The Safety Net

In this issue:

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The Large Questions About Health Impacts from Tiny Nanoparticles by Sandy Smith

With little industry-specific regulation, some occupational health specialists and researchers are concerned that nanomaterial manufacturers and downstream users have been operating like the Wild West, with many of them unaware or choosing to ignore the potential dangers to workers handing particles so small that 100 million nanoparticles could fit on the head of a pin.

A new study, which examines the case of a chemist who formulated polymers and coatings and developed symptoms related to the use of nickel nanoparticle powder, provides new insight into the use of nanomaterials and the impact the lack of personal protective equipment (PPE) or engineering controls could have for many nano workers.

The 26-year-old, non-smoking, female chemist worked as a formulation chemist for 3 years in an industry involved with making metallic inks for various applications. She had no symptoms when doing work that involved formulating polymers and making coatings, nor when working in the same laboratory with metal -plating baths.

She usually used silver ink particles, but within one week of starting to work with nickel nanoparticle powder weighed out and handled on a lab bench with no protective measures, she began to develop throat irritation, nasal congestion, post-nasal drip, facial flushing and new skin reactions to her earrings and belt buckle.

Airborne nanoparticle sampling was not performed at the company, and therefore was not available to determine the exposures of workers to nanomaterials.

After returning to work following some time off, the chemist experienced a return of the symptoms – even when working in other parts of the building – so she went to see an occupational physician. The occupational physician spoke with the company doctor about the need for further assessment and a change in how the nanoparticles were being handled.

Eventually, the chemist had to move to another lab that had no metal chemistry work and her symptoms improved dramatically.

W. Shane Journeay, Ph.D., M.D. and Rose H. Goldman, M.D., MPH, examined the case of the chemist in a study published in the American Journal of Industrial Medicine, "Occupational Handling of Nickel Nanoparticles: A Case Report."

As Journey and Goldman point out in the study, "Nanotechnology applications continue to be used in an increasingly diverse manner in the workplace, resulting in engineered nanoparticles with unique properties. The science of nanotoxicology is also developing as the unique physicochemical properties of nanoscale materials are discovered."

While nanotechnology has some amazing properties that dramatically will change many products, the study by Journeay and Goldman reveals those same amazing, game-changing properties can be harmful to unprotected workers. They also raise a lot of questions about potential health impacts.

Currently, there are thousands of U.S. workers handing nanoparticles, according to Journeay, and by 2020 there will be an estimated 6 million workers handling nanoparticles worldwide with 2 million of them in the United States.

"The implementation of nanotechnology into the workplace poses a challenge for occupational risk assessment because of difficulty isolating exposures to specific types of nanoparticles and determining the presence or absence of nanoparticle toxicity," Journeay and Goldman noted in their study.

Workers may not know they are or were exposed to nanomaterials until they suffer an adverse reaction, said Journeay. "The major difficulty is lack of awareness of the differences in handling nanomaterials," he noted. "Many of the nanomaterials will be benign where others will be a problem and ... we are finding that many companies do not have a full understanding of the nuances of nanoscale EHS. This ranges from management to the workers and therefore, if they treat nanomaterials like traditional chemicals, they may not realize the need for PPE."

Acute exposures can lead to symptoms such as congestion, headache, dermatitis, occupational asthma,

(continued on page 3)

CPR & First Aid Classes Available at the Student Life Center

Baylor Campus Recreation offers both CPR/AED and First Aid certification classes to current Baylor students, faculty and staff. Courses are designed to meet OSHA regulations and current recommendations for workplace training programs. Classes are held in the Student Life Center (SLC).

CPR/AED Certification: This is a 2.5 hour course in which the student will learn techniques such as Cardiopulmonary Resuscitation (CPR) and how to deal with airway obstructions for choking situations. These important skills are demonstrated and described for the adult, child and infant casualty. This program will also help the student to recognize and treat for someone who is suffering from a Heart Attack or Stroke, which are America's # 1 killers, also known as cardiovascular disease. Following successful completion of the course, participants are issued Course Completion Card that is valid for two years.

Bring your Baylor ID and sign up at the SLC front desk. The course fee is $25, and the course is held in room 308 (unless otherwise noted).

