Draft Minutes
Board of Scientific Counselors
National Institute for Occupational Safety and Health
395 Patriots Plaza, SW
Washington, DC 20201
March 30, 2016

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

MaryAnn Gruden (No conflicts)
Grace Lemasters (No conflicts)
Charles Redinger (No conflicts)
Terry Bunn (No conflicts)
Jaswant Singh (No conflicts)
Bonnie Rogers (No conflicts)
Theodore Courtney (No conflicts)
Lamont Byrd (No conflicts)
Karla Armenti (No conflicts)
Mark Nicas (No conflicts)
Sharon Cooper (No conflicts)

Designated Federal Official
Paul Middendorf, NIOSH

On the phone:
Judith McKenzie (No conflicts)

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:
John Howard, NIOSH
Margaret Kitt, NIOSH
Christy Forrester, NIOSH
Christine Branche, NIOSH
Jennifer Lincoln, NIOSH
Alice Schumate, NIOSH
Maria Colopy, NIOSH
John Piacentino, NIOSH
Janice Scott Blanton, NIOSH
Rene Pana-Cryan, NIOSH
Fred Blosser, NIOSH
Roger Rosa, NIOSH

The minutes from the previous meeting were reviewed carefully. There were no comments or corrections to the minutes. There were no additional announcements.

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.

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.

Investment in occupational safety and health research is on page two of the Director's remarks. Dr. Howard noted that the portion of the NIOSH budget allocated to the traditional research and science program is $339 million for FY16 or an increase of 4.2%. A portion of the budget is also allocated to about $55 million for the Division of Compensation Analysis and Support (DCAS). The World Trade Center Health Program (WTCHP) is allocated for $330 million. The total NIOSH budget is about $725 million, but not all of this is available for research. There are two other federal advisory committees that cover The Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and the WTCHP and so we will not report on these programs during the NIOSH BSC. The mining program also has its own federal advisory committee.
There were no questions on budget items.

Personnel Announcements

Kelley Durst is the new NIOSH Deputy Director for Management.
Jessica Kogel is the new Associate Director for Mining.
Eric Lutz is the Division Director for Spokane Mining Research Division
Max Kiefer is the Interim Division Director for the Western States Division
Jennifer Lincoln is the Associate Director for Science

No questions on new organization or personnel issues.

Documents Open for Public Comments
Docket 289 is open until April 18, 2016. This is an effort by the Respiratory Health Division (RHD) to improve the quality assurance of B reading of radiographs for pneumoconiosis.
Current Intelligence Bulletin (CIB) on Silver Nanomaterials is open until April 22, 2016. Silver nanomaterials are of interest to multiple federal agencies. This document focuses on occupational issues associated with silver nanomaterials.
Criteria Document on 1-Bromopropane until April 29, 2016.
Request for information (RFI) closed March 21, 2016 on current or future technologies applicable to emergency response. This will be helpful to the NIOSH Center for Direct Reading and Sensor Technologies.
NIOSH is working with the Department of Labor – Office of Workers Compensation Programs (DOL-OWCP) to establish a program to identify B Readers who show evidence of large opacity misclassification and take corrective actions as appropriate. This will help B readers.

NIOSH has recently started a Research Rounds communication to provide for translation of NIOSH science for a more general readership.

Dr. Howard reviewed the Upcoming Publications including Neurological effects to manganese among welders.

Dr. Grace Lemasters asked how to get to docket 289? Dr. David Weissman noted that there is a docket webpage with draft materials for review.

Ted Courtney asked how often Research Rounds is issued? Fred Blosser noted that they are issued monthly. The publication alternates with NIOSH eNews.

Dr. Mark Nicas asked about the status of the Criteria Document on Diacetyl. The document is currently under review.

Dr. Charles Redinger asked whether NIOSH is ready to issue an update on cumulative risk assessment. NIOSH is intending to develop journal articles related to cumulative risk assessment.

Finally, Dr. Howard noted the new OSHA standard for silica. NIOSH research contributed fundamentally to numerous aspects of the standard.

Dr. Bonnie Rogers asked about what the issue is with the B Reader program. Dr. Howard noted that there was prior media coverage of a series of cases of misclassification of radiographs. This misclassification resulted in the denial of benefits on a uniform without exception basis. Dr. Bonnie Rogers asked about how B Readers are accepted. Dr. David Weissman noted that they engage in education and training. They are generally self-selected. NIOSH does not advocate differential payment for radiograph interpretations. Some situations utilized two B readers for research.

Dr. Terry Bunn asked about the NIOSH blog on opioids in the workplace. Is NIOSH going to pursue research in this area? She also noted that in her experience there seemed to be several fatalities associated with opioid use. Dr. Howard noted that NIOSH was interested in pointing out that to attack the problem of opioid prescription, greater attention should be paid to preventing the injury that precipitated the situation where opioids might be prescribed. NIOSH would like to attract attention to injury prevention. NIOSH has a Center for Workers Compensation Studies that follows this issue.

Dr. Bonnie Rogers asked about NIOSH information related to Zika. Fred Blosser noted that NIOSH just refreshed its webpage related to mosquito transmitted infections. Dr. Margaret Kitt noted that NIOSH continues to work with CDC on Zika.

Mr. Lamont Byrd noted that The Aging Driver Fact Sheet from NIOSH was particularly helpful and sleep patterns of commercial drivers was also important. Dr. Howard noted that CDC just signed an MOU with the National Highway Traffic Safety Administration (NHTSA). The overarching purpose is to facilitate collaboration and communication to prevent motor vehicle crash-related injuries and deaths. The action plan linked to the MOU delineates areas of mutual interest to NIOSH and NHTSA, including improved identification of work-related crash injuries by NHTSA data systems and improving motor vehicle safety for emergency responders. Dr. Bonnie Rogers asked about whether NIOSH was researching workload or work hours. Dr. Howard

answered that the transportation sector often has hours of service rules. NIOSH works with FMCSA on issues related to fatigue.

Dr. Karla Armenti asked about distracted driving. Dr. Christine Schuler noted that the Center for Motor Vehicle Safety has a web page on distracted driving.

Dr. MaryAnn Gruden noted that the blog on annual fit testing was helpful as a communication resource for fit testing in healthcare.

Presentation by Rachel Bailey, DO, MPH
Lung Disease in Coffee Processing Workers

In 2012, the NIOSH Health Hazard Evaluation Program received a confidential health hazard evaluation request from employees at a coffee processing facility. The employees' health concerns included respiratory symptoms, lung disease, and eye irritation in the manufacture of coffee products, including flavorings mixed into roasted coffee beans.

The coffee facility roasted green coffee beans, and produced and packaged flavored and unflavored whole bean and ground coffee. Physicians at a university medical center had diagnosed obliterative bronchiolitis (also known as bronchiolitis obliterans) in five employees that had worked at this coffee processing facility. The five workers diagnosed with obliterative bronchiolitis described onset of severe shortness of breath during their employment at the coffee processing facility.

Obstruction and air trapping are common with obliterative bronchiolitis. The involved areas of the lungs show air trapping because air cannot exit adequately from the affected areas due to partial obstruction of the airways. This leads to an overall increase in the volume of the lungs, termed hyperinflation. A diagnostic clue to obliterative bronchiolitis on high-resolution computerized tomography (HRCT) scans of the chest is in comparing inspiratory and expiratory views. Air trapping in a mosaic pattern can be seen during the expiratory view.
Obliterative bronchioilitis can be caused by certain medications and post-organ transplant including bone marrow, heart-lung, and lung. Toxic gas inhalation such as nitrogen dioxide (or silo gas), chlorine, ammonia, and sulfur dioxide can cause obliterative bronchioilitis as well as mineral and organic dusts, bacterial and viral infections, and certain connective tissue diseases such as rheumatoid arthritis. Flavoring chemicals such as diacetyl can also cause obliterative bronchioilitis. Flavored foods often contain diacetyl. Examples were provided in the slide presentation.

An example of obliterative bronchioilitis in four employees at a cookie manufacturing facility in Brazil suggests that other cases may be happening in similar workplaces due to occupational exposures. The North American Industry Classification System (NAICS) category 311, food manufacturing, indicates nearly 1.5 million workers were employed in food manufacturing as of June 2015. At that time, there were over 19,000 workers employed in coffee and tea manufacturing.

