# THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
# CENTERS FOR DISEASE CONTROL AND PREVENTION

# NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
# BOARD OF SCIENTIFIC COUNSELORS (BSC)

## EIGHTY-SECOND MEETING

## MARCH 13, 2024

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# Summary Proceedings

The eighty-second meeting of the National Institute for Occupational Safety and Health Board of Scientific Counselors (BSC) was convened on March 13, 2024 via Zoom. The BSC met in open session in accordance with the Privacy Act and the Federal Advisory Committee Act (FACA).

# Attendees

ALBERTO CABAN-MARTINEZ, PhD - MEMBER

DAWN CASTILLO

ENJOLI DEGRASSE - MEMBER

MICHAEL FOLEY - MEMBER

RUTH FRANCIS - MEMBER

DANIEL GLUCKMAN

JUDITH GRABER, PhD - MEMBER

GAVIN HORN, PhD - MEMBER

JOHN HOWARD, MD – DIRECTOR

EMILY HUANG, PhD - MEMBER

LAURALYNN MCKERNAN, PhD

KETKI PATEL, PhD - MEMBER

JOHN PIACENTINO, MD

LUIS PIERETTI, PhD - MEMBER

LESLIAM QUIRÓS-ALCALÁ, PhD - MEMBER

TIINA REPONEN, PhD - CHAIR

ROBERT ROY, PhD - MEMBER

MIRIAM SIEGEL, DrPH

MARIA STRICKLAND - DFO

LILIANA TENNEY, DrPH - MEMBER

# Welcome and Meeting Logistics

**Ms. Strickland** called to order the open session of the eightieth meeting of the NIOSH BSC at 10:00 a.m. Eastern Time (ET) on Wednesday, March 13, 2024. A roll call of all BSC members confirmed that a quorum was present. The roll was also called following the break to ensure that quorum was maintained. Quorum was maintained throughout the day. No conflicts of interest were declared. Members of the public were notified that they would remain in listen only mode until the public comment period.

# Agenda

**Dr. Reponen** welcomed everyone and asked all members to introduce themselves since we have six new members joining us. She then summarized the agenda of the meeting. She reminded the group there are specific questions to consider for the presentations:

1. Director's Opening Remarks
2. NIOSH Evaluation Capacity Building Plan Update
3. Public Comments
4. Diversity, Equity, and Inclusion at NIOSH
5. National Firefighter Registry Subcommittee Updates

# Director's Opening Remarks

**Dr. Howard** thanked the members who extended their service 180 days to attend the Spring meeting and welcomed all new members and thanked them for joining the BSC. He explained how he provides remarks beginning with the Budget. We have our Fourth Continuing Resolution which was passed on the 29th of February, and it extends to the 22nd of March, in which, according to the new House Speaker's laddered approach to the federal appropriations, there are now two groups of appropriations, and the Labor, HHS Appropriation Bill is in the March 22nd tranche, and we're in the HHS and CDC's budget. The Senate has pretty much done its work; it's a flat budget, which in this day and age of course is a great victory. The House version is a reduction of $115 million, which would be fairly catastrophic for NIOSH so we're hoping that we can get at least a flat budget agreed to by the House and the Senate.

The one issue I want to bring up is the President signed an Executive Order giving federal employees an average of 5.2% pay increase. They deserve it, but that's called an unfunded mandate and we have to pay it out of our budget. The President doesn't give us extra money to cover that. So there's lots of costs associated of doing research business. That's one example.

**Dr. Howard** continued that the Working Capital Fund, in which we pay for administrative costs to run an organization and the IT modernization that all of us are undergoing—all of those are extra costs that then subtract from the amount of research money that we're able to devote to research projects.

**Dr. Howard** introduced changes to NIOSH leadership in the last year. I want to introduce Marie de Perio, who is our new NIOSH Associate Director for Science. Marie is heading our science activities in the Office of the Director. Maria Strickland was appointed Chief of Staff for NIOSH, and we're going to be transitioning her out of the DFO position here at the BSC and so our next meeting will be our new DFO, Hadley Hickner. So thank you, Maria, for all the work that you've been able to do with the BSC. Dawn Castillo, that many of you knew as the Director of the Division of Safety Research, is now the Director of Office of Extramural Programs. Chad Dowell is our new Emergency Preparedness and Response Office Director. He takes the place of Lisa Delaney, who was recently appointed the new Division Director or Associate Administrator of the World Trade Center Health Program, which is not covered under the Board of Scientific Counselors.

Dr. Don Beezhold retired from HELD last year and we do have a HELD Director-Designate that we're hoping can get through the various bureaucratic hurdles to be actually fully appointed. And unfortunately, Sarah Felknor has left NIOSH, which is a real loss for us but a gain for the University of Texas School of Public Health in Houston, so we wish her all the best even though we're really sorry to see her go.

**Dr. Howard** said that of the items I wanted to bring to your attention on page 4 is the Office of Agriculture Safety and Health. The Sixth International Fishing Industry Conference that was held at the FAO headquarters in Rome is listed there, and a Safety Research and Training Program in commercial fishing, which is growing year-by-year. I also wanted to mention that NIOSH has a unique opportunity in that Secretary Xavier Becerra, the HHS Secretary, has decided to do an initiative in the area of farmworker health and safety, specifically with regard to farmworkers' exposure to heat and smoke, wildland fire smoke. We're thrilled to be a part of that. It's an HHS-wide effort involving other operating divisions of HHS, including CDC, of which we are a part, and we're happy to contribute to farmworker health and safety, and also other outdoor workers—construction workers, utility workers, and others that work outdoors. We have a lot going in in heat obviously, as many of you know. We have a criteria document, a quantitative risk assessment document, that was published in 2016 which the Occupational Safety and Health Administration is using in their efforts to craft a heat injury and illness prevention in outdoor and indoor work settings standards. We're very happy about that. We also have a heat safety tool app. We have a number of blogs. We have a FACE program, reports in MMWR. And we have contributions from at least two of our NIOSH Agricultural Safety and Health Centers, one in Washington State, the Pacific Northwest Center, and the Western Center in California. We hope to be able to involve those two centers in the initiative, the Secretary's initiatives.