Classes are held on the following days:

Tuesday, September 16: 5:30 p.m. - 8:00 p.m.
Tuesday, September 23: 5:30 p.m. - 8:00 p.m.
Friday, September 26: 6:00 p.m. - 8:30 p.m.
Sunday, September 28: 2:00 p.m. - 4:30 p.m.

Monday, October 6: 7:00 p.m. - 9:30 p.m.
Friday, October 10: 3:00 p.m. - 5:30 p.m.
Tuesday, October 14: 5:30 p.m. - 8:00 p.m.
Tuesday, October 21: 5:30 p.m. - 8:00 p.m.
Friday, October 24: 2:00 p.m. - 4:30 p.m.
Sunday, October 26: 2:00 p.m. - 4:30 p.m.
Tuesday, October 28: 5:30 p.m. - 8:00 p.m.

Tuesday, November 4: 5:30 p.m. - 8:00 p.m.
Friday, November 7: 6:00 p.m. - 8:30 p.m.
Sunday, November 9: 5:00 p.m. - 7:30 p.m.
Tuesday, November 11: 5:30 p.m. - 8:00 p.m.

Friday, December 5: 3:00 p.m. - 5:30 p.m.
Sunday, December 7: 2:00 p.m. - 4:30 p.m.
(Room 314)

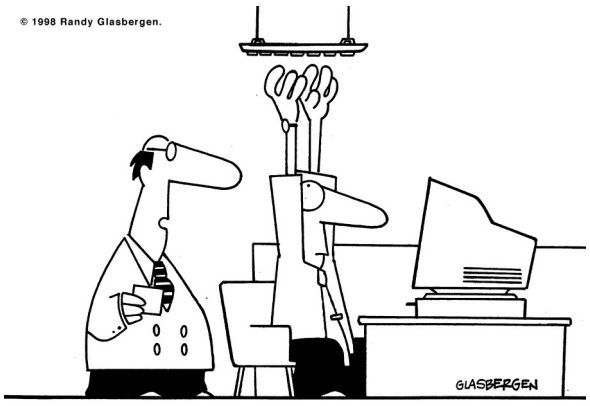
First Aid Certification: This 4.5 hour course approved by American Environmental Health and Safety & American CPR Training, this program shows how to handle various impact injuries that may arise at home, work or play. This class provides the participant with knowledge and skills required to recognize and treat injuries such as major external and internal bleeding. Students will also learn first aid for wounds such as cuts, scrapes, bruises, infection, impaled object, amputation, eye injury, and nosebleed. Also covered is proper burn care for minor and major burns caused by heat, chemical, electrical and by the sun. Participants will also learn how to provide first aid for a bone, muscle or joint injury. Also included is when and how to properly splint or sling an injured body part. Following successful completion of the course, participants are issued Course Completion Card that is valid for two years.

Bring your Baylor ID and sign up at the SLC front desk. The course fee is $35, and the course is held in room 308.

Classes are held on the following days:

Thursday, October 2: 5:00 p.m. - 9:00 p.m.
Saturday, October 25: 10:00 a.m. - 2:00 p.m.

On The Lighter Side



"Suspending your keyboard from the ceiling forces you to sit up straight, thus reducing fatigue."

Used with permission from Randy Glasbergen.

Dear EH&S

Dear EH&S,

What are "ergonomics"?

-Inquiring Mind

Dear Inquiring,

If you want a formal definition, ergonomics is "a science dealing with the application of information on human physical and psychological characteristics to the design of the work environment"[1]. To put that into plain terms, it's designing the work to fit the worker.

If you do one thing over and over again for a long period of time, it can cause injury. Carpal tunnel syndrome is a well-known example of a repetitive use injury.

Office work is an area where ergonomics can come heavily into play. The chair, the desk, the positioning of the keyboard and screen—all of these are variables that can be fit to the worker. This allows for an individual fit that is comfortable for the worker and hence increases productivity.

If you are interested in an ergonomic assessment of your work station, please contact Kenneth_OConnor@baylor.edu.

[1]Nims, Debra K. (1999). *Basics of Industrial Hygiene*. New York, NY: John Wiley & Sons, Inc.