NIOSH conducted an industrial hygiene survey for diacetyl and 2,3-pentanedione (both alpha-diketones) at the coffee processing facility. The draft NIOSH REL and STEL were reviewed. The

results of air sampling were compared to the draft NIOSH RELs for diacetyl and 2,3-pentanedione.

A medical survey was conducted at the coffee processing facility. The medical survey included a health questionnaire, spirometry, bronchodilator or mannitol challenge test, and IgG and IgE for green coffee beans, coffee, and castor beans. The coffee industry is known to have a risk of occupational asthma in relation to green coffee dust, coffee, and castor beans. Medical survey demographics were reviewed, and medical test results were presented.

The employee prevalence of symptoms and spirometric abnormalities was compared to the expected prevalences in the general population, adjusted for age distribution, race, sex, and smoking history. There was a 2.7-fold excess of spirometric obstruction and 1.6-fold excess of shortness of breath on exertion in comparison to the general population in the third National Health and Nutrition Examination (NHANES) Survey.

Workers that spent time in both of the high alpha-diketone exposure areas (grinding/packaging room for unflavored coffee and flavoring room) had a statistically significant decrease in mean FEV1/FVC ratio compared to workers who had not worked in either of these areas.

Conclusions of the health hazard evaluation were reviewed. Workers at this facility were at risk of obliterative bronchioilitis. The combined alpha-diketone exposure during grinding/packaging unflavored coffee was comparable to the manufacture and processing of flavored coffee. The substitution of diacetyl with 2,3-pentanedione in the flavorings did not lower overall alpha-diketone exposure.

The NIOSH Best Practices document on engineering controls, work practices, and exposure monitoring for diacetyl and 2,3-pentanedione was referenced. While not specific to coffee facilities, this document contains practical information that may be useful to many workplaces with potential exposures to flavoring chemicals (alpha-diketones).
Including the original health hazard evaluation, there are 11 other ongoing health hazard evaluations at coffee processing facilities. The medical survey plans for these facilities was presented including a health questionnaire, spirometry with bronchodilator, impulse oscillometry, and exhaled nitric oxide. Exposure assessment plans were also presented.
NIOSH has been updating the NIOSH flavorings-related lung disease website, including the coffee processing secondary page.

Dr. Terry Bunn asked about the strategy to disseminate the results of this study to coffee producers. Dr. Bailey noted that health hazard evaluation reports are shared with requestors, company management, OSHA, and state health departments. Employers are required to post a copy of final health hazard reports for 30 days at or near the workplaces of affected employees.

Dr. Sharon Cooper asked about whether current employees were in PPE and if the exposures were in the dust or vapor form. Dr. Bailey mentioned that diacetyl and 2,3-pentanedione are produced and released during roasting and also released during grinding. Grinding the roasted coffee beans increases the surface area which increases off-gassing. If the coffee is put in hoppers or bins, then there is a potential for off-gassing. Production rates also contribute to exposures. Green coffee dust can contribute to exposure as an asthmogen.

NIOSH recommended PAPRs with organic vapor cartridges and particulate cartridges/filters until engineering controls and administrative controls could reduce exposure.

Dr. Mark Nicas observed that their exposures were probably higher than on the chart. Dr. Nicas wondered what number of people were examined that had never been in the flavoring room prior to 2012? Dr. Bailey mentioned that NIOSH did not assess prior exposures but only looked at current exposures. The average duration of employment was 2.9 years (median duration 1.3 years). Thus, most workers had not been exposed to flavorings when the major chemical in the flavorings was diacetyl, rather than 2,3-pentanedione before the fall of 2011.

Dr. Mark Nicas mentioned that flavored coffee beans had about 25% of diacetyl added prior to grinding. Dr. Nicas also wondered if there a NIOSH method for real-time monitoring for diacetyl at 5 ppb? NIOSH was using real-time monitoring for total VOCs when looking at specific tasks, such as roasting, unloading the roaster, or grinding the roasted coffee. Dr. Bailey mentioned that in addition to using the standard OSHA method, NIOSH has been using a modified OSHA method (that uses a mass spectrometer) for improved detection limits. Additionally, NIOSH has been using evacuated canisters to collect air samples for diacetyl and 2,3-pentanedione. The REL is still a draft REL and is based on health hazard evaluation data that Dr. Bailey mentioned on microwave popcorn and animal data.

Dr. Grace Lemasters asked why not recommend stop using flavorings on coffee beans. Also, what about end users, like coffee shops that grind coffee on the spot. NIOSH just started evaluating coffee cafes. NIOSH has not recommended to stop using flavorings, but recommended using controls to decrease exposure.

Dr. Judith McKenzie asked about the magnitude of the problem and efforts toward dissemination. Is there a sense of how much is known and ready for dissemination? How much dissemination has there really been? Dr. Bailey mentioned that we disseminate our reports through conference presentations, manuscripts, medical providers, and the NIOSH website. NIOSH tries to get the information to the people who need it. There has also been some media coverage.

Ted Courtney stated that it mentioned that diacetyl is released in other cooking and baking environments. Is this localized to coffee or is it wider spread? Dr. Bailey mentioned that diacetyl has been seen in cooking oil (butter-flavored cooking oil). It depends on the volume of use. NIOSH does not have additional information right now. We have been in commercial kitchens; NIOSH detected low levels of diacetyl in bulk samples of unsalted butter and a butter-flavored cooking oil. Diacetyl was not detected in any area or personal air samples collected at these commercial kitchens.

Lamont Byrd asked about evaluating the effectiveness of engineering controls and PPE to reduce to the REL. Dr. Bailey mentioned that engineering controls have been evaluated in flavoring manufacturing. Engineering controls have been effective in microwave popcorn manufacturing. The draft NIOSH criteria document indicates that this is possible. In addition, there is published work that demonstrates the effectiveness of controls (Best Practices Document).

Dr. Bonnie Rogers asked many coffee roasters there are in the U.S.? Dr. Bailey mentioned that the exact number is not very well defined, but there are over 19,000 workers employed in coffee and tea manufacturing. There are many small coffee roasters.

Dr. Bonnie Rogers asked about the difference in toxicity between diacetyl and 2,3-pentanedione? Dr. Bailey mentioned that animal studies show that 2,3-pentanedione is just as toxic. The differences in the draft RELs reflect measurability.

Dr. Bonnie Rogers asked about the contribution of smoking and about the status of the Criteria Document?
Dr. Bailey mentioned that NIOSH studies are adjusted for smoking. Dr. Lauralynn McKernan mentioned that it is currently under review.

NORA: Burden Need Impact Presentation
Third Decade of NORA and Research Framework for Evaluating Research.

Dr. Sarah Felknor acknowledged her NIOSH colleagues and presented background and context of the topic to be described. The NIOSH mission was presented and mentioned how NIOSH accomplishes this mission through a variety of scientific activities such as:

- Research
- Surveillance
- Field investigation
- Development of guidance and recommendations

NORA was launched as a public private partnership to engage diverse interests and perspectives to chart a research course. The evolution of NORA was presented. Three decades of NORA were presented (1996 - 2006, 2006 – 2016 and 2016 – 2026). The third decade of NORA will feature 10 sectors and 7 cross sectors. The third decade also identifies core and specialty programs. This evolution shows us how NORA has been responsive to the research challenge of each of the decades.

NIOSH is going to use the Burden, Need, and Impact (BNI) method to identify research priorities. NIOSH must select the most important work, identify priorities to guide investments and base it on burden, need and impact. These concepts are not new in public health. Examples of burden, need and impact were described. These concepts will help NIOSH select research priorities.
In the third decade of NORA these principles will guide our sectors and cross sectors. The sectors and cross sectors will work in an integrated fashion to develop burden, need and impact. We are pilot testing this concept in our intramural research competition. NIOSH intramural staff worked together to identify integrated priority goals. Not all cells were populated and some were heavily loaded with a large number of proposals. NIOSH scientists developed 55 proposals for research. They are currently under review for funding.

The rollout of the third decade will be a formal announcement in the summer of 2016. The rollout of the third decade of NORA will coincide with the beginning of the fiscal year. We are planning a state of the science meeting in Denver in 2017 in the summer.