What we've committed to do in terms of wildland fire smoke in the Division of Science Integration, led by Chris Whittaker, is a hazard review in which we're going to set out approaches to protect farmworkers and other outdoor workers from wildland fire smoke. This is not a quantitative risk assessment so it's not a criteria document, but it's the next best thing to it. We hope to be able to have a public draft available by the end of the year. It's a very aggressive and very accelerated course with all hands on deck in order to meet the Secretary's initiative.

**Dr. Howard** then commented on page 5 about our National Firefighter Registry. My understanding is that we're approaching a really wonderful number of enrollees so far. He then called attention to page 6, to the emergency response to the Maui County, Hawaii wildfire because it's the first time that we've been able to

do a real-time biomonitoring model for firefighters in that area, with a lot of work by a lot of people in the Division of Field Studies and Engineering that Lauralynn McKernan heads where the Firefighter Registry is. That data's not out yet but I hope that we're able to do that kind of biomonitoring study in real-time in other disasters that involve chemical and physical agents. He thanked Lauralynn for putting all that together, and we look forward to the publications coming out of that.

He then highlighted on page 10, the National Personal Protective Technology Lab has a number of really exciting innovations and initiatives there, numbered 1 through 6. I really encourage the Committee to consider inviting Maryann D'Alessandro, the Director of the Lab, to give you more information and a little deeper dive into that. The National Academy did a review in 2022 on the issue of inhalational hazards not just to biologicals but also to inhalational hazards resulting from smoke, which is now becoming a significant issue in the federal and state government space. And in particular, the National Academy review, which is available online, we looked at two groups of workers—one group of workers are covered by the OSHA respiratory protection standard, and others who are not. During the pandemic we saw grocery workers, other retail workers, etc. wearing various apparatus to protect their respiratory system. They're another group of workers that we need to figure out how to protect those workers that won't be covered by an OSHA standard; and then there's the general public. And I think that National Academy review hopefully will spur lots of innovation, and I encourage the Committee to consider diving a little deeper into that because I think it's a very exciting area.

**Dr. Reponen** opened the floor for questions and asked what is happening with the personal protective equipment? Two years ago, we had the presentation by Dr. D'Alessandro about the report and potential implications, and there was comment that the federal government should establish capacity for standard development and approval for respiratory protection devices for the public. I can see that NIOSH is taking a lead in that area. So my question is what entities or how is the collaboration going with other federal entities that are traditionally in charge of public health?

**Dr. Howard** said that we continue to work with FDA within HHS, with ASPR within HHS, with other parts of CDC, especially the National Center for Environmental Health, which would cover the general public issue, and they're working on their own app for heat and smoke. Hopefully, at some point, we can get these entities involved. The Secretary's initiative for farmworkers, where he's actually calling heat and smoke as a hazard, is really going to help because in our first meeting that we had with the Secretary, all of the HHS operating divisions gave a report about what they could contribute in the area of farmworker protection from heat and smoke. That is a good jumping-off point that we hope we can then leverage to get some interest in the National Academies' recommendations.

**Dr. Graber** then said that it's really encouraging to see and have watched the cross-NIOSH attention to heat and smoke, and some of the other threats from our evolving environment. I think another threat from our evolving environment is mold, changes in indoor air quality, and flooding, and are really impacting workers across the country, and I'm wondering what's happening on the same cross-NIOSH level to address those and what your thoughts are on those going forward.

**Dr. Lauralynn McKernan**, Director of the NIOSH Division of Field Studies and Engineering, answered that as Dr. Howard mentioned, the HHE program, which is the Health Hazard Evaluation Program, is a joint program between my division and David Weissman's Respiratory Health Division. We do continue to receive many HHEs in the indoor air quality arena. I wouldn't say that they've increased recently but we do continue to provide that assistance as necessary. Additionally, we continue to expand our research capability to be able to address those concerns. We continue to keep a very strong bandwidth in regards to that area.

**Dr. Ray Wells**, Director of the NIOSH Health Effects Laboratory Division, continued that we have extensive work in fungal research and trying to understand the transformations that occur and also looking at exposures and how they end up with various health effects. There is extensive work, certainly in this division, on indoor chemistry and those complex transformations as well as mixtures. So when we have different oxidized compounds that are formed, those can lead to various health effects as well, and just trying to understand that both in the gas phase and particulate phase is an area of continuing work in our group. And fungal work as well also has a particulate component too; there's a lot of aerosol work as well as gas phase work here.

**Dr. Caban-Martinez** asked about educating the future generation of occupational health and safety professionals, including healthcare professionals. I come from the lens where I'm at an academic institution where I train medical students, and they don't learn about occupational health and safety—including our nursing colleagues—until later in their professional development. So beyond our ERCs, does NIOSH have any activities with networking with other professional organizations to be able to strengthen and further the pipeline of occupational health healthcare professionals? I'm coming from the vantage point that I'm an ACOEM, the American College of Occupational and Environmental Medicine, member and it's a very senior, mature membership and I think there's opportunities to engage folks earlier on into the profession. For me, I wouldn't have done it if I never met my mentor at a younger age and learned about NIOSH when I was in college; if you're not tethered to an ERC, I wonder what are opportunities that we can do to increase that and how can we support NIOSH at the national level to do so.

**Dr. Dawn Castillo**, Director of the NIOSH Office of Extramural Programs answered that we don't have any new initiatives but it's very much on our radar. One of the first meetings I attended when I took over this role was addressing the pipeline for occupational medicine. No new initiatives to speak of now, but we're certainly aware of the need to bolster it and to expand our horizons, and more to come.

