

**Meeting Minutes
Board of Scientific Counselors
National Institute for Occupational Safety and Health
395 Patriots Plaza, SW
Washington, DC 20201
September 27, 2016**

NIOSH Board of Scientific Counselors (BSC) Board Members in Attendance:

Terry Bunn (No conflicts)
Lamont Byrd (No conflicts)
Theodore Courtney (No conflicts)
James Frederick (No conflicts)
MaryAnn Gruden (No conflicts)
Grace Lemasters (No conflicts)
Judith McKenzie (No conflicts)
Mark Nicas (No conflicts)
Charles Redinger (No conflicts)
Bonnie Rogers (No conflicts)
Jaswant Singh (No conflicts)
Ron Stout (No conflicts)

On the phone:

Sharon Cooper (Co-investigator, R03)

Designated Federal Official

Paul Middendorf, NIOSH

The meeting started at 8:30 am with a quorum present. Paul Middendorf provided emergency procedures and evacuation instructions for the Board members. Dr. Middendorf also discussed the rules of the BSC and the regulations that apply to the Board. No one has signed up for public comments. The agenda was reviewed.

Introductions of Others in Attendance at Patriots Plaza:

Fred Blosser, NIOSH
Christine Branche, NIOSH
Brian Curwin, NIOSH
Kevin H. Dunn, NIOSH
Christy Forrester, NIOSH
Alberto Garcia, NIOSH
Duane Hammond, NIOSH
Ryan Hill, NIOSH
Marna Hoard, NIOSH
John Howard, NIOSH
Margaret Kitt, NIOSH
John Piacentino, NIOSH
Janice Scott Blanton, NIOSH
Christy Spring, NIOSH
Julieta Rodriguez-Guzman, PAHO
Megan Clayton, RTI International
Brenda Kay Zylstra, ASSE

The minutes from the previous meeting were reviewed carefully. One correction was suggested to the title of MaryAnn Gruden. The BSC approved the minutes. There were no additional announcements.

Director's Remarks

Dr. Howard gave a NIOSH update. A copy of the Director's talking points was distributed to BSC members and the complete copy of the talking points are included in Appendix B. The remarks follow a standard format. The report is also published to the NIOSH BSC website.

FY 2017

Both House and Senate call for a reduction to the NIOSH FY 2017 budget.

- Senate Committee recommends a funding level of \$334.1M. Which is a \$5M reduction from the FY 2016 Enacted level.
- Reduction to be taken against the All Other OSH budget line.
- House Committee recommends a funding level of \$329.1M, which is a \$12.7M reduction from the FY2016 Enacted level.
- House Committee recommends \$1M increases for AgFF and ERC's respectively; and a \$700K increase to the Mining Research Program. The language also calls for a \$12.5M reduction to the All Other OSH budget line.

Cincinnati Combined Facility

The House rescinds any unobligated funding in the HHS Non-expiring Fund to zero. This rescission would eliminate the funding previously appropriated for the facility. The Senate provided no specific language, although the language does request a transfer of \$300M to NIH for biomedical research.

Personnel Announcements

CAPT W. Gregory Lotz, Ph.D., Director of the Division of Applied Research and Technology (DART), completed 30 years of distinguished federal service and retired on June 1, 2016, after 40 years of federal service, including active duty and civilian service with the U.S. Navy, and the last 24 years at NIOSH. CAPT Gayle DeBord, Ph.D. will serve as Interim Director of the Division of Applied Research and Technology, effective June 1, 2016.

Pam Drake, MPH has been appointed as the Deputy Director of the Spokane Mining Research Division (SMRD), effective August 10, 2016.

R.J. Matetic, Ph.D., has been appointed as the Director for newly MASO-designated Pittsburgh Mining Research Division (PMRD), effective August 1, 2016.

Kent Slakey has been appointed as the Associate Director for Human Capital Management at the National Institute for Occupational Safety and Health effective June 27, 2016.

Kara Perritt was appointed as permanent Western States Division (WSD) Deputy Director. Kara has been serving as the Interim WSD Deputy Director in Spokane, WA since February 2016 and has been instrumental in standing-up the new WSD, including implementing the important infrastructure essential for establishing a Division.

Currently or Recently Available for Public Review and Comment

Recently closed. Docket: 289: National Institute for Occupational Safety and Health (NIOSH) Quality Assurance Review of B Readers' Classifications Submitted in the Department of Labor (DOL) Black Lung Benefits Program draft.

Recently closed: External Review Draft: NIOSH Current Intelligence Bulletin: Health Effects of Occupational Exposure to Silver Nanomaterials. It contains a review and assessment of the scientific literature on the toxicological effects of exposure to silver nanoparticles in experimental animal and cellular systems, and on the occupational exposures to silver dust and fume and the associated health effects. It evaluates the scientific evidence on the role of particle size on the toxicological effects of silver, including the basis of the current NIOSH recommended exposure limit (REL) for silver.

Recently closed: External Review Draft: NIOSH Criteria Document on Occupational Exposure to 1-Bromopropane. It provides a comprehensive summary of the health effects, exposure data, quantitative risk assessment, and recommendations for controlling exposures in the workplace. 1-Bromopropane is an organic solvent used in manufacturing processes, degreasing operations, cleaning electronics and metal, aerosol applied adhesives, and as an alternative solvent in the dry cleaning industry.

New Programs and Initiatives

RAND Released Report on OSH Systematic Review: A new RAND report commissioned by NIOSH, Systematic Reviews for Occupational Safety and Health Questions—Resources for Evidence Synthesis, is now available. This is important for occupational safety and health questions. This report will add to our fund of knowledge on how to do systematic reviews. The BSC members were encouraged to look at the report.

Easy Access to NIOSH Engineering Control Solutions: NIOSH's new Engineering Controls Database contains descriptions of controls, effectiveness summaries, and schematics of engineering control technology evaluated by NIOSH during laboratory and field investigations. Since the Occupational Safety and Health Act was established in 1970, NIOSH has been developing valuable information, best practices, and guidance on engineering controls addressing a variety of workplace hazards. If you have any questions or need additional information, send an email to ecd@cdc.gov.

On October 19, NIOSH will celebrate the 20th anniversary of the dedication of its Health Effects Laboratory in Morgantown, W.Va. Since its inception, the state-of-the-art facility has led world-class research on an enormous range of high-priority issues. A NIOSH Science Blog will discuss these accomplishments in conjunction with the anniversary.

NIOSH Social Media

NIOSH social medial presence was highlighted and the metrics in the Directors' Remarks

Total Worker Health

NIOSH BSC members are cordially invited to attend a Total Worker Health® Research Methodology Workshop currently scheduled for December 6 – 7, 2016 (venue is yet to be determined and virtual attendance may be possible). More information will be forthcoming from Alberto after the venue and virtual attendance is determined. The purpose of the workshop is to review current methodological approaches and limitations to TWH-related research by TWH researchers themselves and other attendees. The workshop will also explore methods that have the most promise to advance the scientific evidence base. The workshop is planned in response to recommendations included in the NIH Pathways to Prevention workshop report published August 16, 2016 in the Annals of Internal Medicine which can be found at <http://annals.org/article.aspx?articleid=2525718>. Specifically, Recommendation 1 from the Panel reads as follows: "The NIH and Centers for Disease Control and Prevention, along with other funders and stakeholders (for example, private-sector organizations and foundations), should engage key stakeholders to identify and prioritize research needs." Dr. Chosewood will attend the workshop and make a presentation to the BSC on the discussions that occurred at the Workshop.

Today's meeting will include four presentations seeking advice. The purpose of the committee is to receive Board members' ideas on what NIOSH is doing for relevance and impact. NIOSH asked the committee members to give advice during the presentations.

Questions or Comments for the Director

There may be a conflict with the dates of the TWH meeting and an epidemiology meeting.