NIOSH Launches "Buy Quiet" Initiative

News release– Figuring out how to turn down the noise in the workplace just got easier with the release of new Buy Quiet web resources from the National Institute for Occupational Safety and Health (NIOSH). The new, easy to use materials highlight the benefits of a Buy Quiet program, explain how to establish a program in your workplace, and provide additional resources for finding quieter tools and machinery.

The Buy Quiet initiative encourages companies to purchase or rent quieter machinery and tools to reduce noise exposures for workers, helping to prevent work-related noise-induced hearing loss. Noise-induced hearing loss is the most common work-related injury in the United States; approximately 22 million U.S. workers are exposed to hazardous noise exposures at work each year.

"Work-related noise-induced hearing loss is preventable and, with these new resources, NIOSH is working to help employers make better decisions that will have a lasting impact on the quality of life for their workers," said NIOSH Director John Howard, M.D. "Buy Quiet programs, as part of our Prevention through Design initiative, provide a way to create inherently safer worksites that benefit both workers and employers in improving the health and safety of our nation's workforce."

A Buy Quiet program can help to decrease the risk of hearing loss at the worksite, minimize the impact of noise on communities, and assist companies in complying with the Occupational Safety and Health Administration (OSHA) and other noise regulation requirements.

The new resources from NIOSH are intended for employers to use as part of Buy Quiet programs or to help them take the first steps in considering how Buy Quiet can improve their workplace. The newly released Buy Quiet resources include a video, several posters, and links to partner Buy Quiet websites. The materials and more information about NIOSH's Buy Quiet efforts can be found by going to http://www.cdc.gov/niosh/topics/buyquiet/.

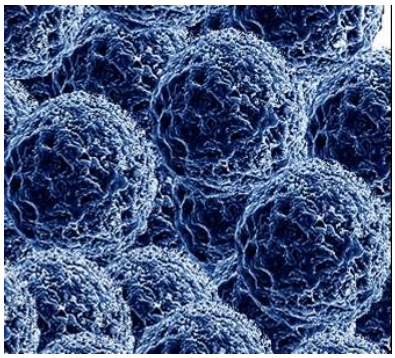
NIOSH's Buy Quiet effort is part of the broader Hearing Loss Prevention Program, which conducts research on the causes of occupational hearing loss and works to deliver practical prevention solutions to employers. More information on NIOSH's Hearing Loss Prevention Program can be found at http://www.cdc.gov/niosh/topics/noise/. Buy Quiet is also a specific application of the NIOSH Prevention through Design (PtD) Initiative, which can be found at http://www.cdc.gov/niosh/topics/PTD/.

Nanoparticles (continued from page 1)

cough, fatigue and allergic reactions. Few doctors in the world are trained in nanotoxicology. The chemist who was the subject of the study by Journay and Goldman originally was diagnosed with a sinus infection by a regular physician. There are some traditional occupational health effects that can be diagnosed by existing methods, however, it is deciphering the exposure that the worker has had to true nanoparticles that few physicians adequately are trained to assess.

"We feel that increasing awareness through training and education about nanomaterials EHS is crucial," Journeay told EHS Today. "Nanotechnology in the workplace is becoming more widespread and advanced and companies should get assistance in tackling these problems. If companies want to lead in the area of nano EHS, they should find specialized help to determine that good practices are in place or whether there is a need for new measures to protect workers."

Used with permission from EHS Today. http://ehstoday.com/health/large-questions-about-health-impacts-tiny-nanoparticles



Web Bytes

The "Laboratory & Chemical Safety" section of the EH&S website contains information on safety programs that apply primarily to work in a campus laboratory.

Included in this section are the following:

Animal Worker Program: The Occupational Safety & Health Program for researchers working with animals.

Biological Safety: Information on Biosafety, link to Biosafety Committee.

Chemical Hygiene: Information on compliance with OSHA's Laboratory Standard

Chemical Storage: Information on Compatibility and proper storage.

Chemical Waste Handling: Proper handling and disposal guidelines, with links to waste forms.

Emergency Response in Laboratories: Information on the various types of incidents that might occur.