**Dr. McKernan** added that we continue to do the Medical Rotation Program within the Division of Field Studies and Engineering, where occupational physicians can come and actually spend a time with us. We've been transitioning that program for a bit to allow more virtual involvement, but we are very excited about the connections that we make for people, for specifically occupational physicians or other physicians that have an occupational interest, to be able to make those connections. And we've really found that that program, although it's only a month to six weeks, has been really valuable long term because we have those connections permanently. Sometimes they even come back to work for us, but other times they're just a permanent connection out in that field, and it's been really, really important.

**Dr. Tenney** then asked about the focus and direction around suicide prevention and mental health. I'm impressed to see the work across Total Worker Health and Division of Safety Research; with the Surgeon General's report that came out in 2022 on mental health and wellbeing in the workplace, what direction is NIOSH looking towards continuing the momentum in that area?

**Dr. Howard** said there's a lot of programs at NIOSH that are really involved in this. In the Total Worker Health Program and DSR and the research that's going on there, our Impact Wellbeing campaign for healthcare workers involves burnout, suicide, depression, anxiety, etc. If the Committee is interested in this area, then I would put it on your agenda for another meeting, to be able to do a dive into that.

**Dr. Caban-Martinez** responded that he appreciates that there's opportunities for medical individuals further down in the pipeline but I'm curious about undergraduates and the broader workforce. For example what Lauralynn suggested, is that available to undergraduate, like nursing, undergraduate medical so that they can start being exposed earlier in the pipeline versus waiting until they've done an occupational medicine residency program?

**Dr. McKernan** said currently, that is not but we can certainly look into that. One of our innovation projects, we're looking to try to make some of those connections earlier and actually have had staff go out to some undergraduate institutions. We've been more on the engineering side than what you're talking about, but we do recognize that if you don't get folks in the pipeline earlier, you're not going to get them later. They don't magically appear at the end stages.

**Dr. Howard** added that one of the issues that we have is our budget for our ERCs are for training people who have degree programs and often terminal degrees, so we're at the far end. What you're talking about is the input pipeline and that's really not something that we can do budgetarily. However, each ERC can, on their own, decide to do lectures in local high schools or whatever. We don't preclude that. But it is an important issue and it doesn't have a budgetary counterpart. That's one of the issues. ERCs have a pipeline too for their training programs. Their pipeline is local or regional undergraduate or high school.

**Dr. Horn** then said this question actually follows on what was just discussed about the budget. As you mentioned very early, potential for a flat budget but a 5% increase in personnel costs off the top. I was wondering, what is the decisions that are made in terms of funding and is there a role, particularly as a new member of the BSC, that the BSC plays in helping to guide or support your decisions as you go through the process or as NIOSH goes through the process of determining funding and how it may be redistributed based on yearly budgets.

**Dr. Howard** responded that we don't determine funding and each member can do their own lobbying on the Hill. We cannot do that; that's illegal. So in terms of allocation, that's where we get great ideas and support from the Committee and they can say, "That's a really great area. We hope that you can put more resources in that area versus another area." And so we're always happy to receive that, that kind of advice, in terms of allocation decisions. But we don't review each division's allocation. We present these large programs to be able to ask what do you guys think of this particular program and what are your views about that. Sometimes we get a lukewarm response, so that indicates to us, well, there doesn't appear to be that much stakeholder

interest in that particular program. So we would reprioritize it, as we have a lot of ideas and a lot of programs but not much money, so you develop a priority list and that may drop down. We've eliminated programs over the past. We had a fairly substantial program years ago in infectious diseases—not that we don't pay attention to that because we're part of CDC obviously, we do the worker part—but we decided that was really not money well-spent because there is so much of that going on at CDC in general. So a lot of the decisions that we make are informed by the Committee's advice, which we appreciate.

**Dr. Reponen** read a question "In the context of NIOSH emergency responder health and monitoring and surveillance, per NIOSH website, the software tool will retire this Friday. Does NIOSH plan to substitute this tool?"

**Dr. Piacentino** responded that periodically, we run through and look at any of the software tools that we make available on the website, and we try to determine utilization rates and then try to adjust that according to whatever we have budget for. So as we went through a periodic review, we just noticed that this particular tool was not highly utilized, which is the reason why we marked it for March 15th as no longer being supported. **Dr. Howard** added that however, we're trying to get FEMA to take it up; we're shopping it around the federal space because we don't have the funds to support it. It is an IT software platform that we host within the federal space. That is a very, very expensive thing to do because if anybody is aware of all of the cybersecurity issues associated with having that kind of openness in the federal space, it took a lot of time, and in fact we got a lot of complaints from the firefighter community about how long it was taking because we had to work out all of those IT things. So every one of our great ideas, like why don't you do an app in that, we go to the IT people and they say, "Okay, the cost to do that is X and by the way, it's 2X every year because you're going to have to maintain it," so that's going to be a big issue. I just wanted you all to know that whatever we do, there's an IT cost to it.

# NIOSH Evaluation Capacity Building Plan Update

**Dr. Reponen** introduced Dr. Amia Downes who gave a status report on the NIOSH Evaluation Capacity Building Plan. She explained that the plan is for years 2021 and 2025 and that Dr. Downes presented the original five-year plan in September 2020, and then gave updates in '21 and '22 in the Fall meetings but because we didn't have a Fall meeting last Fall, she is now giving an update. After the update, we need to give a numerical score for the progress.

**Dr. Downes,** who is a Health Scientist in the Office of Policy, Planning, and Evaluation or (OPPE) said, you might not think it's related to what we were just talking about, but evaluation is very much helpful in helping us with planning and decision-making as we think about budgeting. So hopefully this will help you consider some of those things as well.

I know some of you are new to the Board, so welcome to all of the new and returning members. To those who are new, I want to give you a brief background; and to those of you returning, I know it's been more than a year since you've seen me so let me take us back a few steps and jog some memories about why we got started on this Evaluation Capacity Building journey in the first place.