Dr. Charles Redinger asked about this from a program evaluation, how do we know that NORA has worked? Dr. Howard mentioned that NIOSH is currently conducting a NORA evaluation and perhaps include this in another presentation. Dr. Sarah Felknor noted that NIOSH has conducted an evaluation over the last 2 years. NIOSH has also evaluated its research programs according to relevance and impact. In the summer rollout, we will have quantitative and qualitative information on the impact of NORA. We have some recommendations for the third decade of NORA. There are issues with tracking outcomes. The NIOSH Program Performance and Evaluation Office (PPEO) has been leading an effort for NIOSH evaluation. Dr. Howard stated when NIOSH first started GPRA measures, the PART process and NAS reviews, one of the things we learned was the importance of identifying the outcome and how it would be improved by any given set of activities and outputs.

Dr. Grace Lemasters asked if neurological disorders considered in the cross sectors? This is important with nano exposures. Dr. Howard mentioned that we are trying to create focus in our sector and cross sector programs. We have tried to reduce the formalization for some research interests. There are core areas and special emphasis areas that could capture these interests without the formalization of NORA. We are trying to use the BNI criteria to create a rational approach for prioritization. There is a part of our world that cannot be predicted, but for the part that we can, we are trying to use our BNI approach to demonstrate our priorities.

Ted Courtney asked how did NORA evolve from the first decade to the second decade? Dr. Howard mentioned that the first decade reflected an academic approach for conducting research. The second decade was shifted to reflect interest from labor and management to relate research to the work environment. Consequently, we got more involvement from labor and management in NORA. Ted Courtney asked about what did NIOSH have in mind for emerging technologies in the new NORA? Dr. Howard mentioned that emerging issues are an input to the BNI framework. The connection would be with a sector or cross sector that might take that up as a priority. Ted Courtney asked about work organization? Dr. Howard mentioned that NIOSH has had a legacy program with work organization and stress. The seventh cross sector gets to the issue of healthy work design.

Dr. Sharon Cooper mentioned that she liked the BNI framework. Does this have an implication for the extramural community? Dr. Howard – From my perspective, NIOSH is trying to create a universal calculus for NIOSH funding. Dr. Sarah Felknor mentioned that the concepts of BNI are not new. Researchers have been describing these concepts previously. You will start to see in the funding opportunity announcement (FOA), specific instructions to address BNI and where to put it. We will now be able to follow the same metrics across intramural and extramural research. We have specific instructions to address BNI intramurally. We are trying to figure out whether we are going to add an additional review criteria to the National Institutes of Health 9-point scale (NIH 9) criteria that are used to score proposals. This will allow the NIOSH Secondary Review Committee to have a common metric across intramural and extramural projects. The FOA typically asks researchers to identify a NORA sector and strategic goal that the research is responsive to. The second decade of NORA had numerous goals which made it difficult to be strategic. The NIOSH Office of Program Planning and Evaluation (OPPE) will be giving guidance on goals and how to be more strategic. There will still be an opportunity for investigators to initiate new ideas or address emerging issues.

Dr. Howard mentioned that we would like to reduce our goals to focus efforts on intermediate outcomes. This is the area where we have the most opportunity to transfer outputs to outcomes and get toward impact.

Dr. Charles Redinger suggested that NIOSH should try to work in sustainability into core and specialty programs where you mention climate change. This would help with the integrity of how sustainability is reported. Dr. Sarah Felknor mentioned that the approach is flexible for the core and specialty programs and it allows them to find the sector or cross sector that most closely matches there effort.

Dr. Bonnie Rogers asked that with the core and specialty programs, is the expectation to select the core and specialty program and fit it into the sector and cross sector area. Dr. Sarah Felknor mentioned that the process that we used in our pilot, was to let the core and specialty program engage the sector and cross sector for finding the best match. The match might be based on burden on priority goals.

Dr. Bonnie Rogers mentioned that it was said on the presentation that there will be room for investigator initiated research. Do you just make the case for it, if it doesn't fit? Dr. Sarah Felknor mentioned that NIOSH is getting ready to reissue the standing announcement for RO1 and R21 and previous language indicated that priority may be given to stated priority goals. There is opportunity for researchers to identify workplaces and health outcomes of interest.

Dr. Bonnie Rogers asked that in gauging impact, do NIOSH also consider increasing awareness. I hope that does not get lost. Dr. Sarah Felknor mentioned that one of the bullets under impact, gives language that would include raising awareness. This is more of an output that would lead to impact. We are pilot testing the review criteria for BNI right now intramurally.

Dr. Terry Bunn asked if performance measures will be included at the launch of the third decade of NORA? Also, raising awareness may lead to measurement bias in measuring injury rates and I hope that this is included in how to bring the next decade of NORA forward. Dr. Sarah Felknor responded that it would, the OPPE is developing guidance to help our sector and cross sector programs articulate measureable goals. Measuring awareness is challenging. We have tried to measure or demonstrate reach in the second decade of NORA. Beginning the third decade, we will begin with a better approach for how to approach setting goals. This will help with evaluating programs and activities in the third decade of NORA.

Ted Courtney asked how is NIOSH going to stimulate innovation? Dr. Sarah Felknor mentioned that is likely to come up in need and argue the potential for impact. Also, burden is not limited to reported burden. It also includes potential burden.

Dr. Paul Schulte
Translation Research

Dr. Paul Schulte started the presentation acknowledging all the member of the workgroup that contributed to these efforts. Over the last 20-30 years there is new emphasis on science generated in the context of application. This is referred to as Mode-2 science and it is related to

generating knowledge for a societal purpose. The trend in government is related to GPRA, PART and GRPAMA.

There has been a new emphasis at NIOSH with a focus on intervention effective research, NORA and then the research-to-practice concept. The second decade of NORA started to think about the continuum of research to end outcomes. Then the Education and Information Dissemination Division (EID) started a research program on translation research. In 2013, the Burden, Need, and Impact (BNI) workgroup called for an emphasis on impact science.

The Research to Practice program is critical to drive translation research. It is the way that NIOSH drives impact. Historically, it was thought to be enough to only publish the results from research. NIOSH is now focusing on translating findings to practice. During the second decade of NORA, NIOSH developed a logic model with a focus on transferring outputs to outcomes. This is not a linear process and it also involves feedback. The NAS committee that reviewed the NIOSH programs developed two recommendations regarding research translation. NIOSH must do more to learn about how to improve the likelihood that research translation efforts will positively impact worksites and NIOSH should continue contributions to research on improving the effectiveness of translation efforts.

NIOSH has identified four types of research in the institute: basic, intervention, translation and surveillance. Translation research is the study of the processes, drivers and barriers that affect the relationship between research outputs and downstream outcomes. It is not research to practice but rather the study of those activities.

The field includes knowledge utilization, intervention effectiveness, outcomes research, implementation research, impact evaluation, program evaluation, and communication and dissemination research among others.

The National Institutes of Health (NIH) has four phases to move information from the bench to the bedside; NIOSH has adapted these to occupational safety and health:

Phase 1 – NIOSH would study how to take a laboratory or field study finding and make it into actionable information.

Phase 2 – NIOSH would assess the internal validity and efficacy of the actionable packaging of the knowledge.

Phase 3 – NIOSH would study how best to move it into occupational safety and health practice.

Phase 4 – NIOSH would study how to scale up solutions.

One activity of the Translation Research Program will be capacity building within NIOSH. Many of the NIOSH skill sets are not aligned with research translation skill sets. There is a need to further develop the internal capabilities of NIOSH.

The literature is ambiguous on what to call this area: research translation, translation research, or translational research. NIOSH calls this translation research. NIOSH will start an inventory of current translation research and other activities. NIOSH will form a intramural translation

research council. NIOSH will work with the extramural community to develop targeted funding announcements.

The translation research program will be added to the list of Core and Specialty Programs. As such, its function will be to promote Translation Research and coordinate activities related to it across NIOSH. Actual Translation Research will be conducted by investigators in Divisions, Laboratories, or Offices (DLO) and be managed therein.

Dr. Mark Nicas asked about the NIOSH findings showing that grinding beans caused an exposure above the draft REL. Can you illustrate for me what kind of research translation study would be done in Phase 1? Dr. Paul Schulte mentioned that there maybe a variety of ways to study how this information would be disseminated or utilized by employees. Additionally, the cost effectiveness of engineering controls could be determined and studied as a motivational factor. Overall, research would assess how organizations take that information and make decisions to protect workers.