Charles Redinger - Is the list of publications, new publications since the last meeting? Yes.

Bonnie Rogers – Any anticipation of the budget? Dr. Howard mentioned that it is not clear yet.

Sharon Cooper – Is there an update for NORA 3? Lore Jackson-Lee mentioned that various activities are going on with the roll out of NORA 3. The roll out is being timed with the beginning of the Fiscal Year which is October 1st. A new NORA website is available and an article. The NORA link is:
<http://www.cdc.gov/niosh/nora/default.html>. We have Sector Council meetings scheduled. Please note the addition of 7 outcome-based cross sectors.

Presentation

Chronic Kidney Disease and Pesticide Exposure in Central American Sugarcane Workers

Dr. Brian Curwin, Deputy Branch Chief, Industrywide Studies Branch, NIOSH

Margaret Kitt, NIOSH

Dr. Kitt provided a brief background of NIOSH interest in Chronic Kidney Disease (CKD) in sugar cane workers. The description included initial cases of CKD brought to NIOSH's attention and a discussion and technical assistance request from PAHO.

Julietta Rodriguez-Guzman, PAHO

The CKD is a problem that seems to be going on for over 30 years, but only recently identified. The identification happened through involvement of a journalist. This was brought to the attention of PAHO. PAHO estimates that around 30,000 male sugar cane workers have died due to CKD over a 12-year period. The working conditions are poor. When workers reach the country health service, it is when they are already symptomatic. These cases have overwhelmed country resources for dialysis. The Ministry of Health of El Salvador brought this to the attention of PAHO as well. PAHO noticed that this was affecting agriculture workers and realized that additional information/research was needed. PAHO needed to document the working conditions and health conditions of workers. PAHO has engaged in 3 projects. PAHO is concerned about heat stress and extreme weather conditions. The conditions are harsh and workers work more than 12-hours per day. Workers are paid by the product, which typically averages at \$2 per day. During the past three years, there has been increased documentation of these issues. There are still other risk factors to be examined including pesticides and others. The intervention research by NIOSH has been helpful. PAHO has created a working group and hoped to keep collaborating with NIOSH and other organizations in addressing the CKD epidemic.

Brian Curwin, NIOSH

Dr. Curwin mentioned that young males are affected by this disease. In the last 10 years, 20,200 people have died due to this condition. The condition affects hot areas of the world including Latin America, India, Sri Lanka and Southeast Asia. It affects the agriculture industry. Research suggests that CKD is multi-causal and occupational and exacerbated by heat stress and high work load. Repeated kidney damage culminates in loss of function. NIOSH is collaborating with the Worker Health and Efficiency Program. Several risk factors are being investigated including dehydration, excessive workload and heat stress, toxicant exposures, anti-inflammatory consumption and infectious disease. One aspect of prevention is access to water and mandatory rest breaks. Improving cutting practices and using an improved machete may reduce required cutting effort and improve productivity. One theory is that chronic and severe dehydration may amplify the health effects of pesticides. Harvesting of sugar cane is done manually in many countries, including El Salvador. Glyphosate is applied as a ripening agent 28-49 days prior to harvest. Just before harvesting, the sugar cane is burned to facilitate cutting. There is some research to suggest that pesticides may be a co-etiological factor. Additional recent research was reviewed. A description of the NIOSH engagement was presented.

Ron Stout – Does the condition affect women. Brian responded that there are women engaged in cutting. Julietta Rodriguez-Guzman also mentioned that there are data for women in the highlands.

Bonnie Rogers – Were any of the women pregnant? Brian responded that was not in our study.

Jaswant Singh – Did you notice if there was crystalline silica present? Brian responded that we analyzed for silica in samples, but did not find any on the samples.

Grace Lemasters – Do workers wear gloves? Brian responded that the practices are variable. If workers wear gloves it would typically be a single glove on the grabbing hand.

Bonnie Rogers – What about ergonomic issues? Brian mentioned that there have been studies that address ergonomic outcomes.

Lamont Byrd – Are there any moving vehicles? Brian mentioned that there are trucks on the site and heavy equipment machines to collect the cut cane.

Grace Lemasters – Could you do an analysis to separate workers wearing gloves and workers not wearing gloves and then analyze for pesticides? Brian mentioned that we could conduct this analysis.

Jaswant Singh - Could you try a different method for sampling for pesticides like a particle counter? Brian mentioned that if we went back, we would try different methods.

Mark Nicas - What do you get if you burn glyphosate? Brian mentioned that we wanted to sample for polycyclic aromatic hydrocarbons (PAHs).

James Frederick – Is there an accelerant to burn the cane? Brian mentioned that there may be.

Theodore Courtney – Looking for combustion byproducts would be important. Is burning of cane a standard practice? Brian mentioned that it is a standard practice in Central America. There is some green harvesting of cane for seed.

Lamont Byrd – How long is the season? Brian said the harvesting season is from November to March or April (in El Salvador).

Paul Middendorf – Has anyone looked at the contribution of the residual heat from burning the sugar cane? They are already in a hot field.

James Frederick – Is there any common work outside of the months of harvest? Julieta Rodriguez-Guzman mentioned that most of this workforce is temporary worker. Following this cohort is difficult. They come from poor communities. When father dies, then the younger son covers the position. The other part of the problem the way that workers are employed. Some cutters are hired by third parties and not the company. So the employment conditions are precarious. This is a generational process.

Bonnie Rogers – Is the age relatedness due to the fact mostly young men do the work? Julieta Rodriguez-Guzman mentioned that young men do the work because the father died. The disease causes death early in a worker's career.

Judith McKenzie – Is this a new disease or is it now due to increased recognition? Julietta Rodriguez-Guzman mentioned that it was recognized 30 years ago, with an increase in recognition more recently.

Judith McKenzie – I liked the improvement in the machete as a resource to encourage workers to take a break.

Grace Lemasters – A case control study might help answer who would get the disease and why. Not everyone gets kidney disease. What are the characteristics of those that get the disease? Do you have demographics between groups of cutters? In El Salvador coastal areas get the disease.

Julieta Rodriguez-Guzman mentioned that sugar cane cutters get the disease. We do not know who are the burners and the applicators of glyphosate. They may be workers hired by the company.

Margaret Kitt – There are periodic meetings of researchers.

Bonnie Rogers – Is child labor an issue? Brian mentioned that there can be children of 12 and 14 years old.

Terry Bunn – You could look at the appropriate type of glove for workers.

Mark Nicas – Do you see this disease in US workers that pick hot crops? – Brian mentioned he has a slide on this.

Ron Stout – Why focus on 2,4D? Brian mentioned that 2,4D was selected because it is a commonly used pesticide.

Judith McKenzie – It would be interesting to look at the women and their rates? They may not be as involved in the cutting.

Bonnie Rogers – Do the workers receive education? Brian mentioned that workers do not receive much information at all.

Sharon Cooper – I suggest that you look at other NIOSH research. For example, look at construction workers or migrant and seasonal farm workers in the US. You could look at linking electronic health records to meteorological databases for temperature and hydration records. They might be helpful to look at renal markers.

Terry Bunn – Through SOUTHON we are collecting data on firefighters.

Bonnie Rogers – What is next? Julieta Rodriguez-Guzman mentioned that we need to try to stop exposure.

James Frederick – Were the heat stress interventions going to continue? Brian mentioned that they will, yes. They started at the beginning of the harvest and continued throughout the harvest.

Charles Redinger – The Center for worker health and sustainability may have a role to help with this project. Article on framework for climate change to be published in JOEH may be helpful for looking for other effects.

Bonnie Rogers – There is a major problem with literacy among workers in Central America and the US. This needs to be addressed. It is important to empower the worker to speak up and engage in self-protection.