As you may recall, we conducted five program reviews from 2016 to 2018, and we received some critical feedback, particularly citing the need to think more about moving beyond reach metrics and focusing more on studying implementation and demonstrating impact. Also, evaluability assessment. We found a lack of readiness among our programs undergoing review. We also recognized the overlap of information being reviewed between programs, as NIOSH does have a matrix program portfolio. Plus, the burden involved in developing evidence packages was significant. And finally, the Foundations of Evidence-Based Policymaking Act had just been passed into law, and we knew that there would be some evidence-building capacity trickledown, if you will. So, we concluded that we had an opportunity to build our skill, knowledge, and even strengthen our organizational beliefs regarding evaluative practices, and increase our application of those practices and what we learned from them.

Four topics were included in the ECB Plan going into fiscal year 2023. During that year, the implementation program review recommendation topic was eliminated, and a long-term program review strategy topic was revised, which caused this result.

**Dr. Downes** continued that first, based on input during educational material development, we made a change from focusing narrowly on intermediate outcomes to more broadly on impact. Second, we eliminated the topic on implementing review recommendations and introduced that topic area which was previously focused on external program reviews to long-term evidence building. This was done largely to ensure that NIOSH is aligned with federal expectations around evidence and evaluation, in addition to implementing lessons learned from the most recent program reviews. Instead of focusing solely on program reviews, we will now be looking at evidence building more broadly. I'll describe this in more detail later in the presentation. And finally, our implementation science topic area has remained unchanged.

I am going to talk about what we've done in FY23 but to provide some more context, I will also be telling you about what we did in FY21 and 22.

To recap, in FY21, we conducted interviews and focus groups with program leaders, researchers, branch managers, and division, lab, and office directors to gather information about their understanding of intermediate outcomes, how they are currently collecting and documenting these outcomes, the barriers to doing so, and the opportunities to improve their ability to do so.

NIOSH defines intermediate outcomes as actions taken by external persons or organizations to improve occupational safety and health in response to knowledge or products generated by NIOSH or NIOSH-funded initiatives, projects, or programs.

Five recommendations resulting from this effort primarily focused on the need for an official definition for an intermediate outcome, and for educational resources including training around these outcomes and evaluation more broadly.

So, the main learning activity we have been focused on over the last two years has been addressing these key recommendations through educational and awareness-raising activities.

In FY22, our evaluators worked with the Zimmet Group to begin development of four training modules designed to increase thinking about impact at project conception. All modules are designed to include a mix of instructor lecture and interactive activities to increase learning and engagement. All modules, except for Module 4, as it is designed to be more of a peer assessment opportunity, includes a workbook that aligns with the instructor slide deck. Additionally, Module 1 includes a researcher's guide which provides even more detail than what is offered in the course and may be used as a standalone document.

This past fiscal year we completed development and dry runs of all the modules and began rolling them out. Dr. Howard sent out an all-NIOSH email announcing the rollout of these resources, including a link to the Guide. The Guide was also shared as a resource in training for the new project planning system so project officers could refer to it as they were entering their outputs and outcomes into the new system.

Lastly, in FY24 project officers and their supervisors were sent invitations to register for each of the modules. As space became available, additional researchers, scientific supervisors, communications specialists, and for Module 1 lead program analysts, were invited to register for the courses.

The first module is designed to provide researchers with definitions that are commonly used evaluation terms, along with occupational safety and health examples of those terms, common characteristics, methods for measuring outcomes, and common mistakes in their application. We held 11 sessions in FY23, which were approximately two and a half hours in length. 165 NIOSH staff voluntarily completed this course. Of those, 53 staff completed the post-course survey. Let me share some of the data from the post-course survey with you.

Overall, 92% of respondents said they definitely would or probably will, use what they learned in the course in their work, which we believe speaks to the relevance of the course. The top three results showed that this information would be used by participants in their work to develop reasonable, well-written anticipated outcomes; attempt to measure and document those outcomes; and consider their project's intended impact early in the process of developing their projects.

Not only did self-reported knowledge increase in several areas, but we also included a knowledge check question, and 64% of respondents answered that question correctly. Clearly, we still have some room for growth but it's promising that most of those participants who answered the question incorrectly simply confused one type of outcome for another, as opposed to confusing it with an input or an output or an activity.

Seventy-three percent of respondents said that they were very likely to recommend the course to someone else. This result was very encouraging since we hope to see others register for the course in the future.

Module 2 was designed for supervisors only, as a way to present tools and ideas that they could implement to collegially work with their researchers to encourage them to think about making impact at the conception of their projects. While OPPE originally offered six sessions of Module 2, only three were conducted in FY23 due to a lack of registration for the training. 15 people completed this module, with 8 of those completing the post-course evaluation survey.

Seven out of eight reported that they definitely or probably will use the information with the researchers they supervise. The most common ways that participants cited that they would use the information they learned was to increase or improve their interaction and guidance to researchers as they develop and implement their projects; help researchers identify assumptions in the system and planning; and use example questions from the course in discussions with their researchers.

Half the respondents were likely to recommend the course to someone else. In the written comments, some of the participants stated that the course was more appropriate for new supervisors, and it was also suggested that the information in this module would be helpful if it was directly presented to the researchers themselves. Modules 3 and 4 were not presented until FY24, so I will give you information about those the next time I come to see you.

**Dr. Downes** continued, the next topic in the ECB is where we had the most change in strategy in FY23. The first two years of implementation around this topic were focused on learning more about how other organizations evaluated their research programs, and further refining how NIOSH would review its programs. Those of you who attended the Fall 2020 BSC meeting may recall me mentioning that while we had finalized the purpose statement and objectives for external program reviews, NIOSH was considering broadening its strategy for evidence building to align with expectations outlined by the Office of Management and Budget guidance related to the Foundations of Evidence-Based Policymaking Act.

We did in fact take that broader evidence-building approach, which not only caused the renaming of this topic area but changing of some of our key learning activities and process steps. This doesn't mean that NIOSH will no longer conduct program reviews. However, moving forward, it will thoughtfully determine how they will be prioritized within the overall strategy.

Our first step was outlining what will be included in the strategy and presenting it to Dr. Howard and his deputies. Once that group accepted the proposal, the outline was shared with the NIOSH Lead Team and the program portfolio leaders. There will be three components: a learning agenda, an evaluation capacity building initiative, and a monitoring and evaluation component.