Dr. Charles Redinger mentioned that there may be a connection with action research. One issue to be aware of is whether research is driven to practice too quickly. Think about validity and reliability. Dr. Paul Schulte mentioned that this is examined in the second and third tier of research translation. Also, the timing is critical. You can be premature in moving science too quickly.

Ted Courtney asked what does success look like? Is there anyone doing this well? Dr. Paul Schulte mentioned CPWR does good translation and as part of their efforts. This is an example of research translation. There are also good examples at NIH with biotechnology. McMaster University also is an example of historic training about translation research.

Ted Courtney mentioned that NIOSH may also want to reach out to the Institute of Work and Health. They presented at NOIRS last year. For the extramural community, to what extent is there a journal appetite for this information? Dr. Paul Schulte mentioned that there are several journals with translation research in the title. The focus on workers and employers will take time to develop.

Dr. Sharon Cooper asked if there are any thoughts on how to incorporate this into the Education and Research Centers (ERCs) and train the occupational safety and health workforce? Dr. Paul Schulte responded that there are, there will be an extramural component that will involve discussion with the ERCs. In occupational safety and health we need more space for organizational sciences. We have to train people to do this. We may need more interaction with social science departments. The field is evolving. The ERCs and TPG's (Training Program Grantees) will be important in this evolution.

Ted Courtney asked if there is an opportunity for industrial psychology to take on research translation questions? Dr. Paul Schulte mentioned that he would not want this to be seen as a study of the behavior of workers. We are interested in study employers and workplaces. Dr. Schulte would also want to make sure that we do not imply that we should shrink the traditional occupational safety and health professionals. We want to expand the grouping.

Dr. Charles Redinger mentioned that there might be room for a matrix approach to dip into the other programs and bring this concept forward. Dr. Paul Schulte mentioned that a matrix approach could be useful for OSH to have a strong translation and impact assessment. We are not investing enough of our mental capital on assessing impact.

Dr. Mark Nicas mentioned that it is hard to measure impacts of health and safety outcomes. If you cannot do that, then what would you measure? Dr. Paul Schulte mentioned that we look for immediate impacts, such as measures for moving people to action. Is it using NIOSH or other authoritative guidance in corporate risk management policies and asking trade associations to rebroadcast NIOSH recommendations. Some of these end outcomes are many years down the road and we need more outcomes that are measurable over a shorter time frame.

Dr. Bonnie Rogers mentioned that you can take a topic and think about the translation of that information according to several components (curriculum, management). Dr. Paul Schulte mentioned that we need to have the whole OSH community to engage in translation research.

Dr. John Howard mentioned that we have focused on evaluation today. Organizations have measures for performance that are outcome-based. Individual researchers can produce outputs but may not have specialization to move research to outcomes. There are also increased costs associated with producing research in an evaluation-oriented organization. Dr. Terry Bunn mentioned that all of this points toward an interdisciplinary research. There could be an opportunity for NIOSH to use collaborative agreements to draw on expertise among intramural and extramural researchers to advance translation research. Dr. John Howard mentioned that what we try to do is integrate our research. Dr. Sarah Felknor is the Associate Director for Research Integration. We must be respectful of intellectual property. We also ask about comparative advantage and intramural/extramural research using our BNI method.

Dr. Charles Redinger asked how the Board can learn about translation research? Dr. Paul Schulte mentioned that he will send some information to Paul Middendorf and make it available over the next couple of weeks.

NIOSH Center for Maritime Safety and Health Studies
Dr. Jennifer Lincoln

Dr. Jennifer Lincoln started by talking about the commercial fishing industry, since the NIOSH Center for Maritime Safety builds on the success of our prior research in commercial fishing. Dr. Lincoln would appreciate input and guidance on how to set up a Center and prioritize research.

The extent of the commercial fishing industry was presented. Fishing vessels range in size from small undecked skiffs, to more traditional looking vessels such as purse seiners to vessels that catch and process fish with 200 people on board. The annual fatality rate has been high for this population (128/100,000 workers). NIOSH expanded the commercial fishing safety research program to a national program in 2007. There are active projects on every coast in the United States and NIOSH has many partners throughout the US.

The Commercial Fishing Vessel Safety Act was passed in 1988 which gives the US Coast Guard jurisdiction for fishing safety. The regulations written for this Act focus on life saving equipment.

There are no primary prevention regulations such as mandating vessel inspections or vessel maintenance which would prevent emergencies at sea from occurring in the first place. There are also no requirements for Personal Flotation Devices (PFDs) to be worn on deck while fishermen are working.

NIOSH has an MOU with the USCG, signed in March 2014. During the most recent renewal, we included language that allows us to work on fishing safety issues as well as other maritime industries and collaborate regionally on interventions.

NIOSH Commercial Fishing Incident Database is used to identify the hazards that exist within the regions of the country. Most hazardous fishery events were presented by region including, AK, West Coast, East Coast and Gulf of Mexico. Winch entanglements are a major problem for fishermen. One of the NIOSH projects is to design stationary guards to protect against winch entanglements. The number of fatalities and the fatality rate among commercial fisherman in Alaska has been decreasing since 1990.

Data demonstrate that commercial fishermen that fell overboard and died were not wearing a PFD (n = 210, 2000-2014). NIOSH studied reasons for not wearing PFD and used a research to practice approach to promote design of more acceptable PFDs.

The NIOSH commercial fishing safety research program attempts to inform national policy, and has research partners internationally as well. NIOSH established the Center for Maritime Safety and Health Studies in November 2015.

Maritime workers include individuals employed:

- On vessels
- At waterfront facilities, working in and around vessels
- On shore directly supporting marine operations

The Core Areas of Focus for the Center include:

- Commercial fishing
- Fish processing
- Shipyard operations
- Marine transportation
- Marine terminal operations
- Long shoring
- Commercial diving
- Aquaculture

Maritime Industry hazards include:

- Exposure to toxic chemicals, metals, and dust
- Exposures to extreme heat or cold
- Musculoskeletal/ergonomic injuries (MSDs)
- Confined spaces
- Shiftwork and fatigue
- Falls overboard/drowning
- Vessel disasters

- Deck safety
- Falls and traumatic injuries
- Diving injuries

There are complex maritime jurisdictional issues. Next steps include collecting additional burden data, developing an understanding of the maritime industry, developing a census of NIOSH projects related to maritime, and meeting with external stakeholders.

Dr. Terry Bunn asked if NIOSH is including great lakes, rivers and surveillance system? Dr. Jennifer Lincoln replied yes. The maritime definition does not have a geographic or type of water limit.

Dr. Terry Bunn mentioned that this topic seems to cover multiple sectors. What about reaching out to the National Center for Health Statistics (NCHS) to get death certificates and then do a literal text search for related deaths? Dr. Jennifer Lincoln thanked Dr. Bunn for the suggestion.

Dr. Jaswant Singh asked if NIOSH covers offshore oil and gas and supply vessels, tugs, and barges? Dr. Jennifer Lincoln replied yes, we identified this as a research need.

Dr. Karla Armenti mentioned to consider reaching out to NIOSH funded state occupational health surveillance states and ERC sites. They even may have medical records via hospital discharge data. Dr. Jennifer Lincoln agreed.

Dr. Terry Bunn mentioned that trauma registry data from the states does have industry, occupation and a work related indicator. Also think about the Fatality Assessment and Control Evaluation (FACE) program. Dr. Jennifer Lincoln agreed.

Dr. Bonnie Rogers asked how many workers are potentially affected? Dr. Alice Shumate indicated it is a challenge to identify the total number of workers. This may be up to 500,000 (160K in shipyards, 100K in marine transport, 100K in marine terminals and longshoring, 100K in fishing, 35K in seafood processing). We do not have demographics to get additional variables, such as males and females, ages etc.

Dr. Grace Lemasters mentioned that this is a complex task in that this is multiple industries. Have you been able to prioritize the burden in this industry and where might you have the most impact? Dr. Jennifer Lincoln indicated that we should look at data and our capabilities and create priorities. We can then try to develop strategies to leverage resources across NIOSH both intramurally and extramurally. Part of what we're doing with our meetings this week in Washington, DC is meeting with stakeholders to help us prioritize.

Dr. Lamont Byrd asked if NIOSH's maritime definition include charter? Dr. Jennifer Lincoln replied yes. We are thinking that any worker operating or working on a vessel.