General Chemical Awareness for Office Personnel: An educational presentation for persons who do not work with chemicals, but work in areas where chemicals are nearby.

Hazard Assessment Table: Outlines the various hazards possible in a lab, and appropriate precautions to take.

Lab Close Out Procedure & Checklist: Information for when a lab is decommissioned.

Lab Equipment Decommissioning: Information on proper moving or removal of lab apparatus.

Laboratory Inspection Program: Outlines the various parts of the program.

Laboratory Safety Committee: Information on membership and meeting summaries.

Laboratory Safety Manual: Extensive reference covering safety in the lab.

Laboratory Safety Training: Requirements, registration, and training options.

New Faculty & Staff Hires: Information for new employees to aid in getting their labs up and running.

Did You Know?

Baylor became a tobacco-free, smoke-free campus on August 11 of this year. This prohibits the use of all tobacco products, including e-cigarettes, on all university-owned property.

As more places in the developed world move to be tobacco and smoke free, the industry is rapidly expanding in the developing world.

In the 20th century, there were an estimated 100 million tobacco-related deaths. The projected estimate for this century is a staggering 1 billion!

At present, there are an estimated 1.1 billion tobacco users in the world, and that number is expected to rise to 1.6 billion in the next 20 years.

China ranks first on the list of top cigarette consuming countries, consuming a total of 38% of the world's cigarettes and more than the other top four countries combined.

Coming in second on the list of top countries is the Russian Federation, followed by the United States, Indonesia, and Japan.

Combined, these top five countries accounted for the consumption of 3.5 trillion cigarettes.

-Information from www.tobaccoatlas.org

Bringing Safety Home: National Preparedness Month

September is National Preparedness Month. The Federal Emergency Management Agency (FEMA) asks that families and workplaces take action by planning a National PrepareAthon Day on or around September 30th.

You can register for the National PrepareAthon Day by visiting: www.ready.gov/prepare. Registration will give you access to exclusive resources, and you will be able to collaborate in communities of practice, regional groups, national forums, and also to get updates from FEMA and emergency management personnel.

While you're on the site, you'll also be able to access information on various types of hazards, such as: earthquake, flood, hurricane, tornado, wildfire, and winter storm. Each of these areas will contain information on the hazards and how to prepare for them.

As of the time of this article, over 13 million participants had registered for the PrepareAthon, including the EH&S staffer who is writing this article.

This is not the only way you can take part in National Preparedness Month, though. You can also take a look at your own emergency preparedness.

Here are some questions to consider:

- Do you have emergency supplies in your home, your office, and your car?
- Do you have an emergency plan for your family?
- Do you know what to do in case of an emergency here on campus?

FEMA statistics say that only roughly 50% of people have made emergency preparations. If you are among the people who have not, now is an excellent time to start.

-Information from www.ready.gov

What We're Working On

As Baylor gears up for Homecoming, Ken O'Connor and Cody Rogers are involved with ensuring the safety of the floats being built for the parade. They'll be checking on things periodically through the building process, to make sure that everyone involved in the floats can have a safe and wonderful Baylor Homecoming experience. Sic 'em, Bears!

The new stadium is open and it is spectacular! Jim Karban, Brent Jones, and Ken O'Connor have been involved with health and safety inspections and patrolling during the game day festivities. Look for them at home games throughout the season.

There will be a meeting of the Lab Safety Committee 10-13.

Laboratory inspections have begun for the semester and will involve various labs in the Chemistry, Geology, and Physics departments.

At last check, the sheetrock had been put up in our new office suite and work was continuing. Estimates have us moving over to Draper before the end of the calendar year.

Current Live Training Schedule:

http://www.baylor.edu/ehs/index.php?id=98325

Training Matrix:

http://www.baylor.edu/ehs/doc.php/203191.pdf

Online trainings available through Blackboard

"The Safety Net" is published by the Department of Environmental Health & Safety 10 months a year and intended to share information with the Baylor community, promote transparency within the university's safety program, and encourage the continued development of a culture of safety among university employees and students.
Comments, questions, and ideas for future stories are welcomed. Email: ehs@baylor.edu