At a high level, the purpose of a learning agenda is to identify evidence needs and gaps aligned with strategic goals and objectives typically found in a strategic plan. While there is no one format, a learning agenda includes a list of specific, answerable questions, planned activities, and products designed to inform priority, mission, and operational goals and objectives. The learning agenda may answer questions like, “What does my organization need to do?” “What do we need to know to do it best?” and, “What do we wish we knew?” The agenda must remain flexible and iterative to be effective as new evidence and priorities arise. This is where future program review might be used to address a specific question. Finally, in regard to what the federal government requires per the Evidence Act, all learning agendas last a period of five years.

While we have and will continue to make great strides in the area of evaluation capacity building with the help of interested volunteers around the Institute, the effort will be somewhat scaled down from what it is now, given the growth in these other areas. However, three areas continue to float to the top as we implement the current ECB Plan, and those areas are: continuing education, building evaluation and

implementation science expertise, and use of evaluation findings and results. Just as we did previously, OPPE will work with staff across the Institute to develop objectives and metrics as it relates to each one of these topics.

And finally, for decades, NIOSH has been responsible for federal performance reporting through the Government Performance and Results Act, or GPRA, and Healthy People, but it never formalized this performance management function. In anticipation of performance management responsibilities growing around CDC priorities, Dr. Mandy Cohen's emphasis on demonstrating measuring impact, and NIOSH's intention to incorporate measures into its future strategic plan and learning agenda, we believe it's prudent to formalize this function within the Institute.

And last but certainly not least, implementation science within the ECB Plan. The implementation science is an area that NIOSH has made major strides in over the last several years, from attempting to improve our understanding of the dissemination and implementation field and altering our terminology to better align with that field to developing materials, to support and furthering our work in this area. With the completion of several division laboratory listening sessions and the finalization of the definition and supporting materials, we believe we have completed the Key Learning Activity 1 in our Evaluation Capacity Building Plan.

To prepare for our FY22 or FY24 project planning, we updated this definition in our project planning guidance, and went through a process to re-categorize our goals in our NIOSH strategic plan, formerly categorized as translation research, which is what we formerly called implementation science, and changed those to either intervention research or to implementation science based on our new definition. Additionally, documents to further support and dissemination the definition, such as the 7Ps implementation table and the NIOSH Research to Impact framework were finalized and are being prepared for publication.

We also held a total of seven one-hour listening sessions that included 34 NIOSH staff from across 8 divisions and labs. We first gave a one-hour brief introductory presentation about implementation science, which some divisions chose to have as an all-hands meeting while others chose to allow those who were interested to attend based on their availability. Then, within a few weeks of the presentation, we scheduled one-hour focus group-like sessions with volunteer staff from each division who were interested in participating. The 34 participants reflect the number of individuals who participated in the listening session portion only.

The purpose of the listening sessions was to learn from one another on how best to introduce implementation science into NIOSH broadly, and specific divisions and labs as their working cultures vary greatly. We did this by asking a series of questions to better understand how implementation science might be relevant to the work of various divisions and labs, and what opportunities may exist currently, or in the near future, for implementation science to further NIOSH research. And finally, when making changes, it is important to attempt to understand what might be needed to meaningfully make that change—in this case, adopting implementation science into NIOSH.

So, the internal report from these listening sessions is still in draft form but the preliminary recommendations have been shared with Dr. Howard, his deputies, and our internal Implementation Science Workgroup. While

I won't be sharing the final recommendations or any other details from the report today because they are still in draft form, I will share that the recommendations are based in these four areas.

Like so many other areas, the need for resources, including expertise, funding, and time, continue to be an area of concern. Because of all the other tasks and activities related to conducting a project, it's easy to find yourself near or at the end of a project thinking more about implementation that you did at the beginning or any other time before. So, there is a need to think more about implementation science throughout all stages of a project. And relatedly, researchers have an increasing number of tasks associated with completing a project. Plus, without adequate resources, it's difficult to motivate oneself to successfully implement, but researchers expressed that an incentive to do so might be helpful. And finally, I think most of us can relate to this. You have to see it, to believe it. Researchers want to see how successful implementation science is as applied to the field of occupational safety and health, and not just look at successful examples from other fields.

As I've said before, minus the effort of those in OPPE, those within NIOSH that give their time to this effort do so in addition to their regular duties because they are interested and committed to the importance of these efforts, so I sincerely appreciate their continued efforts in implementing this plan. And with that, I'll be happy to take any questions that you all might have.

**Dr. Tenney** thanked Dr. Downes for the presentation. I think this is really exciting to see this education that's being rolled out within NIOSH, and I'm wondering if you can speak to the modules being disseminated more broadly. Just thinking of how they could increase in reach and impact themselves.

**Dr Downes** responded, that's a really good question. We are hoping that maybe we can at least get them reviewed to share with our cooperative centers. That would be something that we're looking at doing as a next step. We're in the process of taking the feedback that we receive from the post-course surveys and doing some revising. There wasn't much revising to Module 1. We're doing some significant revising to Module 2, and likely to Module 3. And based on some of the feedback we got, we're thinking about additional modules that we need to potentially add.

And in relation to your question, I know you didn't ask me about more than the modules but there's a RE-AIM tool related to implementation science, because I know that's an area you're interested in, that I'm working on with Rebecca Guerin. She's the co-chair of our workgroup. And that's a tool that we hope to test. We are developing it now and we hope to test it next fiscal year and make that available, at least to our cooperative centers as well, once we can get clearance. So that's our next step, and where we go beyond that, I think it will depend on what the feedback is from maybe the centers. But I will have to coordinate that with Dawn Castillo.