Julieta Rodriguez-Guzman – We need to do a policy statement that this is an occupational disease needing attention from health, labor and industry.

Presentation

NIOSH Oil and Gas Sector Program: Using Data and Partnerships to Improve Safety and Health CDR Ryan Hill, Epidemiologist, Manager Oil and Gas Sector Program, NIOSH

The Industry. The U.S. oil and gas industry is comprised of three subsectors – Upstream, midstream and downstream. The fatality rate varies by each subsector. The fatality rate upstream is 22.9, compared with midstream at 4.1 and downstream is 4.2. NIOSH is focusing on upstream in recognition of the higher fatality rate. The U.S. Oil and Gas Extraction Industry can be separated into three categories – Operators, drilling contractors and well servicing. The fatality rates for these categories are as follows: Operators (33% of workforce, 11.3), drilling contractors (16% of workforce, 44.6) and well servicing (50% of workforce, 27.9).

Early Work. NIOSH began conducting research in this industry because of an increase in the number and rate of fatal injuries in the oil and gas extraction industry in 2004. The fatality rate for the O&G industry that year was almost 8 times higher than the rate for all U.S. workers. Research found that as the drilling rig count increases, the fatality rate also increases. Early NIOSH work involved analyzing data from BLS, conducting well site visits, and participating in conferences and meetings. At the same time, NIOSH staff were seeking participants for the National Occupational Research Agenda (NORA) Oil and Gas extraction Sector Council. Early publications from the oil and gas program included an MMWR, “Rig Check” drilling rig safety checklists, and videos on fall protection and seatbelt use.

Mark Nicas – Have you found hydrogen sulfide fatalities? Ryan mentioned that there are some fatalities related to H₂S.

Jaswant Singh – One of the things related to fatalities is dropped objects from derricks. This is low hanging fruit for prevention. This may be important for your statistic where you show that contact with objects caused 26% of fatalities. There were questions about fatalities related to the transportation of offshore workers to offshore rigs and platforms. Ryan Hill – We have found fatalities related to helicopter transportation. We published an MMWR on fatalities to offshore workers, which found helicopter crashes were the leading cause of death among this worker population.

Fatalities. Today’s presentation is focused on one NIOSH project related to injury prevention. NIOSH analyzed Census of Fatal Occupational Injuries (CFOI) data to describe fatalities among oil and gas extraction workers. The leading cause of fatalities are transportation related (41%) – most of which are the result of motor vehicle crashes. Our first large NORA project focused on fatal motor vehicle crashes. Research from this project resulted in the first scientific publication that identified and described risk factors for fatal motor vehicle crashes in this industry. This project also identify and described the industry’s best practices in motor vehicle safety.

Surveillance. There are some questions that cannot be addressed by the BLS data. In order to fill in the gaps, NIOSH developed a Fatalities in Oil and Gas (FOG) database. Data sources include OSHA case files, media, crash reports, autopsy reports and industry partners.

The fatality rate is improving from 2003-2013. A recent MMWR by our oil and gas team found a 36% decrease in the industry’s fatality rate despite this being a period of sustained growth in the industry.

Grace Lemasters – Is commuting to and from work considered a fatality of the workplace? Ryan mentioned that according to CFOI, it depends on whether the worker relied on company-provided transportation or whether they were traveling outside their normal geographic or temporal routine. In our NIOSH Fatalities in Oil and Gas (FOG) database, we do seek to identify and include commuting-related events.

Lamont Byrd – Are you capturing information on driver fatigue? This industry has exemptions for hours of service? Ryan mentioned that fatigue is not well captured in investigation of events. NIOSH is anticipating capturing information related to fatigue in a national survey in 2017. One small NORA project in NIOSH will evaluate a fatigue monitoring system among oil and gas drivers.

Terry Bunn – Does your system include interviews with medical examiners and coroners? This would help to identify crashes on private property. Ryan mentioned that NIOSH has, in a few cases, obtained information from medical examiners and coroners. We have also engaged the states. This question is helpful to identify areas where we could improve. What about cardiac events? Some fatalities are attributed to cardiac etiology when there is limited information related to a fatality. FOG does include cardiac events for exactly that reason.

Bonnie Rogers – Have you engaged with TWH? This would be important for workers who work on rigs for long periods of time. Ryan mentioned that there has been discussion about the utility of the TWH model among workers employed in the offshore oil and gas industry.

Ron Stout – What percentage of fatalities are related to commuting? 90 miles round trip is not unusual for these workers. Ryan mentioned that it is not clear from the data that are currently available about commuting-related fatalities.

Ted Courtney – The Society for Risk Analysis (SRA) is helpful in drafting questions that are generalizable across survey methods. Ryan mentioned that, the NIOSH survey has already received public comment. Ryan will send a copy of the NIOSH survey once it is approved.

Health Research. Based on results from NIOSH field studies, the American Petroleum Institute (API) has developed two new standards for tank gauging, and the Bureau of Land Management is updating Onshore Order 4. NIOSH investigations have addressed health hazards including, silica and hydrocarbon gases and vapors.

Some questions for BSC members to consider:

- We want to reach small companies/contractors with OSH information. Are there success stories from other industries that we might learn from?
- Given that there are now 4 generations of workers in the U.S. workforce, what strategies have been effective in other industries that might help oil and gas companies develop and deliver effective training to new/young workers?
- We would like to expand FOG to include non-fatal cases. What advice does the BSC have on how to approach and collaborate with states and other partners?

Terry Bunn – You could reach out to FACE programs. One example is for all individuals interested in establishing businesses, they must get a license. The state links to our website and new businesses can reach out to OSHA and other resources. Ryan thanked Dr. Bunn for the suggestion.

Grace Lemasters – There is an apprenticeship program in construction that might be helpful. Think about developing a certificate program.

Jaswant Singh – Has anybody looked at multi-exposures (mix of hydrocarbons) when opening the thief hatch? That would be an important area to investigate. Ryan mentioned that there does not seem to be a lot of published reports documenting exposures.

Theodore Courtney – Reach out to Hester Lipscomb to benchmark training techniques with carpenters.

Sharon Cooper – You could look at data from NHTSA for non-fatal injury. The distribution of rigs might help to find the highest risk areas. The Texas Institute for Safety may also be helpful.

Terry Bunn – Consider working with State Workers Compensation agencies. Also consider the State trauma registries.

Mark Nicas – Why are operators at risk for fatalities? Operators do spend time in the field and on the road. What does OSHA require for tank gauging? Not clear. Ryan mentioned that the accidents for operators are mostly when they step out of the office.

Mary Ann Gruden – Does English as a second language affect the FOG database? Not sure. Ryan mentioned that this has not yet been examined.

Theodore Courtney – Do you work with EPA on this work? Your baghouse work might be of interest to the EPA. Ryan said that this is a good idea. We have worked on an interagency work group to look at unconventional oil and gas operations. We have provided regular updates to the work group.

Presentation

Engineering Controls for Additive (3D) Manufacturing

CDR Duane Hammond, Mechanical Engineer, Division of Applied Research and Technology, NIOSH

Duane started the presentation explaining what additive manufacturing (AM) is and the different advantages of AM. There are many applications for 3D printing such as: tissue and organ fabrication, custom prosthetics, dental applications, aerospace applications, and defense applications. There are a range of materials for 3D printing including, plastics, metals, alloys, sugar, silicone, ceramics, composites, glass, concrete and food. Common 3D printing technologies include fused deposition modeling, fused filament fabrication, stereolithography, selective laser sintering, and electron beam additive manufacturing. Sales of desktop 3D printers are growing in numbers and there are increasing future predictions of growth. 3D printers are also located in schools, libraries and businesses. A few journal articles related to particle emissions from 3D printing were reviewed. NIOSH research will focus on assessing exposures, developing engineering controls, and assessing the effectiveness of existing engineering controls and containment techniques. NIOSH asked for input from the BSC on the following two areas:

1 – Several companies have already approached NIOSH asking for information about how to reduce worker exposure to 3D printer emissions. We would appreciate input on developing a strategy to effectively and efficiently move our engineering control solutions into practice as they are developed.