Dr. Jaswant Singh mentioned that he would think that ergonomics will be the biggest priority after deaths. Dr. Sharon Cooper mentioned that you might want to reach out the Office of Naval Research and Dr. Charles Redinger mentioned to also look at the Department of Defense (DOD). Dr. Bonnie Rogers asked if NIOSH is working with the oil and gas sector? Dr. Jennifer Lincoln

indicated that we published an MMWR on fatalities that included those that occurred during transportation activities including marine transportation.

Dr. Charles Redinger asked what attribution can NIOSH claim for the reduction in fatalities among commercial fishermen? Dr. Jennifer Lincoln stated that NIOSH has had an impact in Alaska and would like to think that NIOSH has an impact Nationwide.

Wrap up and Adjourn

- We will send an email for future meetings, maybe mid-September through end of October.
- We discussed in the previous BSC meeting about having a Wikipedia presentation in Morgantown. NIOSH will pursue this idea.
- Please email Paul Middendorf with suggestions for topics.
- A presentation on the second decade of NORA evaluation also have a topic on hazard banding and how pharmaceutical companies have used this system.

Appendix A

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-Sixth 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/

Wednesday – March 30, 2016

Time All times are	**Topic**	**Presenter**
8:30 am	Welcome and Introduction Meeting Logistics	Dr. Paul Middendorf DFO, NIOSH
8:45 am	Agenda, Announcements, and Approval of Minutes	Dr. Bonnie Rogers Chair, NIOSH BSC
9:00 am	Director's Opening Remarks	Dr. John Howard Director, NIOSH
9:30 am	Diacetyl in Coffee Roasting	Dr. Rachel Bailey Respiratory Health Division, NIOSH
10:15 am	Break	
10:30 am	BNI Framework and NORA 3	Dr. Sarah Felknor Associate Director for Research Integration and Extramural Performance, NIOSH
11:30 am	Lunch	
12:30	Public Comments	Dr. Paul Middendorf
12:45 pm	Translation Research	Dr. Paul Schulte Division Director, Education and
1:30 pm	NIOSH Center for Maritime Safety and Health Studies	Dr. Jennifer Lincoln Associate Director for Science,
2:30 pm	Summary & Wrap-up, Future Agenda Items, Meeting Dates, Closing Remarks	Dr. Bonnie Rogers Chair, NIOSH BSC
3:00 pm	Adjourn	

Appendix B

Board of Scientific Counselors
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

395 Patriots Plaza, SW
Washington, DC 20201
March 30, 2016

New Members of the Board of Scientific Counselors (BSC)

Terry L Bunn Ph.D.
University of Kentucky, Department of Preventive Medicine

Mary Ann Gruden MSN, CRNP, NP-C, COHN-S/CM
Allegheny Health Network

Grace LeMasters Ph.D.
University of Cincinnati, College of Medicine, Department of Environmental Health

Mark Nicas Ph.D., M.P.H., C.I.H.
University of California, Berkeley, Environmental Health Sciences Division, School of Public Health

Charles Redinger Ph.D., M.P.A., C.I.H.
Redinger 360, Inc.

Jaswant Singh Ph.D., C.I.H.
JAS International, LLC

Ronald W Stout M.D., M.P.H.
Procter & Gamble

NIOSH thanks each member of the NIOSH Board of Scientific Counselors for contributing their time to help advance high quality science at NIOSH for the betterment of workers.

Budget

FY 2016

- NIOSH FY 2016 budget is $339 million. A 4.2M increase from FY 2015.
    - Restoration of the Agriculture, Forestry and Fishing Program, and the Education and Research Centers which were proposed for elimination in the FY 2016 President's Budget. Both programs also received a funding increase of $1M each.
    - Restoration of the extramural Healthier Workforce Centers (part of the Total Worker Health Program) which were proposed for elimination by the Senate.
    - Mining Research funding increased by $1.8M to charter the National Academies to develop science-based conclusions regarding optimal monitoring and sampling strategies that support mine operational decision making as it relates to reducing miner respirable coal mine dust exposure.
    - Funding to support the consolidation of NIOSH facilities in Cincinnati has been restored.
- The Energy Employees Occupational Illness Compensation Program Act (EEOICPA), administered by the NIOSH Division of Compensation Analysis and Support, will receive $55.3 million.
- On December 18, 2015, President Obama signed into law a bill reauthorizing the James Zadroga 9/11 Health and Compensation Act of 2010. This includes reauthorization of the World Trade Center Health Program for 75 years, ending in 2090.
    - The World Trade Center (WTC) Health Program was provided appropriation of $330M for FY 2016. The reauthorization of the WTC Health Program sets a specific appropriation for the next 10 years. Allows unexpended funding to be available in future fiscal years. WTC Bill Reauthorizes WTC Health Program

FY 2017

- The President's FY 2017 budget provides NIOSH with $285.6M. A decrease of $53.4M.
    - Proposes the elimination of the Agriculture, Forestry and Fishing Program (-25M), and the Education Research Centers (-28.4M).
- $55.3M was proposed for the Energy Employees Occupational Illness Compensation Program Act (EEOICPA), a straight-line request from FY 2016

- Per the WTC Health Program 2016 Reauthorization, the WTC Health Program will receive $345.6M in FY 2017, an increase of 15.6M over FY 2016.

Organizational and Personnel Announcements

- **Kelley Durst** has been appointed as the new Deputy Director for Management in the National Institute for Occupational Safety and Health, effective November 29, 2015.
- **Jessica Elzea Kogel, Ph.D.,** has been appointed as the new Associate Director for Mining in the Office of the Director, National Institute for Occupational Safety and Health (NIOSH), effective February 8, 2016.
- **Eric Lutz, PhD,** has been appointed as the new Director of the Spokane Mine Research Division, effective January 10, 2016.
- **Max Kiefer** has been appointed as the Interim Director of the Western States Division effective January 11, 2016.
- **CAPT Jennifer Lincoln,** Western States Division Associate Director for Science, has agreed to direct the new Center for Maritime Safety and Health Studies (CMSHS

Currently or Recently Available for Public Review and Comment

- **Open for Comment. 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**,** closes 04/18/2016.

- **External Review Draft: NIOSH Current Intelligence Bulletin: Health Effects of Occupational Exposure to Silver Nanomaterials** is available for public comment until April 22, 2016. 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.

- **External Review Draft: NIOSH Criteria Document on Occupational Exposure to 1-Bromopropane** is available for public comment until April 29, 2016. 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.

- **Direct-reading monitors:** The NIOSH Center for Direct Reading and Sensor Technologies published a request for information (RFI) regarding the capability, suitability, and opportunities for current or future sensors that can be utilized for emergency response. This RFI is intended to inform the planning of a document to evaluate current and future sensor technologies used in emergency response. https://www.federalregister.gov/articles/2016/01/19/2016-00828/request-for-information-on-niosh-center-for-direct-reading-and-sensor-technologies-sensors-for

- **NIOSH is working with DOL-OWCP to establish a program to identify B Readers who show evidence of large opacity misclassification and take corrective actions as appropriate.** NIOSH operates the B Reader Program to approve physicians as able to classify chest x-rays for presence and severity findings of dust-induced lung disease (pneumoconiosis) for the NIOSH Coal Workers' Health Surveillance Program. B Readers also perform chest image classifications in other settings. For example, B Readers' classifications of chest x-rays are used in Black Lung Benefits proceedings managed by the Department of Labor, Office of Workers' Compensation Programs (DOL-OWCP). Because findings of large opacities associated with a severe form of pneumoconiosis called Progressive Massive Fibrosis can be very important in determining the outcome of these proceedings. When B Readers showing possible evidence of misclassification are identified, DOL-OWCP will send chest x-rays and classifications to NIOSH for review. An MOU details how the B Readers are identified for review. Also, a draft review process has been posted for public comment. Comments are being accepted through April 18. Both the MOU and the draft review procedure can be downloaded from the NIOSH web site: http://www.cdc.gov/niosh/docket/review/docket289/default.html

New Programs and Initiatives

Partnerships and Collaborations

- **NIOSH and OSHA begin collaboration on Socially-Responsible Sustainability, Safe Green Jobs, Prevention through Design (PtD):** On March 7, the first meeting of this OSHA-NIOSH working group, including the EID Prevention through Design coordinator, met to begin collaborating on worker safety and health through design under the banner of Socially-Responsible Sustainability. Discussion started with the new Leadership in Energy and Environmental Design (LEED) PtD pilot credits released by the U.S. Green Building Council in 2015. Dr. Branche reported that over 600 LEED professionals have now taken the LEED PtD webinar, with 18 projects formally using the credits. The USGBC considers these numbers to be amazing for non-traditional pilot credits. The working group is looking to make advances beyond construction.