**Dr. Huang** said, this is a great project. It's very important to study the impact of a project, the long-term impact and implementation science. Some quick comments and questions. One, would there be support groups within NIOSH if people have questions about how the implementation science? Are there any internal support groups in NIOSH for the long-term impact? And the other one would be how about the motivation piece, like how motivating more people involved in a project such as peer pressure, right? You can

share with others what projects currently adopted all those approaches, make significant impact. You can share the names and, as a good role model, the motivation piece to improve that. And the other quick comment would be in terms of when you say "evaluate." In my field we talk about Kirkpatrick four levels. It's great to see you demonstrate people appreciate that, positive reactions. How about learning? Did you put in maybe like a ten-question pre/post-test? People really gain that knowledge, or do you keep track maybe six months, a year later? Are there any behavior change? Are they really taking the approach, really implementing and documenting it for a long term to see the impact? Again, that's a great project. Thank you for sharing that.

**Dr. Downes** responded, yes, I love that you're so excited and I appreciate the questions and the comments. So, we have a small planning and evaluation team, and we have a technical assistance form that people can submit when we do consultations for that. So that's one avenue. We can certainly use more folks to do that.

Regarding your question about motivation, with this whole approach, it's been completely voluntary so we kind of took an early adopter's approach to this and we knew we weren't going to get everyone on board to jump on this initially. So, we went out and kind of approached it by who might be motivated at first to join us to do work on this, or who might be incentivized? And I can tell you, particularly around implementation science, our workgroup started at 4 and now we're at 28. So, we have someone representing almost all divisions except one. So, we're really gaining some momentum, and I did not expect to have 165 people participate in that first module. That was kind of mind-blowing for me; it was great. And we've actually had some people that have followed up when we've asked for the opportunity for logic modeling. I have just had my first project officer voluntarily ask to sit with me, and she got right back to me and made some revisions. So, some of these early adopters are bringing other folks along with them when they see there's value to it. So, some of those early adopters are bringing more people along so that's sort of been our approach to this. And so far, it seems to be working. But we're open to ideas if you have others, to try to motivate and incentivize.

And as far as the pre/post, I'm not sure how familiar you are with trying to get things through the Office of Management and Budget, through getting approvals for surveys and that sort of thing. So, we're looking at ways now that we can get things cleared through generic approvals to expedite that process for our project officers by looking at other ways that we might be able to assist them to collect that data at the beginning of a project instead of waiting until the end, so they kind of build that piece in.

There are some challenges but we're working through them, and it's a slow but meaningful process but we're making headway. So, I'm happy with that. I appreciate your comments and I'm glad that you're excited about it because I am too.

**Dr. Caban-Martinez** said, I just wanted to say thank you. This was really awesome to hear the evaluation process. And just wanted to nominate, if you would consider, when the modules are ready, to share them with the Total Worker Health affiliates, not just the centers like ERC but also the affiliates, because I think they would really benefit from this type of resource. He explained, oftentimes I feel they get forgotten that they're there. Great Job.

**Dr. Reponen** said so of course, it's understandable, every time you start a project, it evolves and then you kind of learn and you change things. But could you elaborate? There was quite a lot of changes in the past, since we last met with you. So, could you elaborate a little bit of more on why those changes were done?

**Dr. Downes** responded, so the change from taking the recommendations, the external program recommendations, because we went to this broader evidence building which includes things beyond evaluation. We could be looking at formative research to gather more description, to understand our audience better. This can include doing some focus groups that aren't necessarily evaluation per se. They're a lot broader than that. And that's how the Evidence Act describes evidence building. And so, we wanted it to go broader than just external program reviews and think more broadly about evidence building. We knew we needed to do that first, and so that's why we kind of changed from just these narrow program reviews to more broadly thinking about evidence building. And with that, we wanted to create a learning agenda. I mentioned sort of what that was, and based on that, in order to apply what we learned from the learning agenda, which I hope will speak to some of the things that you all were talking about, I think Judith with the indoor air quality or, you know, air quality in general. Even some of the things that Alberto talked about, we can possibly learn some things around the pipeline like, do we need to do more for under graduates? Or if we try something in that area, does it work? Should we be doing more of it? Is there uptake there? If we include that in learning agenda. So that's where we then start applying what we've learned. So, we took those external recommendations, that topic area, out because until we create the learning agenda, until we apply it, until we learn from it, we won't have those recommendations to apply. So that's why we took that out. It's not that we're not going to do it. It just won't come until later because we've sort of broadened our thinking in terms of evidence building from just more focused on evaluation. So, I hope that makes sense.

**Dr. Reponen** said, yes, and somewhere I was reading - maybe it was on some other materials that you gave, that there was a federal Evidence Act and Moving Forward initiative from CDC, so it's also beyond NIOSH policy changes that might happen.

**Dr. Downes** explained that the federal evaluation landscape has very much changed. That Evidence Act is actually hitting its five-year anniversary this year. So, we're also following the guidance from the Office of Management and Budget that suggests that not only larger departments like the Health and Human Services Department or Department of Labor should be developing learning agendas but those agencies that fall under those umbrellas should also be doing the same. So, we're trying to follow suit with that. And they use terms like "evidence building" and "learning agendas" and things like that.

**Dr. Reponen** said the scoring would be done next and she asked Ms. Strickland if she could explain why the scoring needed to be done.

# Scoring Progress on the NIOSH Evaluation Capacity Building Plan

**Ms. Maria Strickland** reminded members of two documents that were shared before the meeting: one being the explanation of the Government Performance and Results Modernization Act (GPRA measures) and the second one is the scoring sheet.

**Dr. Amia Downes** described the purpose of scoring progress on the NIOSH Evaluation Capacity Building Plan. She explained how the areas in the Evaluation Capacity Building Plan represented the themes that were observed during five program reviews, becoming the basis for the plan. NIOSH wanted to make sure that the plan was feasible, yet ambitious and used the Board of Scientific Counselors to hold the Institute accountable for the progress in implementing it. The scoring criteria is a scale of 1 to 5 and is up to the Board to annually determine a score based on a report of progress toward the Government Performance and Results Act measure. The score is reported to the Office of Management and Budget.