2 – What mix of studies in larger companies that are already developing engineering controls and smaller start-ups that do not have expertise within the company would be most effective in gaining knowledge that would be most beneficial?

Mark Nicas – Are you examining the inherent toxicology of the materials or are you focusing on reducing a hazard? Controlled emission studies are very helpful. They could be coupled with field studies. You could make crude models to predict emissions and then use field studies to measure. This then enables you to make reliable predictions with known ventilation patterns. This can then be applied across a variety of manufacturing environments.

Jaswant Singh – Is the concern about nanoparticles from relatively nontoxic polymers or about decomposition of materials or some other? There may be a concern related to a variety of materials in use.

Grace Lemasters – Have you looked into what other folks are doing? For example, have you worked with 3M? Duane mentioned that we are working with several manufacturers.

Bonnie Rogers – Can you describe the process? – Duane provided a verbal description

Bonnie Rogers – How is this different than traditional manufacturing? – Duane mentioned that traditional manufacturing is subtractive and 3D printing is additive. Traditional manufacturing may also rely on a mold and in 3D printing you would not.

Ron Stout – With 3D printing you can laminate drugs to accommodate different dissolution times. This helps a medication dissolve over time.

Charles Redinger – It doesn't seem like its printing. It sounds more like additive manufacturing. Duane mentioned that there are multiple terms with distinct meanings.

Mark Nicas – Why is additive manufacturing different than extrusion? Are the temperatures in additive manufacturing higher? I am not sure.

Ron Stout – Is the concern about ultrafine particles? Duane mentioned that we are looking at this.

Bonnie Rogers – Is the concern about nanoparticles new? It seems like they have been around for long time. Duane mentioned the concern about nanoparticles is not new, but the nanoparticle aspect on this manufacturing process is new and understudied. Duane also mentioned that emission controls for this process are not available and workplaces are using these 3D printers in office spaces and other poorly ventilated locations near unprotected workers. Duane finally mentioned that this project can pull from a variety of prior research efforts.

Presentation

Engineering Controls and Nanomaterials

Dr. Kevin H. Dunn, Mechanical Engineer, Division of Applied Research and Technology, NIOSH

Fundamentals on nanomaterials were presented. This included a short background on physical properties and selected toxicology findings. In addition, an overview of the key components of the NIOSH Nanotechnology Research Center (NTRC) was presented and collaboration between different field studies within NIOSH (specifically IWSB and NTRC field teams) was discussed. NIOSH has conducted engineering control evaluations in several facilities that produce or process carbon nanotubes (CNT), CNT composite manufacturers, nano metal oxide producers, nano-cellulose producers, and academic laboratories.

Potential exposures exist from a variety of sources, including, leakage from reactors and powder processing equipment, manual harvesting of materials from reactors, dumping and mixing of powders, replacing bulk containers of nanomaterial-containing powders, spraying of liquids containing nanomaterials, weighing out powder/packaging material, changing filters on dust collection systems and emissions from vacuum cleaners. Real-time particle concentrations measured during a range of manufacturing and use activities was reviewed and sources of emission were discussed. For each of the emission activities shown, sketches of potential engineering controls were presented.

Following this initial background information, Dr. Dunn shifted focus of the presentation to discuss the development and dissemination of control approaches for nano-manufacturing processes, including a 2013 NIOSH document entitled “Current Strategies for Engineering Controls in Nanomaterial Production and Downstream Handling Processes”. This document was disseminated through a variety of channels including the NIOSH website, press release, Twitter activity, NIOSH Facebook page, NIOSH eNews, the NIOSH Blog, and Wikipedia. Web-metrics were presented for the Nano control document and next steps were presented. He mentioned that a series of unit process-based short information documents were in development to provide control approaches for a variety of common manufacturing and use scenarios. Finally, questions and advice were solicited from BSC members regarding additional dissemination efforts and other channels for dissemination.

Charles Redinger – Are you focusing on small operations? Kevin mentioned that they have traditionally focused on small producers and users since this is a fairly new field and many companies are in the R&D or pilot plant stage. Many of the plants that we have visited may have 10 or fewer production employees. However, we expect that we will branch out to larger companies as these materials are more commonly used in those workplaces.

Ronald Stout wondered when NIOSH releases new products, do we coordinate with Google or something else to prioritize how these materials show on a web browser when searched? Kevin mentioned that a Google search on engineering or exposure controls for nanomaterials shows that the 2013 NIOSH engineering controls document was the first result among many.

Grace Lemasters to answer your question about “was it useful?” maybe try to follow up with the people that received the materials and how helpful has it been? Dr. Lemasters suggested that when visitors to the NIOSH

webpage download the 2013 NIOSH engineering controls document, you could ask for an e-mail address or feedback.

Jaswant Singh – Once the product is manufactured, are there exposure to consumers? What about when you are grinding parts that were manufactured with nanomaterials? Kevin mentioned that he was aware of few published studies on potential consumer exposures but that it is an area of interest to the EPA and Consumer Products Safety Commission (CPSC).

Terry Bunn – Recommended to look at things that worked and what didn't work and what else can be done.

Judith McKenzie asked about human health effects data – Kevin mentioned that most of the published literature on health hazards was from animal toxicity studies. There is not much in the published literature on human health effects at this point. However, NIOSH has an ongoing epidemiological study on workers who produce of use carbonaceous nanomaterials.

Jim Frederic – What about workers in these workplaces and the possibility of take home contamination on clothing. He mentioned that following good chemical hygiene practices is of key importance to minimize this possibility.

Jaswant Singh – Is ventilating nano particles any different than other chemicals? Kevin mentioned that it is not. Companies that use proper risk management approaches to dealing with nanomaterials will be in a good position to safely use these materials. Commonly used engineering control approaches should be effective and applicable for nanomaterials.

Bonnie Rogers asked about looking at new topics and future meetings.

Max Lum mentioned that in 2013 Wikipedia became the main driver to the NIOSH website. 16,000 – 18,000 visits per month. Max mentioned that Wikipedia drives Google in some way. Max mentioned that it would be good to do a Wikipedia session for BSC members. The benefit would be for each member to see how easy it would be to add information to Wikipedia and the uses of it to disseminate information. About ½ day session. Dr. Kitt mentioned that other advantages is that we can also show lab tours to BSC members.

MaryAnn suggested updates from NPPTL.

Bonnie Rogers mentioned about workplace bullying and violence.

Meeting Adjourned at 2:33 pm ET

**Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
Board of Scientific Counselors (BSC)
Agenda: Sixty-Seventh Meeting**

NIOSH Offices
395 E Street, S.W., Suite 9000
Washington, DC 20201

Conference Number: 888-397-9578
Participant Code: 63257516
<https://odniosh.adobeconnect.com/nioshbsc/>

Tuesday – September 27, 2016

Time All times are Eastern Time	Topic	Presenter
8:30 am	Welcome and Introduction Meeting Logistics	Dr. Paul Middendorf DFO, NIOSH
8:40 am	Agenda, Announcements, and Approval of Minutes	Dr. Bonnie Rogers Chair, NIOSH BSC
8:50 am	Director’s Opening Remarks	Dr. John Howard Director, NIOSH
9:20 am	Chronic Kidney Disease and Pesticide Exposure in Central American Sugarcane Workers	Dr. Brian Curwin Deputy Branch Chief, Industrywide Studies Branch, NIOSH
10:20 am	Break	
10:30 am	NIOSH Oil and Gas Sector Program: Using Data and Partnerships to Improve Safety and Health	CDR Ryan Hill Epidemiologist, Manager Oil and Gas Sector Program, NIOSH
11:30 am	Lunch	
12:30 pm	Public Comments	Dr. Paul Middendorf DFO, NIOSH
12:45 pm	Engineering Controls for Additive (3D) Manufacturing	CDR Duane Hammond Mechanical Engineer, Division of Applied Research and Technology, NIOSH
1:30 pm	Engineering Controls and Nanomaterials	Dr. Kevin H. Dunn Mechanical Engineer, Division of Applied Research and Technology, NIOSH
2:15 pm	Summary & Wrap-up, Future Agenda Items, Meeting Dates, Closing Remarks	Dr. Bonnie Rogers Chair, NIOSH BSC
2:30 pm	Adjourn	

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Budget

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Both House and Senate call for a reduction to the NIOSH FY 2017 budget.