- **The Oklahoma Department of Labor, the Oklahoma City Public Schools, and the Oklahoma Safety Council have asked NIOSH** to partner to help integrate Talking Safety with the Business Fundamentals of Technology and Technology Education Courses reaching approximately 4,000 eighth and ninth grade students per year.

Conferences, Courses, and Outreach

- **NIOSH Elongate Mineral Particles Workshop.** NIOSH is sponsoring this workshop to be held in Bethesda, MD on September 7-8, 2016, to explore issues of nomenclature and characterization of elongate mineral particles (EMPs) to improve science reporting and subsequent recommendations to prevent related diseases. The organizing committee includes representatives from OSHA, NIEHS, EPA, industry, academia, and trade associations. The NIEHS is co-locating a workshop on EMP health effects immediately following the NIOSH workshop.

- **The NIOSH Small Business Outreach and Assistance Program and the Colorado School of Public Health's Center for Health, Work & Environment** announced they will host the Understanding Small Enterprises Conference in Denver, October 25–27, 2017, the first international small business occupational safety and health conference held in the United States. The theme is "Worker Well-being and Sustainable Business Health: From Ideas to Achievable Reality." The conference seeks to provide solutions and methods to small businesses for improvements in worker well-being and productivity, while reducing injuries and illnesses.

Initiatives

- **NIOSH Announces Center for Maritime Safety and Health Studies**: NIOSH announces the launch of its new Center for Maritime Safety and Health Studies. The ocean environment presents many challenges to those who protect seafaring workers' safety and health. The Center will promote safety and health for this high-risk worker population by coordinating research and intervention studies across NIOSH. CAPT Jennifer Lincoln of NIOSH will lead the new Center.
- **First CCER Approved under New Standard**: On January 4, NIOSH and the Mine Safety and Health Administration (MSHA) approved the first large-capacity closed-circuit escape respirator (CCER) under new standards published in 42 CFR Part 84, Subpart O. Additional information, including the status of CCERs approved under Subpart H, is available on the NIOSH NPPTL website.
- **Predictors of Adherence to Safe Handling Practices for Antineoplastic Drugs:** A Survey of Hospital Nurses: A new article by NIOSH researchers looks at predictors of adherence to recommended safe-handling practices for administration of antineoplastic drugs (ADs). The

study analyzed survey responses from nurses at hospitals and found that training, familiarity with safe-handling guidelines, and availability of engineering controls and personal protective equipment (PPE) were associated with better adherence to safe-handling practices and with fewer reported spills of ADs. The study report will be published in the March issue of the *Journal of Occupational and Environmental Hygiene* and is now available online.

- **NIOSH Study Reveals Safety Issues in Long-haul Trucking Industry:** New data from NIOSH highlights a number of important safety issues facing long-haul truck drivers (LHTDs) and their employers. The study, published in the December 2015 issue of the journal *Accident Analysis and Prevention,* is the first to describe truck crashes, work-related injuries, work environments, and driver training, attitudes, and behaviors. See "NIOSH national survey of long-haul truck drivers: Injury and safety".

- **NIOSH Updates Software for Estimating Respirator Service Life:** The NIOSH MultiVapor™ tool has been updated and posted to the web. MultiVapor™ is a computer tool for estimating breakthrough times and service lives of air-purifying respirator cartridges for removing toxic organic vapors from breathed air. It can also be used for larger filters and for carbon beds of any size prepared for laboratory studies. MultiVapor™ 2.2.3 replaces the 2.1.3 version.

NIOSH Research in the News

- **NIOSH Occupational Research Noted in Harvard Study of Diacetyl, Other Flavorings in e-Cigarettes**: Pioneering NIOSH studies on the risk of the severe lung disease *obliterative bronchiolitis* associated with occupational exposures to flavorings were noted in a recent report by scientists at Harvard University's T.H. Chan School of Public Health. The scientists analyzed 51 types of flavored e-cigarettes for the flavorings diacetyl, 2'3-pentanedione, and acetoin. Their study, posted on December 8, 2015, by *Environmental Health Perspectives* ahead of publication, showed that 47 of the 51 products contained at least one of the three chemicals. "Due to the associations between diacetyl, bronchiolitis obliterans, and other severe respiratory diseases observed in workers, urgent action is recommended to further evaluate this potentially widespread exposure via flavored e-cigarettes," the Harvard scientists recommended. NIOSH's findings and recommendations on reducing the risk of obliterative bronchiolitis associated with occupational exposures to flavorings are available on its flavorings topic page.
- **NIOSH Lead Contamination Research Cited In Recent Headlines:** A February Huffington Post article, "How Lead In Recycled Electronics Can Poison Workers' Families" refers to a July

2015 MMWR article by NIOSH investigators and outside colleagues on take-home lead contamination.

- **NIOSH Researcher Talks Black Lung with NPR:** NIOSH epidemiologist, David Blackley, sits down with NPR's Here & Now (hour 2, at time 10:57) to speak about coal workers' pneumoconiosis, or "black lung," the possible reasons for its prevalence and resurgence among coal miners in Appalachia, and what research NIOSH has done. He is joined by a third-generation coal miner who was recently diagnosed with advanced black lung disease.

- **NIOSH TWH™ Director Talks With *Working Capital Review:*** *Working Capital Review,* covering ideas that drive global business, sat down with Dr. Casey Chosewood, Director of NIOSH's Office for Total Worker Health,™ during "Working Capital Conversations" in December. Dr. Chosewood spoke about the importance of making worker health and safety part of an ongoing business strategy.

Upcoming NIOSH Publications

Criteria for a Recommended Standard: Occupational Exposures to Diacetyl and 2, 3-pentanedione

Criteria for a Recommended Standard: 1-Bromopropane

Current Intelligence Bulletin: Neurological Effects of Manganese Exposure to Welders

NIOSH Current Intelligence Bulletin: Update of NIOSH Carcinogen Classification and Target Risk Level Policy for Chemical Hazards in the Workplace

Recently Released 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 This joint NIOSH and OSHA hazard alert identifies health and safety risks to oil and gas industry workers who manually gauge or sample fluids on production and flowback tanks. "Health and Safety Risks for Workers Involved in Manual Tank Gauging and Sampling at Oil and Gas Extraction Sites," specifically recommends how employers can protect workers from hazards that occur when tank hatches are opened to manually gauge or sample hydrocarbon levels.

Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments DHHS (NIOSH) Publication No. 2016-106. It provides new recommendations and information

related to the understanding and control of occupational heat stress. It was developed by NIOSH subject matter experts and reviewed by other government agencies, external experts from academia, organized labor, and industry. Some of the topic areas include biologic effects, occupational exposure limits, medical monitoring, training, and controls.

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

Workplace Design Solutions: Preventing Hazardous Noise and Hearing Loss During Project Design and Operation. 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. 2016-101, pp. 1-5, http://www.cdc.gov/niosh/docs/2016-101/.

Health Hazard Evaluation Report: Evaluation of Erionite and Silica Exposure During Forestry Activities. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. HETA 2013-0061-3244, pp. 1-31 (November 2015).

Buy Quiet -- For Manufacturers. 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. 2016-103, (video https://www.youtube.com/watch?v=AXrNAY16zKo); http://www.cdc.gov/niosh/docs/video/2016-103/.

Recently Published NIOSH Manual of Analytical Methods (NMAM):

The following methods have been published or updated since September 2015

- 8318 – 2,5-Hexanedione in urine
- 8323 – 2- Methoxyethoxyacetic acid in urine
- 8320 – Butyltin chlorides in urine
- 7306 – Elements by cellulosic internal sampler
- 7704 – Beryllium in air
- 9110 – Beryllium in wipes

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.