**Ms. Strickland** added that the documents explain the GPRA measure and the previous scores. Today we'll be doing that fiscal year 2023 score. The scoring can be done either in whole or in half-scores, so it could be a 3, 3.5, 4, 4.5 up to 5, or lower than that should you determine, but it's in the 1 to 5 progress. How we do that is that someone will make a motion. There can be a discussion beforehand if you all would like to discuss how you would like to score this progress. But when we come to a consensus, one of the members will say, "I make a motion to provide a score of X number," and then we'll have another member say, "I second that motion." We'll then go through and do a roll call vote, and we use a simple majority of the voting to determine the outcome. So, after we have a motion and a second motion, we'll run through each of your names and you can say if you agree or do not agree.

**Dr. Downes** went on to describe that NIOSH completed the key learning activity which was to prepare for education and awareness-raising activities. This included conducting focus groups, developing awareness and educational activities, and rolling them all out. We also developed a new outline for evidence building strategy. It was proposed to the Director and his deputies, and they accepted it. And then the outline was shared with the NIOSH lead team and the program portfolio members, and we are working with that outline moving forward. And we'll begin in FY24 the development of that learning agenda. Another big completion was the refinement of the definition and the changing of terms from translation research to implementation science, and the definition that we developed; and developing the support materials for implementation science, some of the big ones being that 7Ps for Implementation table, the Research to Impact framework, which are now in process for publication.

**Dr. Lili Tenney** asked if she encountered any barriers in implementing and completing these.

**Dr. Downes** responded that the timeline and working with volunteers, and COVID were barriers. When you're working with volunteers, and you're reliant on that, that can change your timeline. But those that we have are very motivated to do it. I think it kind of harkens back to what Dr. Howard was saying, you know, earlier

about having to manage those resources and being aware of and making decisions about what we can and can't do.

**Dr. Gavin Horn** asked for clarification that the scoring is focusing purely on the progress in terms of completing these goals, rather than the implementation or impact of this project itself.

**Dr. Reponen** shared her understanding that it has been the progress but asked for Ms. Strickland to give advice.

**Ms. Strickland** obliged and shared that on our last meeting as well, people were taking a look at the plan itself and looking and using some of that discussion and then basing scoring on the plan a little bit more. So, we were trying to redirect that to score is on is what has actually been done. The plan is set and the purpose here is to look at how NIOSH is doing on our progress in implementing that plan.

**Dr. Tenney** requested the group start working towards consensus. She felt like based on the documentation and the presentation, that NIOSH has made very good progress in implementing the plan, and really specific to each of the strategies in providing the status updates on each of them.

**Dr. Reponen** added that making those changes also has taken a lot of effort, and that happened also in the last period. So, and then still completing all the tasks. So I feel the progress was good. Any other—okay, Judith?

**Dr. Judith Graber** asked and just to be clear, based on your previous comments, were some of those changes in response to the previous discussion and scoring? Because they seemed like quite fundamental and very positive changes that were made, which **Dr. Downes** confirmed.

**Dr. Graber** spoke again, adding that as a new member also, she's reviewing the information ahead and time, and hearing it, she thought it seemed like an amazing amount of progress has been made, that this is an organizational shift and realignment and it's very exciting to see the work and the amount of progress that you've made. So, I would agree with Lili.

**Dr. Reponen** reviewed the scoring system and asked if anybody wanted to suggest a score.

**Dr. Pieretti** proposed 4 or 4.5 and shared that he thought from the graph that was shown, it was not completely 100% but that there was good progress. I think 4.5 is fair.

**Dr. Patel** made a motion to score 4.5.

**Dr. Caban-Martinez** seconded the motion.

**Ms. Strickland** thanked them for their motions. So at this point, we will be voting on the motion of scoring the progress at a 4.5. When I call your name, you can either say yes, that you agree to vote to a score of 4.5, or you can say no, meaning that you do not agree with that score.

**Ms. Strickland** announced that the unanimous vote is a score of 4.5. She thanked the group.

# Public Comments

**Ms. Strickland** noted that Daniel Glucksman was present and asked if he would like to sign up for a public comment for five minutes before the meeting continued?

**Mr. Glucksman** responded by asking if we could talk more about the HHS initiative for Ag workers to protect them from heat and wildfire smoke.

**Ms. Strickland** pointed out that Dr. Howard had included that in the Director's opening remarks and asked if Mr. Glucksman had a specific question for Dr. Howard?

**Mr. Glucksman** responded, A little bit about how NIOSH is engaged, when it might kick off, or what the goal is and so forth.

**Ms. Strickland** noted that Dr. Howard was present and asked if he would like to respond.

**Dr. Howard** replied, it's already started. We started last month, and it's like a March to December initiative. As I mentioned, it's very aggressive, very time-limited, and our part, as I mentioned, is the hazard review for smoke. We've done everything in heat already. And then the other operating divisions of HHS contribute whatever they're doing.

**Mr. Glucksman** well, that sounds great. I also note that tomorrow in the Federal Register a comment request from NPPTL will publish asking for information on protection from wildfire smoke. It seems like there's a lot of confluence here.

**Dr. Howard** responded that there's a lot going on this space. I think we were all impressed in New York City last June, and we've already had wildfires. The Smokehouse Creek fire in Texas - Over a million acres. So, this is a big thing. And CDC has a priority for heat and health, and smoke and health, so it's becoming a major occupational as well as public health issue.

**Mr. Glucksman and Dr. Howard** agreed to touch base at another time about this topic.

# Diversity, Equity, and Inclusion at NIOSH

**Dr. Rashaun Roberts** began her presentation by providing this overview of the cross-cutting strategy that NIOSH has developed and adopted to advance health equity science and solutions, and I'm looking forward to getting your thoughts as BSC members on how NIOSH can further strengthen its work and activities in this area.