- Senate Committee recommends a funding level of \$334.1M. Which is a \$5M reduction from the FY 2016 Enacted level.
 - Reduction to be taken against the All Other OSH budget line.
- House Committee recommends a funding level of \$329.1M, which is a \$12.7M reduction from the FY2016 Enacted level.
 - House Committee recommends \$1M increases for AgFF and ERC’s respectively; and a \$700K increase to the Mining Research Program. The language also calls for a \$12.5M reduction to the All Other OSH budget line.

Cincinnati Combined Facility

- The House rescinds any unobligated funding in the HHS Non-expiring Fund to zero. This rescission would eliminate the funding previously appropriated for the facility. The Senate provided no specific language, although the language does request a transfer of \$300M to NIH for biomedical research.

Organizational and Personnel Announcements

NIOSH Alaska Field Station Celebrates 25 Years!

This year NIOSH celebrates the 25th anniversary of the establishment of the NIOSH Alaska Field Station (AFS). From its inception, the mission of AFS was to combat the urgent problem of work-related fatalities in Alaska. AFS served as a “catalyst for change” by providing a scientific assessment of occupational safety hazards, such as identifying the state's highest risk industries, the workers most at risk of fatality, and the highest priority problems.

CAPT W. Gregory Lotz, Ph.D., Director of the Division of Applied Research and Technology (DART), completed 30 years of distinguished federal service and retired on June 1, 2016, after 40 years of federal service, including active duty and civilian service with the U.S. Navy, and the last 24 years at NIOSH. **CAPT Gayle DeBord, Ph.D.** will serve as Interim Director of the Division of Applied Research and Technology, effective June 1, 2016.

Pam Drake, MPH has been appointed as the Deputy Director of the Spokane Mining Research Division (SMRD), effective August 10, 2016.

R.J. Matetic, Ph.D., has been appointed as the Director for newly MASO-designated Pittsburgh Mining Research Division (PMRD), effective August 1, 2016.

Kent Slakey has been appointed as the Associate Director for Human Capital Management at the National Institute for Occupational Safety and Health effective June 27, 2016.

Kara Perritt was appointed as permanent Western States Division (WSD) Deputy Director. Kara has been serving as the Interim WSD Deputy Director in Spokane, WA since February 2016 and has been instrumental in standing-up the new WSD, including implementing the important infrastructure essential for establishing a Division.

Currently or Recently Available for Public Review and Comment

Docket 270-A: NIOSH announces a public web meeting and an opportunity to comment on future directions for Center for Motor Vehicle Safety (CMVS). The public web meeting was held on September 14, 2016 from 1 p.m. to 5 p.m., Eastern Time. Comments will be accepted until 11:59 p.m. EST on October 14, 2016

Recently closed. **Docket: 289:** National Institute for Occupational Safety and Health (NIOSH) Quality Assurance Review of B Readers' Classifications Submitted in the Department of Labor (DOL) Black Lung Benefits Program draft.

Recently closed: **External Review Draft: NIOSH Current Intelligence Bulletin: Health Effects of Occupational Exposure to Silver Nanomaterials.** It contains a review and assessment of the scientific literature on the toxicological effects of exposure to silver nanoparticles in experimental animal and cellular systems, and on the occupational exposures to silver dust and fume and the associated health effects. It evaluates the scientific evidence on the role of particle size on the toxicological effects of silver, including the basis of the current NIOSH recommended exposure limit (REL) for silver.

Recently closed: **External Review Draft: NIOSH Criteria Document on Occupational Exposure to 1-Bromopropane.** It provides a comprehensive summary of the health effects, exposure data, quantitative risk assessment, and recommendations for controlling exposures in the workplace. 1-Bromopropane is an organic solvent used in manufacturing processes, degreasing operations, cleaning electronics and metal, aerosol applied adhesives, and as an alternative solvent in the dry cleaning industry.

New Programs and Initiatives

- In May, the Vietnam National Institute of Occupational and Environmental Health visited the NIOSH DC office to sign a renewed Memorandum of Understanding (MOU). This MOU continues efforts originally initiated in May 2004 to use collective efforts and expertise to advance the protection of workers and promote best practices to improve worker safety and health.
- **RAND Releases Report on OSH Systematic Review:** A new RAND report commissioned by NIOSH, *Systematic Reviews for Occupational Safety and Health Questions—Resources for Evidence Synthesis*, is now available. Evolving scientific standards and public policy increasingly require clear documentation and transparent approaches when using scientific evidence to develop guidance or recommendations. The RAND report provides practical guidance and resources for

researchers interested in conducting systematic reviews. Essential steps such as (1) defining a policy question, (2) creating a protocol, (3) conducting a literature search, (4) documenting and assessing studies, (5) evaluating evidence, and (6) drawing conclusions are described in detail.

- **Easy Access to NIOSH Engineering Control Solutions:** NIOSH’s new Engineering Controls Database contains descriptions of controls, effectiveness summaries, and schematics of engineering control technology evaluated by NIOSH during laboratory and field investigations. Since the Occupational Safety and Health Act was established in 1970, NIOSH has been developing valuable information, best practices, and guidance on engineering controls addressing a variety of workplace hazards. If you have any questions or need additional information, send an email to ecd@cdc.gov.
- NIOSH posted its first feature on “Instagram Stories” in August, a short video clip of the NIOSH Mobile Occupational Safety and Health van. The clip was part of outreach to notify coal miners in western Virginia that the van would be traveling to their region to provide free, accessible screenings under the Coal Mine Safety and Health Act. The posting represented NIOSH’s latest use of new social networks to connect with stakeholders.
- On October 19, NIOSH will celebrate the 20th anniversary of the dedication of its Health Effects Laboratory in Morgantown, W.Va. Since its inception, the state-of-the-art facility has led world-class research on an enormous range of high-priority issues. A NIOSH Science Blog will discuss these accomplishments in conjunction with the anniversary.

NIOSH Research Rounds

- **New Rock-crusher Booth Protects Against Airborne Pollutants:** In a recent study, NIOSH investigators worked with industry partners at 3M Company to design and test an environmentally controlled booth for workers who operate rock crushers at the company’s Wausau granite quarry near Wausau, Wisconsin. Previously, the Wausau quarry had used an older crusher booth without HVAC or air filtration and pressurization systems. Based on specifications from previous NIOSH research, 3M designed and installed a new booth with full HVAC and filtration and pressurization systems. Compared to the old booth, the new one provided significantly greater protection against respirable rock dust, the investigators reported in a paper published in the peer-reviewed journal *Mining Engineering*. In addition, they found that increased filtration of the recirculated airflow markedly improved the booth’s effectiveness at protecting the operator from airborne pollutants.
- **Most Traumatic Brain Injury Deaths in Construction are Due to Falls:** NIOSH investigators wanted to identify the major risks to workers in the construction industry. In identifying these risks, they analyzed data on TBIs from the Bureau of Labor Statistics Census of Fatal Occupational Injuries and reported their findings in the peer-reviewed *American Journal of Industrial Medicine*. They found that some construction workers were at greater risk of dying from a TBI than others. Specifically, the risk of dying from a TBI varied according to sex, age, country of birth, occupation, and size of the construction company. NIOSH partnered with the Occupational Safety and Health Administration (OSHA) and CPWR—The Center for Construction Research and Training to promote the Safety Stand-Down, a nationwide construction falls-prevention campaign. Now in its third year, the campaign seeks to raise awareness by encouraging everyone in construction to work safely and use the right safety equipment while working at heights, such as on roofs, ladders, and scaffolds. In

addition to the campaign, NIOSH also developed the Ladder Safety smartphone app, which prevents falls from ladders by providing visual and audio signals as well as safety tips for safe extension ladder positioning.