Science Blog Topics since Last BSC Meeting

How to Put Leading Indicators into Practice

Occupational Exposure Limits—State of the Science

Coffee Workers at Risk for Lung Disease

Preventing Wood Chipper Fatalities

The Opioid Overdose Epidemic and the Workplace

New NIOSH Study Supports the OSHA Annual Fit Testing Requirements for Filtering Facepiece Respirators

Office of Extramural Programs

Center Program Competitions in FY2016 (all cooperative agreements)

- Centers for Agricultural Safety and Health
- NIOSH Centers of Excellence for Total Worker Health®
- World Trade Center Health Registry
- National Mesothelioma Virtual Bank for Translational Research (Tissue Registry)

Workers' Compensation Surveillance Update:

- Provide state health and Workers' Compensation (WC) agencies resources to initiate or expand WC surveillance and intervention activities.

- FY2015: Massachusetts and California funded (each for 3 yrs. @ $200K/yr.; total NIOSH funds = $1.2M).
- FY2016: at least 2 more states to be funded for 3 years @ $200K each (another $1.2M commitment).
- FY2017: applications due August 29, 2016 (http://grants.nih.gov/grants/guide/pa-files/PAR-14-227.html).

New Cooperative Research Agreements Related to the World Trade Center Health Program Funding Announcement Published

- Applications due April 19
- PAR-16-098 (http://grants.nih.gov/grants/guide/pa-files/PAR-16-098.html)

Education and Information Division

- **The Nanotechnology Research Center** served as primary organizer and Co-Chair for a Working Session on Nanotechnology in the Workplace at the 8th Joint US-EU Conference on Occupational Safety and Health. The session focused on areas of mutual interest and collaboration on research topics in nanotechnology and the safe and responsible use of nanomaterials in the workplace. The Finnish Institute of Occupational Health served as the EU Co-Chair. A joint pre-conference paper for the delegation members identified key areas of interest and topics such as: methods to communicate hazard information; developing criteria for evaluating hazard and risk; developing harmonized strategies for exposure measurements; and disseminating best practices for engineering controls and risk management.

- **Additional Accomplishments**
    - The NIOSH Web team has moved 98% of the NIOSH Website to the new CDC web template which is designed to provide NIOSH web content in a mobile-friendly format.

    - The Information Resources and Dissemination Branch of the EID has developed a plan for using alternative metrics to begin measuring the impact of NIOSH products and publications.

Respiratory Health Division

- **Health Hazard Evaluations (HHE) at Coffee Processing Facilities.** A severe lung disease called obliterative bronchiolitis occurred in five workers at a coffee processing facility that roasted, ground, and flavored coffee. Two of the cases were summarized in a

Morbidity and Mortality Weekly Report (MMWR), published by the Centers for Disease Control and Prevention (MMWR 62(16):304-307). NIOSH investigators recently published an article in the American Journal of Industrial Medicine about a health hazard evaluation at this facility (AJIM 2015;*58*(12):1235-1245). NIOSH is working with a number of coffee processing facilities through the HHE Program. NIOSH HHE investigators have developed a coffee processing webpage with interim recommendations; these recommendations may change as we learn more over the coming year.

- **Expansion of Health Surveillance for Coal Miners to include Surface Miners.** To date, approximately 4500 surface miners have received services. Extensive outreach to surface miners using a mobile medical unit to provide chest radiography and spirometry will begin this spring.

- **Published research on prevalence of smoking** in the Healthcare and Social Assistance Sector and among working women of reproductive age.

Division of Surveillance, Hazard Evaluations, and Field Studies

- **HHS Ignite Accelerator Program.** The NIOSH Health Hazard Evaluation (HHE) Program is participating in a DHHS program to design innovative solutions and approaches to program activities. This DHHS program is called "HHS Ignite Accelerator" and is an internal innovation startup program for staff within the Department that want to improve the way their program, office, or agency works. The program provides selected teams methodological coaching and technical guidance within a fast-paced, entrepreneurial framework. The Ignite Accelerator program is part of the "HHS Idea Lab." The HHE Program is one of 24 teams selected out of 104 entrants across the Department! The project is redesigning HHE reports to best meet stakeholder needs.

- **Evaluation of Erionite Exposure during Forestry Activities.** HHE Program investigators found erionite mineral fibers on air samples collected on employees doing forest management work. Investigators recommended against repairing roads with aggregate that contained erionite. Investigators also recommended controlling dust exposures with ventilated vehicle cabs, wet methods, and other work practices.

- **Ergonomics Recommendations for an Airline Catering Company.** HHE Program investigators found work-related risk factors that could explain employees' musculoskeletal symptoms, injuries, and disorders. Investigators also found problems related to cold exposure, dry ice, job stress, and communication. Investigators recommended redesigning workstations, employee rotation, training, and addressing

job stressors. For more information go to: http://www.cdc.gov/niosh/hhe/whats_new.html?s_cid=102015-HETAB-ENEWS-001.

- **Request for Assistance from PAHO.** NIOSH recently traveled a team of 3 exposure assessors (2 DSHEFS, 1 DART; led by Brian Curwin, DSHEFS) to assess occupational exposures among young agricultural workers (sugar cane workers) in El Salvador. Our current effort is in response to a request for assistance from PAHO. The underlying problem we are helping to evaluate is an increased prevalence of chronic kidney disease (CKD) of unknown or non-traditional etiology among the population (particularly young males, which is highly unusual) of several Central American countries in the last 20 years. Workers in industries with jobs that occur outdoors and with a high work load, such as agriculture, seem to be the most affected; one of the emphasis areas of the NIOSH exposure assessment is occupational exposure to pesticides.

Division of Applied Research and Technology

- **International implementation of engineering controls on asphalt pavers:** On March 2-3, DART/EPHB engineers participated in the final meeting of the Institut National de Recherche et de Securite (INRS) led ad hoc group Bitumen fumes / aerosols ISO/TC 195/WG 9 ISO 20500 Mobile Road Construction Machinery - Safety. The ad hoc group is adopting the NIOSH-developed tracer gas testing protocol for asphalt fume engineering controls (NIOSH publication number 97-105) into a proposed draft ISO standard for mobile road construction machinery. Including the test procedures of NIOSH publication 97-105 into the ISO 20500 standard will facilitate implementation of engineering controls on pavers worldwide.

- **Carmustine analyses for HEPA recirculation project:** EPHB engineer Deborah Hirst is leading a research effort to investigate whether antineoplastic drug aerosols trapped on HEPA filters significantly evaporate under prolonged air flow. Studies were conducted with a number of common but low volatility antineoplastics spiked onto HEPA filters and subjected to air recirculation in a closed test loop of the engineers' design.

- **Hazardous drugs:** Tom Connor (BHAB) and Kenneth Mead (EPHB) served on The United States Pharmacopeia Expert Panel on Hazardous Drugs. Over the past five and a half years, the panel helped develop "USP General Chapter <800> Hazardous Drugs—Handling in Healthcare Settings" which was published February 1, 2016. The Chapter takes effect July 1, 2018 and will be enforceable by State Boards of Pharmacy. The focus of the Chapter is to protect the safety of the patient, the healthcare worker, and the environment.

Division of Safety Research

- **Participated in the National Highway Traffic Safety Administration (NHTSA) - sponsored forum called "Asleep at the Wheel: A Nation of Drowsy Drivers"** in November 2015 in Washington DC. Stephanie Pratt, Director of the NIOSH Center for Motor Vehicle Safety, participated by invitation. The main purpose of the meeting was for NHTSA to gather broad input for a new national drowsy driving initiative. Dr. Pratt represented NIOSH and served on a panel on employer and public policy.

- **The NIOSH Center for Motor Vehicle Safety now has a quarterly eNewsletter called "Behind the Wheel at Work."** The first edition was published in December 2015, and has 3,275 subscribers as of February 2016.

- **Ladder safety app for smartphones**. DSR's award-winning app uses visual and audio signals to make it easier for workers to position extension ladders at a safe angle that reduces the risk for falls. The app was recently updated to include stepladders and other enhancements based on user input. As of February 2016, the app has been downloaded 67,340 times.

- **Aerial lift safety.** A recent addition to Workplace Safety and Health Topics for fall injury prevention is a webpage on aerial lift safety. Aerial lifts are powered and mobile platforms that are used for elevating workers to various heights, and are used in construction, warehousing, and general building maintenance, among other industries. The new page includes information about fall-related risks and recommended safe work practices associated with this equipment, and includes a novel Aerial Lift Hazard Recognition Simulator to help operators acclimate to aerial lift operation and identify common occupational hazards that can be present during use.

