graph showing this data is available at <http://www.cdc.gov/niosh/enevents/enevents6n12chart.html>.



## New Health Hazard Evaluation Report Now Available

The NIOSH Health Hazard Evaluation (HHE) Program evaluated potential chemical exposures at a metal furniture manufacturing facility. Investigators recommended that the facility use powder paints that do not contain 1,3,5-triglycidyl isocyanurate and welding wire that does not contain manganese. It was also recommended that spot cooling fans and exhaust fans be installed in the paint booth room to control heat stress and exhaust fans be installed in the welding area to remove welding fumes. Employees were instructed to notify their supervisor about any work-related health problems. <http://www.cdc.gov/niosh/hhe/reports/pdfs/2007-0199-3075.pdf>.

## New Fire Fighter Fatality Investigation Reports

NIOSH recently released the following Fire Fighter Fatality Investigation Reports:

Volunteer fire fighter dies while performing exterior fire suppression at a large machine shed fire—Illinois (F2008-20) <http://www.cdc.gov/niosh/fire/reports/face200820.html>

Volunteer deputy fire chief dies when struck by motorized water monitor that "launched" off aerial ladder truck—Pennsylvania (F2008-12) <http://www.cdc.gov/niosh/fire/reports/face200812.html>

Fire fighter suffers fatal heart attack at fire at his residence—Florida (F2002-22) <http://www.cdc.gov/niosh/fire/reports/face200222.html>

Engineer suffers fatal heart attack at scene of residential fire—Michigan (F2008-15) <http://www.cdc.gov/niosh/fire/reports/face200815.html>



Fire fighter-emergency medical technician suffers sudden cardiac death during overhaul—New York (F2008-13) <http://www.cdc.gov/niosh/fire/reports/face200813.html>

## **Draft Alert Docket Comments Posted**

On March 20, NIOSH posted a docket of public comments received from a December 2008 notice asking for comment on a draft NIOSH Alert. The Alert will provide findings and recommendations for preventing the deaths of fire fighters when fighting fires in unoccupied structures. Between 1998 and 2007, 72 fire fighters died during such operations. <http://www.cdc.gov/niosh/docket/nioshdocket0141.html>

## **Public Comment Wanted!**

## **NIOSH Seeks Input on Childhood Agricultural Injury Prevention Initiative**

The most recent annual statistics reviewed by NIOSH revealed that 27,600 youths suffered injuries on farms. To assess ongoing needs for research to prevent these injuries, NIOSH invites comments on the NIOSH Childhood Agricultural Injury Prevention Initiative, originally established in 1996. What progress has been made since 1996? What needs, as suggested by the injury statistics, remain to be met? Deadline for comments is May 15. <http://www.cdc.gov/niosh/review/public/145/>

## **NIOSH Seeks Comments for Draft Personal Protective Technology Implementation Plan**

Public comment on this plan will help ensure that NIOSH has identified stakeholder needs for new research on respirators and other types of personal protective equipment in the 21<sup>st</sup> century workplace and has designed an effective research plan to meet those needs. Deadline for comments is April 20, 2009. <http://www.cdc.gov/niosh/review/public/146/>

## **R2p corner**

## **NIOSH Seeks Partners**



To better improve safety and protect workers, NIOSH developed the JamAlert system which automatically terminates power to a machine when a jam is detected and initiates a system that prevents the machine from being turned back on before the jam is cleared. This technology was granted a patent (US 7,493,854) on February 24, 2009. The newly developed JamAlert could be adapted to machinery that is prone to jamming and/or requires a secondary level of lock-out control. NIOSH is interested in identifying partners to further test and move the technology into the workplace. To learn more about this partnering opportunity contact John Powers ([Jpowers@cdc.gov](mailto:Jpowers@cdc.gov)).