- **Investigators Design Experimental Engineering Control for Silica Dust:** Silicosis is an irreversible, but preventable, occupational lung disease caused by inhalation of respirable crystalline silica dust (RCS). Recently, NIOSH investigators developed a novel engineering control called the NIOSH mini-baghouse retrofit assembly, to help control RCS released from sand moving machinery on oil and gas extraction sites.
- **New Laboratory Method Evaluates Vibrations From Hand-held Riveting Tools:** During aircraft construction and maintenance, workers attach layers of sheet metal to airframes using hand-held tools called bucking bars. The problem is that bucking bars, like most powered hand tools, transmit vibrations, which increase the risk of injuries and disorders to the blood vessels, nerves, muscles, and bones of the hands. Although manufacturers have introduced new types of bucking bars designed to reduce risk, their effectiveness is unclear because there is no standardized method to measure their transmitted vibrations. Recognizing this need, scientists at NIOSH recently developed and tested a lab-based riveting simulator that mimics the conditions observed during actual riveting tasks. They found that the laboratory method was able to identify which bucking bars would transmit the lowest exposure of vibrations to workers at the maintenance facility. These findings suggest that the laboratory method is an acceptable way to compare and screen bucking bars but not to measure the risk of exposure to transmitted vibrations in the workplace.

Respiratory Health Division

Coal Worker's Health Surveillance Program (CWHSP)

A number of spirometer manufacturers have been working with NIOSH to qualify their spirometers for use in the CWHSP. On June 28, the team posted a detailed table to the NIOSH website, listing spirometer models that can be used by CWHSP Spirometry facilities that meet all NIOSH required spirometry reporting criteria.

June 27-28, 2016, **Diana Freeland** and **Kathleen Rogers** (Surveillance Branch) completed an initial course compliance audit in Detroit, MI for NIOSH-Approved Spirometry Course Sponsor #100. The compliance audit evaluated the courses' faculty competency, course design, curriculum content, equipment accuracy, and examination instruments. The audit was reviewed with the course director after the end of the course, and suggestions were given to enhance the knowledge and practical skills of their students. Currently, course and lecture materials are under NIOSH committee review, prior to our final Sponsor renewal and approval. All sponsors have now successfully revised their Spirometry Training Test Exams derived from questions from the NIOSH newly revised 2016 Exam Bank.

Division of Surveillance, Hazard Evaluations, and Field Studies

The NIOSH Surveillance Program, in collaboration with the Federal Motor Carriers Safety Administration (FMSCA), conducted a nationally representative Survey of Long-Haul Truck Drivers. Compared to the US population, long-haul truck drivers experience a higher prevalence of obesity and smoking. Interest in obesity and other health findings lead to a September 2016 interview by both BBC

and SiriusXM110 Doctor Radio. Based on these surveillance data the National Academies of Sciences recommended additional health studies of truck drivers in 2016. NIOSH and FMCSA are now collaborating on a study to determine feasible methods to conduct health studies on this highly mobile working population.

The NIOSH Health Hazard Evaluation (HHE) Program competed successfully in the HHS Ignite Accelerator Program, part of the HHS IDEA Lab. The HHE Program was 1 of 24 teams selected for inclusion and had 1 of the 4 “winning” projects. The idea was to design reports that are clear & useful for all of our diverse stakeholders. The Program engaged stakeholders to identify core information, package it with the most useful information up front, and make it easy to find.

As a result of DSHEFS work showing a 42% carpal tunnel rate among poultry workers, OSHA has started an educational prevention campaign in 4 states with the largest chicken producers.

OSHA is using NIOSH research showing lung cancer risk from beryllium exposure in its proposed rulemaking for a new beryllium standard.

The International Agency for Research on Cancer utilized DSHEFS occupational exposure publications in 1-bromopropane for its determination that 1-bromopropane is “possibly carcinogenic in humans”.

Division of Applied Research and Technology

NIOSH published an Alert in 2004 with a list of hazardous drugs and an update to that document in 2014. Since publishing the 2014 update to the list, NIOSH reviewed 60 new drugs that received FDA approval and 270 drugs that received new special warnings (usually black box warnings) based on reported adverse effects in patients covering the time period from January 2012 to December 2013. From this list of approximately 330 drugs, 45 drugs were determined to have one or more characteristics of a hazardous drug. This preliminary list was published for comment in NIOSH Docket Number NIOSH 233-A.

After expert panel review, public review and comment, and review of the scientific literature, NIOSH has developed a revised list of hazardous drugs. Along with drugs initially identified in the 2014 Hazardous Drug List, NIOSH is adding 29 new drugs plus 5 drugs with manufacturers’ safe handling warnings. A total of 34 drugs are being added to the 2014 NIOSH List of Hazardous Drugs. The 2016 list follows the 2014 format subdivided into three groups: Group 1, Antineoplastic Drugs; Group 2, Non-antineoplastic Drugs; and Group 3, Drugs with Reproductive Effects. The document will be posted in September 2016.

Division of Safety Research

CDC Foundation Business Pulse: Motor Vehicle Safety at Work (published August 24, 2016): features recommendations and resources from NIOSH and NCIPC that can improve motor vehicle safety at work (<http://www.cdcfoundation.org/businesspulse>). A NIOSH Science Blog and CDC Foundation Blog were published by Stephanie Pratt, as were at least 7 external articles in various media outlets.

Behind the Wheel at Work eNewsletter: published quarterly since December 2015, with almost 8,000 subscribers to date; 4th issue was published September 20th.

Center for Motor Vehicle Safety distracted driving GIF: NIOSH’s first animated image, created in early 2016 to promote distracted driving awareness and remind those who drive for work that driving is their primary job when behind the wheel, has garnered over 30 clicks in April, which was also Distracted Driving Awareness Month. Available for download on the Center’s Distracted Driving at Work topic page: <https://www.cdc.gov/niosh/topics/distracteddriving/images/Distracted-Driving-GIF.gif>

Center for Motor Vehicle Safety mid-course review: To ensure that the Center is addressing goals outlined in their 5-year strategic plan, meeting stakeholder needs, and working effectively toward its overarching purpose of preventing work-related crashes and injuries, the CMVS hosted a web-based public meeting on September 14th and has a public docket that is open until October 14. Input was requested directly from 5 key stakeholders: National Highway Traffic Safety Administration, Network of Employers for Traffic Safety, National Safety Council, International Brotherhood of Teamsters, and Virginia Tech Transportation Institute. As of September 12, three comments had been submitted.

Comments to regulatory agencies: NIOSH provided comments to the Federal Motor Carrier Safety Administration in support of a proposed rule (now final) that would require passengers in commercial motor vehicles (i.e., large trucks, buses) to wear seat belts; supporting data came from the NIOSH National Survey of Long-Haul Truck Driver Health and Injury. NIOSH provided comments to the National Highway Traffic Safety Administration proposing changes to the Model Minimum Uniform Crash Criteria (MMUCC), a national guideline for state-level police crash reports; NIOSH recommended improvements to better identify work-related crashes as well as crashes that occur during commuting.