- **Contemporary anthropometry (body size and dimensions) data for fire fighters and truck drivers.** Contemporary anthropometry (body size and dimensions) data for fire fighters and truck drivers has been posted to the NIOSH website, to encourage use of these data in equipment and workspace design (e.g. fire fighter gloves, truck cabs). Previously available data were drawn from studies of military personnel, most of which was collected during the 1950s through the 1970s, and did not reflect today's workforce.

- **NIOSH Fact Sheet *Older Drivers in the Workplace: Crash Prevention for Employers and Workers*,** was recently released and includes recommendations to improve the safety of older drivers in the workplace. This is an update of a 2005 fact sheet.

National Personal Protective Technology Laboratory (NPPTL)

- **NIOSH research will be highlighted at an upcoming National Academy of Medicine workshop scheduled for August 1-2, 2016 in Washington, DC.** The purpose of this workshop is to assess the state of the science relative to filtering facepiece respirator approval and clearance in healthcare. This workshop supports the efforts underway to unify the FDA and NIOSH filtering facepiece respirator approval/clearance processes.

- **The NIOSH research on respirator panel variability will be used to support a new ANSI subcommittee** (ASSE/ANSI Z88.15 – Respirator Fit Capability Subcommittee) to establish minimum performance requirements to demonstrate that filtering facepiece respirators have good face seal performance on the intended user population, when users are properly trained and fit tested in compliance with the Occupational Safety and Health Administration Respiratory Protection Standards 29 CFR 1910.134. The standard is supported by including the first of several papers on interpanel variability (Zhuang-Z; Liu-Y; Coffey-CC; Miller-C; Szalajda-J. Inward leakage variability between respirator fit test panels - part I. Deterministic approach. J Occup Environ Hyg 2015 Nov; 12(11):753-760).

- **Respiratory Protection:** NIOSH published a Science Blog (http://blogs.cdc.gov/niosh-science-blog/2016/01/05/fit-testing/) and a manuscript in Journal of Occupational and Environmental Hygiene with data that confirm the necessity of the current Occupational Safety and Health Administration (OSHA) respirator fit testing requirement, both annually and when physical changes have occurred. The study's conclusions emphasize that respirator users who have lost more than 20 pounds should be re-tested to be sure that the current size and model of respirator in use still properly fits. For over three years, NIOSH researchers followed a cohort of 229 subjects measuring N95 filtering facepiece respirator (FFR) fit and physical characteristics (e.g., face size, weight) every six months.

- **Ebola/Healthcare Worker PPE:** Progress has continued since the last BSC meeting on research projects initiated as a result of the Ebola response. A manuscript is currently in CDC clearance with data demonstrating how cooling devices can increase the amount of time one can wear Ebola PPE before core body temperature reaches 39 degrees Celsius. NIOSH data on the barrier effectiveness of isolation gowns is the subject of a draft manuscript targeted for publication in the May 2016 MMWR. Multiple FY16 new starts were initiated to improve test methods and develop standards for Ebola PPE and to assist in resource distribution. These projects are being done with collaboration with key partners and collaborators. In one study, a research agreement has been developed to formalize a collaboration with the Food and Drug Administration. In another project,

a contract was issued to Vanderbilt University to establish a national system to monitor usage of PPE used to protect healthcare workers against the Ebola virus.

- **Participation and leadership in National and International consensus standards.** Updated the NIOSH-NFPA partnership agreement (MOU) on September 23, 2015 providing another 5 years of performance focusing on priority research areas and PPE standards development. Collaborative research is underway to better understand PPE decontamination procedures.

- **Conformity Verification.** So far for fiscal year 2016, 202 respirator approval decisions have been completed (116 granted and 86 denied). Notable accomplishments - the first large-capacity (Cap 3) closed-circuit escape respirator (CCER) for use in underground coal mining was approved on January 4, 2016 to Ocenco Inc., for their Model EBA 75 CCER, approval number TC-13G-0005. A second approval is expected by the end of March based on the success of the test results and quality assurance evaluation.

- **NPPTL is working with its stakeholders to provide innovative ways of communicating and translating research to practice.** The 4th annual N95 day, held Friday, September 4th, was a huge success. Fifteen states declared it an N95 holiday and more than 300 people attended NPPTL's webinar. NPPTL had a video on YouTube highlighting Dr. Ray Roberge's study on pregnant workers wearing N95 FFRs, and a science blog that provided other resources of use to RPP administrators. Three new infographics were developed and showcased, including (1) Key Requirements of a Respiratory Protection Program, (2), Summary of Respirator Fit Test Requirements, and (3) Respirator Use & Infection Control in Healthcare. The NPPTL twitter account was active leading up to N95 Day and on N95 Day itself. Tweets using the hashtag #N95Day reached 1,165,322 accounts. NPPTL had 47 retweets from 8/26 through 9/5 of content that used the #N95Day hashtag. A novel social media campaign was done this year. A series of 5 photos of people (NPPTL employees) incorrectly wearing a N95 respirator was posted to social media (Facebook, Pinterest, Instagram). This enabled us to promote interaction between us and the stakeholders. Two photos received just a little over 100 likes on Facebook and one photo received over 200 likes. Each had several comments identifying what was incorrect about how each N95 respirator was worn.

Emergency Preparedness and Response Office

- **Zika Virus:** New NIOSH mosquito-borne topic pages, including Zika, have been posted to the NIOSH website. NIOSH is working within the CDC's Emergency Operations Center to address Zika occupational safety and health concerns. NIOSH/EID has drafted a poster and factsheet on Zika for the cruise industry. We are currently collaborating with OSHA

to develop business guidance for protecting workers from occupational exposures to Zika virus.

Social Presence Statistics

NIOSH continues to expand its presence on social networks.

Social Media and Public Outreach Accounts and Services	February 2015	February 2016
Facebook	84,697 likes	111,370
Twitter	@NIOSH account 299,000 followers	16 accounts @NIOSH account 325,451 followers
Instagram	Launched in Spring 2015	425 followers, 181 posts
YouTube	978 subscribers, 264,620 views 131 videos	1,081 subscribers, 301,131 views 147 videos/clips
Pinterest	37 pins to CDC's Workplace Safety and Health Board which has 3100 followers	37 pins to CDC's Workplace Safety and Health Board which has 3628 followers
Flickr	245 images	283 images
Website Views	1,634,121 site views in Feb 2015	1,791,912 site views in Feb 2016
eNews Subscribers	57,000	58,000
TWH Newsletter Subscribers	61,000	64,000
Research Rounds Newsletter	Launched July 2015	57,000
Science Blog	Total blog entries: 243 Total comments: 4394 Blog site views (Feb 2015): 27580	Total blog entries: 321 Total comments: 5458 Blog site views (Feb 2016): 35324

Awards

- **Supervisor of the Year.** Congratulations to **Gayle DeBord** for being selected in 2015 as the 2014 Supervisor of the Year by the American Federation of Government Employees local 3840 at the NIOSH Cincinnati location. This award promotes a sense of caring and respect within NIOSH that is crucial to teamwork in the workplace. Gayle was selected from among several outstanding supervisors, for continually striving for fair and equitable compensation for her employees; ensuring the individual dignity of each employee; providing an atmosphere of free expression; guaranteeing "fair play" to all; sparing no effort to provide safe working conditions; and helping make employees feel involved, important, and appreciated.

- **NIOSH Nano Researcher Recognized as One of World's Most Influential Scientific Minds.** Congratulations to Dr. Anna Shvedova for her recognition as one of most influential scientific minds of 2015 by Thomson Reuters. The international publisher has named Dr. Shvedova a "Highly Cited Researcher," recognizing her significant contributions in the field of pharmacology and toxicology. Dr. Shvedova is one of only 128 worldwide who were recognized in the area of pharmacology and toxicology. Dr. Shvedova will be listed in Thomson Reuters' publication, The World's Most Influential Scientific Minds 2015. Thomson Reuters analyzed citation data over an 11-year period to determine which researchers were cited the most by their scientific peers.

Recent NIOSH Authored Journal Publications

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I hereby certify that, to the best of my knowledge, the meeting minutes of the March 30th, 2016 meeting of the NIOSH Board of Scientific Counselors is accurate and complete.