## NORA

### NORA Liaison Committee Public Meeting Announced for June

The next NORA Liaison Committee meeting, *Partnerships to Advance the National Occupational Research Agenda*, will be held June 17, 2009, in Washington, DC. Attendees can also participate online. Representatives of organizations with a national scope (employers, unions, professional associations, and others) learn about the progress of NORA and identify possible partnerships with each other or with NIOSH. Details on the meeting have been posted at <http://edocket.access.gpo.gov/2009/E9-4318.htm>. For more information or to preregister to attend in person or online, contact the NORA Coordinator [noracoordinator@cdc.gov](mailto:noracoordinator@cdc.gov).



## News from Our Partners

### Crossing Guards At Risk for Traumatic Injuries

A common but inconspicuous occupation, the school crossing guard, was the subject of a New Jersey hazard alert and educational outreach after NIOSH-funded researchers investigated a work-related fatality under the Fatality Assessment and Control Evaluation (FACE) Program. NJ FACE researchers developed a hazard alert ([http://www.nj.gov/health/surv/documents/njcrossing\\_guards.pdf](http://www.nj.gov/health/surv/documents/njcrossing_guards.pdf)) for school crossing guards, and a survey was sent to crossing guards' police department employers as part of an occupational health surveillance intervention project to prevent worksite injuries and raise awareness of the hazards associated with this occupation. A final report on this project can be found at: <http://www.nj.gov/health/surv/documents/xguardsrpt.pdf>.



## Traffic Hazards of Moving Ag Equipment on Rural Roadways



*Agricultural Equipment on Public Roads* presents current and future issues associated with traffic hazards related to the movement of agricultural equipment on rural roadways. Released by the United States Department of Agriculture's North Central Education/Extension Research Activity Committee 197 on Agricultural Safety and Health Research and Extension (NCERA-197), this document contains research recommendations to address these issues and is available at [http://www.csrees.usda.gov/about/white\\_papers/pdfs/ag\\_equipment.pdf](http://www.csrees.usda.gov/about/white_papers/pdfs/ag_equipment.pdf). For more information, contact Dr. Dennis Murphy, Chair of the NCERA 197 Committee, at (814) 865-7157 or [djm13@psu.edu](mailto:djm13@psu.edu).

## New Communication Products

### New NIOSH Document Addresses Crane Operators to Prevent Electrocution

On March 3, NIOSH issued technical findings from research evaluating two alarm systems, called "proximity warning devices," for preventing crane operators' risk of electrocution from the unintended contact of cranes with overhead power lines. Contacts between cranes and energized power lines account for 20 percent of work-related electrocutions. <http://www.cdc.gov/niosh/mining/pubs/pubreference/outputid3068.htm>

### Got germs? Zap 'em the High Tech Way!

New NIOSH document offers new, research-based guidelines for healthcare facilities on the use of UV light to kill tuberculosis bacteria as part of strategic systems to protect employees from risk of work-related infection. <http://www.cdc.gov/niosh/docs/2009-105/>

To see other new NIOSH communication products, including documents and new and updated topic pages, go to the NIOSH "What's New" page. <http://www.cdc.gov/niosh/whatsnew/>.

## Call for Abstracts

### Colloquium of the ISSA International Section for Research on Prevention—Deadline April 14, 2009

October 15–16, 2009, Dresden, Germany. Request for papers.

<http://www.dguv.de/bgag/de/veranstaltungen/weitere/ivss-kolloquium/index.jsp>

## 2009 National Environmental Public Health Conference, Healthy People in a Healthy Environment —Deadline May 8, 2009

October 26-28, 2009, Atlanta GA. Call for abstracts.

<http://www.team-psa.com/2009nephc/main.asp>

### Upcoming Conferences

A comprehensive list of upcoming conferences can be found at <http://www.cdc.gov/niosh/exhibits.html>.

### Word of the Month

**WorkLife:** WorkLife at NIOSH refers to the NIOSH WorkLife Initiative. This Initiative kicked off in 2004 and seeks to better understand and promote the kinds of work environments, programs, and policies that result in healthier, more productive workers with reduced disease and injury and lower healthcare needs and costs. It is based on a foundational commitment to workplaces free of recognized hazards and the idea that better work-based health policies and programs can help to sustain and improve the health and wellbeing of workers.

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