Web-based simulator for aerial lift hazard recognition: To prevent falls and other aerial lift-related injuries and deaths, especially in construction, NIOSH has developed a free web-based simulator that provides a realistic workplace with various hazards for users to navigate from a safe and controlled environment. This simulator is useful for both new operators (for hazard recognition) and experienced operators (to refresh knowledge).

Dr. Hongwei Hsiao is a finalist for the Samuel J. Heyman Service to America Medals (Sammies) for his research and design of a new generation of PPE and industrial apparatus that improves worker safety. The Sammies are the “Oscars” of government service, honoring federal employees who have made a commitment to make our government and our nation stronger. This is the 2nd time DSR has had a finalist for the award.

Education and Information Division

NIOSH provided technical assistance to Serviço Social de Indústria (SESI) in Rio Grande do Sul, Brazil, in support of the NIOSH-SESI Memorandum of Understanding. The purpose of this technical assistance was to customize the NIOSH young worker safety and health curriculum, *Youth@Work: Talking Safety*, to the Brazilian context, and to facilitate implementation of *Talking Safety* within the SESI supported schools. NIOSH researchers worked with SESI scientists to adapt the curriculum for use in Brazil, including creating new case stories, revised games, and incorporating new resources into the curriculum, such as information on Brazilian labor laws relevant to youth and other workers in Brazil. Following the adaptation, the revised curriculum was taught to approximately 40 SESI staff from the states of Rio Grande do Sul and Parana, August 8-16.

The [Understanding Small Enterprises Conference](#) will be held in Denver, October 25–27, 2017, hosted by the NIOSH Small Business Outreach and Assistance Program and the Colorado School of Public Health’s Center for Health, Work & Environment. The conference theme is “Worker Well-being and Sustainable Business Health: From Ideas to Achievable Reality.” Registration opened September 15, 2016.

Cumulative Risk Assessment Workshop – During April 2016, EID organized a two-day Cumulative Risk Assessment Workshop at the U.S. EPA in Cincinnati. The effort involved about two dozen researchers from government agencies, academia, professional organizations, and organized labor. The meeting established a framework for developing more than 15 manuscripts focusing on key issues for integrating cumulative risk assessments of aggregate exposures into occupational safety and health.

The NIOSH National Center for Productive Aging and Work has established a partnership with EU-OSHA, the European Agency for Safety and Health at Work. Juliann Scholl of NCPAW and EID has been invited to the European Health Forum in Gastein, Austria to participate in a panel discussion, “Work and Health” on September 28, 2016. She will speak about a holistic approach to health considering approaches that promote workplaces and worker health that meet the needs of aging workers.

Extreme Heat Awareness Week (May 23-26, 2016) – EID led the development of several informational products as part of a national campaign initiated by the White House to increase awareness about the hazards of exposure to extreme heat. Products included a NIOSH Blog, a [Preventing Heat Illness Poster](#), and an updated NIOSH Heat Stress Safety and Health Web Topic Page. In addition, EID has been working with OSHA to update and co-brand a Heat Safety Tool mobile application.

Emergency Preparedness and Response Office

NIOSH is working within the CDC’s Emergency Operations Center to address Zika occupational safety and health concerns. We are currently updating our website to include information about Zika and assisting OSHA in developing business guidance.

National Personal Protective Technology Laboratory (NPPTL)

Respirator Fit Capability Voluntary Standard - NPPTL is collaborating with ASSE to prepare a national consensus standard establishing a respirator fit capability test for half-mask air-purifying particulate respirators. The scope of this standard is to define performance requirements that could be used as part of a respirator certification program to ensure certified respirators/families of respirators are capable of fitting a specified percentage of their intended user population. These minimum performance requirements will demonstrate that half-mask respirators have good face seal performance on their intended user population.

Memorandum of Understanding (MOU) between the Food and Drug Administration, Center for Devices and Radiological Health and NIOSH NPPTL - The Memorandum of Understanding (MOU) between the Food and Drug Administration, Center for Devices and Radiological Health and NPPTL is in the process of being finalized. It will provide a framework for coordination and collaborative efforts among these two agencies regarding surgical N95 respirators and/or NIOSH-approved N95 filtering facepiece respirators (FFRs) used in a healthcare setting surgical N95 respirators and/or NIOSH-approved N95 filtering facepiece respirators (FFRs) used in a healthcare setting.

Integration of FDA and NIOSH Evaluation Processes of Respiratory Protective Devices for Health Care Workers: A Workshop – On August 1, 2016, the National Academies’ Committee on Personal Protective Equipment conducted a public workshop to explore the current state of practices related to the evaluation of N95 respiratory protective devices (RPDs). To assist NIOSH and the FDA in streamlining the approval and clearance process, the workshop explored the strengths and limitations of several current test methods as well as identified ongoing research and research needs. The workshop was attended (in person and online) by over 75 individuals working in the academic, clinical, policy, and industrial sectors. A summary of this workshop is being prepared and is anticipated to be released in January 2017.

Total Heat Loss - Firefighters, EMS, and HazMat workers wearing protective ensembles are at risk of heat injury because of the limited ability to transfer body heat to the environment through their personal protective ensembles. Currently, protective ensembles are evaluated using a Total Heat Loss (THL) model that measures heat flux across a representative swatch of materials used in the construction of the ensembles. NPPTL has a project that will describe a physiological evaluation of commonly used Personal Protective Equipment (PPE) to determine the heat stress on the user and to provide a physiological basis for setting the THL values for ensembles designed for different uses and hazard situations. This information will be used by ASTM and National Fire Protection Association (NFPA) to modify and/or develop new test methods or performance standards.

Conformity Assessment Framework – The hierarchy of controls, the standards needed to provide adequate PPE, and the conformity assessment processes applied to PPE collectively comprise the PPE Conformity Assessment (CA) Framework developed by NIOSH. This framework provides a tool for developing and monitoring PPE CA programs. This Framework expands concepts beyond the traditional roles (e.g. conformity, facilitate trade, etc.) and activities of conformity assessment by more transparently linking them with an analysis of workplace hazards and protection requirements of PPE standards. This permits a CA program owner to trace hazards through PPE standards and products which enhances worker health and safety and provide greater confidence in the utility of PPE by and for workers.

Total Worker Health

NIOSH BSC members are cordially invited to attend a Total Worker Health® Research Methodology Workshop currently scheduled for December 6 – 7, 2016 (venue is yet to be determined and virtual attendance may be possible). More information will be forthcoming from Alberto after the venue and virtual attendance is determined. The purpose of the workshop is to review current methodological approaches and limitations to TWH-related research by TWH researchers themselves and other attendees. The workshop will also explore methods that have the most promise to advance the scientific evidence base. The workshop is planned in response to recommendations included in the NIH Pathways to Prevention workshop report (published August 16, 2016 in the Annals of Internal Medicine which can be found at <http://annals.org/article.aspx?articleid=2525718>). Specifically, Recommendation 1 from the Panel reads as follows: “The NIH and Centers for Disease Control and Prevention, along with other funders and stakeholders (for example, private-sector organizations and foundations), should engage key stakeholders to identify and prioritize research needs.” Dr. Chosewood will attend the workshop and make a presentation to the BSC on the discussions that occurred at the Workshop.

Social Presence Statistics

NIOSH continues to expand its presence on social networks.

Social Media and Public Outreach Accounts and Services	July 2015	July 2016
Facebook	95084 likes	118537
Twitter	@NIOSH account 327000 followers	@NIOSH account 325279 followers
Instagram	173 followers, 66 posts	544 followers, 239 posts
YouTube	978 subscribers, 298,138 views 139 videos	1,538 subscribers, 358,360 views 191 videos/clips
Pinterest	37 pins to CDC's Workplace Safety and Health Board which has 2927 followers	37 pins to CDC's Workplace Safety and Health Board which has 4500 followers
Flickr	258 images	305 images
Website Views	1,450,549 site views in July 2015	1,247,434 site views in July 2016
eNews Subscribers	57,988	58,453
TWH Newsletter Subscribers	61,882	64,103
Research Rounds Newsletter	Launched July 2015	57,027
Science Blog	Total blog entries: 278 Total comments: 4909 Blog site views (July 2015): 30378	Total blog entries: 351 Total comments: 6058 Blog site views (July 2016): 35786

Awards

NIOSH Wikipedian Named Co-Wikipedian of the Year - Emily Temple-Wood, a NIOSH Wikipedian-in-Residence, was recently named as one of two Wikipedians of the Year for 2016 by Wikipedia founder Jimmy Wales.

Upcoming NIOSH Publications

New ePub On Heat Stress Now Available

NIOSH is pleased to announce the availability of its first [ePub](#). This new format is based on the OSHA/NIOSH Infosheet: *Protecting Workers From Heat Illness*. The epub allows for the document to be downloaded for use on e-readers and mobile devices.

New Factsheet Series Highlights NIOSH Programs

NIOSH has published a series of factsheets called [Program Performance One-Pagers](#) designed to provide a snapshot of each of its programs. The factsheets describe the relevance and impact of NIOSH programs in a short and easy to understand format. Each one includes the program's priorities, major activities, accomplishments, and future plans.

NIOSH Publications

- [NIOSH-OSHA Hazard Alert: Health and Safety Risks for Workers Involved in Manual Tank Gauging and Sampling at Oil and Gas Extraction Sites](#) DHHS (NIOSH) Publication No. 2016-108
- [Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments](#) DHHS (NIOSH) Publication No. 2016-106
- [Fatality Assessment and Control Evaluation Program Brochure](#) DHHS (NIOSH) Publication Number 2016-113
- [Use of Aftermarket Replacement Component Parts for NIOSH-Approved Respirators](#) DHHS (NIOSH) Publication No. 2016-107
- [Buy Quiet for Manufacturers](#) DHHS (NIOSH) Publication No. 2016-103
- [NIOSH Bibliography of Communication and Research Products 2015](#). Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2016-115.
- [Building a Safety Program to Protect the Nanotechnology Workforce: A Guide for Small to Medium-Sized Enterprises](#). By Hodson L, Hull M. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2016-102.
- [External Review Draft: NIOSH Immediately Dangerous to Life or Health \(IDLH\) Value Profile for Peracetic Acid](#) is available for public comment until October 11, 2016.
- Mobile NIOSH Pocket Guide Application (App). NIOSH began a phased rollout campaign and launch of the mobile app of this population NIOSH product in July 2016. To date, the mobile NIOSH Pocket Guide App has been downloaded 2,847 times.
- NORA Program Performance One-pagers, May 2016:
- [Small Business Assistance Program](http://www.cdc.gov/niosh/docs/2016-145/)(<http://www.cdc.gov/niosh/docs/2016-145/>)

- [Occupational Health Equity Program](http://www.cdc.gov/niosh/docs/2016-142/)(<http://www.cdc.gov/niosh/docs/2016-142/>)
- [Prevention through Design Program](http://www.cdc.gov/niosh/docs/2016-130/)(<http://www.cdc.gov/niosh/docs/2016-130/>)
- [Safe-Skilled-Ready Workforce Program](http://www.cdc.gov/niosh/docs/2016-147/)(<http://www.cdc.gov/niosh/docs/2016-147/>)
- [Wholesale and Retail Trade Program](http://www.cdc.gov/niosh/docs/2016-157/)(<http://www.cdc.gov/niosh/docs/2016-157/>)
- [National Center for Productive Aging and Work](http://www.cdc.gov/niosh/docs/2016-154/)(<http://www.cdc.gov/niosh/docs/2016-154/>)
- Extreme Heat Awareness Week (May 23-26, 2016) – EID led the development of several informational products as part of a national campaign initiated by the White House to increase awareness about the hazards of exposure to extreme heat. Products included a NIOSH Blog, a [Preventing Heat Illness Poster](#), and an updated NIOSH Heat Stress Safety and Health Web Topic Page. In addition, EID has been working with OSHA to update and co-brand a Heat Safety Tool mobile application.

Upcoming NIOSH-Authored Journal Publications

Worker Health and Safety and Climate Change in the Americas: What We Know and Research Needs

Max Kiefer, NIOSH; Julietta Rodríguez-Guzmán, PAHO; Joanna Watson, NIOSH; Berna van Wendel de Joode, Central American Institute for Studies on Toxic Substances (IRET), Universidad Nacional, Heredia, Costa Rica; Donna Mergler Center for Interdisciplinary Research on Health, Well-being, Environment and Society (CINBIOSE), University of Quebec at Montreal, Montreal, Canada; Agnes Soares da Silva, PAHO

Manuscripts

- Best Paper in Epidemiology in Occupational Health at EPICOH Award: Richardson DB, Cardis E, Daniels RD, et al. [2015] Risk of cancer from exposure to ionizing radiation: a retrospective cohort study of workers in France, the United Kingdom, and the United States (INWORKS). *BMJ* 351:h5359.
- DeBord DG, Carreón T, Lentz TJ, Middendorf P, Hoover MD, Schulte P [2016]. Use of the “Exposome” in the practice of epidemiology: A primer on –omic technologies. *Am J Epidemiol.* 184(4):302–314, <http://aje.oxfordjournals.org/content/184/4/302.full.pdf+html>
- Moir-W; Zeig-Owens-R; Daniels-RD; Hall-CB; Webber-MP; Jaber-N; Yiin-JH; Schwartz-T; Liu-X; Vossbrinck-M; Kelly-K; Prezant-DJ. (2016) Post-9/11 cancer incidence in World Trade Center-exposed New York City firefighters as compared to a pooled cohort of firefighters from San Francisco, Chicago and Philadelphia (9/11/2001-2009). *American Journal of Industrial Medicine* 59.9 (2016): 722-730
- Pinkerton LE, Yiin JH, Daniels RD, Fent KW [2016]. Mortality among workers exposed to toluene diisocyanate in the US polyurethane foam industry: Update and exposure-response analyses. *Am J Ind Med* 59:630-643.
- Schulte PA, Bhattacharya A, Jacklitsch B, Jacobs T, Kiefer M, Lincoln J, Pendergrass S, Shire J, Watson J, Wagner GR [2016]. Advancing the framework for considering the effects of climate change on worker safety and health. *J Occup Environ Hyg.* 2016 Nov;13(11):847-865. DOI: [10.1080/15459624.2016.1179388](https://doi.org/10.1080/15459624.2016.1179388).

- Schulte PA, Roth G, Hodson LL, Murashov V, Hoover MD, Zumwalde R, Kuempel ED, Geraci CL, Stefaniak AB, Castranova V, Howard J [2016]. Taking stock of the occupational safety and health challenges of nanotechnology: 2000-2016. *J Nanopart Res.* 18:159. DOI 10.1007/s11051-016-3459-1.
- Yiin JH, Daniels RD, Kubale TL, Dunn KL, Stayner LT. A study update of mortality in workers at a phosphate fertilizer production facility [2016]. *Am J Ind Med.* 59(1):12-22.

Certification Statement

I hereby certify that, to the best of my knowledge and ability, the foregoing minutes of the September 27, 2016, meeting of the NIOSH Board of Scientific Counselors, CDC are accurate and complete.



January 12, 2017

Date

M.E. Bonnie Rogers, MPH, DrPH, COHN-S
Chair, NIOSH Board of Scientific Counselors