As described by CDC, health equity is the state in which everyone has a fair and just opportunity to attain their highest levels of health, irrespective of social position or other socially determined circumstances. Achieving optimal occupational safety and health for all workers across all populations is of course at the heart of NIOSH's mission. Research and services that are not explicitly designed and implemented with health equity in mind, however, can inadvertently marginalize or exclude certain groups and/or can perpetuate or widen disparities in occupational safety and health. Thus, NIOSH has spent the last three years working to

increase the focus on health equity, and strengthen its health equity science and related work enterprise-wide.

As defined by CDC, health equity science examines patterns and factors that contribute to health inequities, and there are six high-level principles that have been described by CDC to guide the development, implementation, dissemination, and use of effective health equity science. The first of these principles is that health equity science should be conducted for action; that is, it should build an evidence base that can guide action across the domains of public health programs, surveillance, policy, communication, and scientific inquiry to move toward eliminating, rather than simply documenting, inequity.

**Dr. Roberts** continued that the second principle was that health equity science should clarify the uses of race and ethnicity by explicitly expressing the purpose, methods, interpretation of results, and limitations when including race or ethnicity in scientific activities.Third, for all populations that may be at risk of inadequate representation due to social marginalization or exclusion, actively ensure their visibility in data collection, data reporting, and in interpretation of findings.

Markers of health inequity are characteristics of population subgroups that are experiencing a health inequity. Now, while the study of markers can help document trends in disparities and identify previously undescribed disparities, scientific agendas that focus solely on markers can stigmatize the very populations that are experiencing inequities. In contrast, drivers are factors that create, exacerbate, or perpetuate health inequity, and research that identifies drivers can guide the development and evaluation of interventions. Because of this, the fourth guiding principle is to emphasize the drivers rather than the markers of inequity.

**Dr. Roberts** said that fifth, in conducting research, evaluating services and interventions, and tracking progress to eliminate health disparities and inequities, health equity science should use appropriate measures and methods because their selection and use of course affects analyses and conclusions. Also, bear in mind that making progress toward eliminating health disparities and inequities requires a holistic understanding of disparities that may have been uncovered by quantitative data. So to that end, the use of qualitative and mixed methods could be useful in understanding how populations experience a particular health inequity.

The final and sixth principle is to understand and address the social, societal, and environmental contexts that contribute to health inequities. Health and safety is shaped by the environments in which people live and work. In health equity science, it's important to apply conceptual models and methods that include contextual factors like the social and structural determinants of health.

**Dr. Roberts** said that NIOSH has been working toward these principles through its Health Equity Science and Solutions strategy, what I will refer to as HESS, which was first developed in 2021. The process of development had two components. The first component consisted of my working with each of NIOSH's eleven divisions and labs to develop and adopt a customized goal to advance HESS. For example, one of the divisions developed the goal statement here, which basically describes a commitment to increase its dissemination of science to working populations that have been underserved, to ensure that the innovation produced by that division helps to reduce OSH inequities that affect those populations.

The second component of the HESS development process involved bringing together a collaborative consisting of myself and other OSH subject matter experts at NIOSH to identify common themes among the division- and lab-customized HESS goals. Those common themes were then used as a springboard for generating cross-cutting or enterprise-wide HESS goals that the NIOSH OD would oversee and also help to advance. The cross-cutting component of the strategy for advancing health equity is comprised of three goals.

**Dr. Roberts** highlighted that Goal 1 is for NIOSH to work toward transforming its research approaches and data practices, and NIOSH would accomplish this goal through modernizing program- and institute-level policies and practices so that they better support the inclusion of diverse populations in OSH research and help to stimulate more work with a specific health equity lens. NIOSH would also accomplish this goal through identifying, developing, and adopting new research measures, methods, and data analytic and interpretative approaches to document and understand the drivers of OSH inequities and disparities. And finally, the goal, this goal would be accomplished through establishing, where possible, new funding priorities, mechanisms, strategies, and/or other opportunities to build the OSH equity-focused research and intervention portfolio.

Goal 2 is for NIOSH to work toward increasing and enhancing outreach and dissemination efforts to advance health equity, and NIOSH would accomplish that through enhancing program and institute practices to increase and accelerate translation and dissemination of OSH findings, through adopting innovative strategies and channels for disseminating OSH solutions to populations impacted by disparities and inequities, and through establishing, again where possible, new funding mechanisms, strategies, or opportunities to encourage OSH equity-focused translation and dissemination efforts.

And finally, Goal 3 is for NIOSH to work toward building and sustaining institute and national capacity to advance health equity. NIOSH would accomplish this goal through establishing new, or enhancing existing, partnerships and collaborations to support and facilitate OSH equity projects and initiatives, to engage in focused outreach and recruitment efforts to increase scientific workforce diversity in the OS field, and by accelerating the development and deployment of new training, information, tools, and other resources to build OSH equity skills in the scientific workforce.

**Dr. Roberts** explained that every six months since the strategy launched in 2021, NIOSH takes an account of the progress NIOSH has made on the strategy which, as of Fall 2023, was comprised of a total of 15 goals, including the three cross-cutting goals I just described which are overseen by the NIOSH OD, one goal for each of our ten divisions and labs, and two goals for our one remaining division and lab. The 15 goals comprising the strategy are linked with what are called milestones, 45 of them, and also 33 indicators.

**Dr. Roberts** presented that this slide provides examples of a division or lab goal together with the milestones and indicator linked to it. So the goal here is to increase the dissemination of science, addressing underserved working populations to help reduce occupational safety and health inequities. The milestone for that goal is that by December 2025, 40% of that division's products will address underserved working populations, and the division management will annually review project plans and milestones to ensure that the plans for the products include reporting data on underserved working populations where that would be feasible, and

would ensure the inclusion of products focused on underserved working populations. And division management would monitor progress through quarterly milestone reports.

Finally, the indicator of progress for this particular goal is that the percentage of products that address underserved working populations would increase from a baseline of 25% to 40% over calendar years 2022-2025. Of the 15 goals, 100% so far have been completed or are on track for completion, and none were reported as having made limited or slow progress in the last reporting period, in last Fall. 87% of the 45 milestones were reported as completed or on track. However, 13% were reported as either delayed or having minimal or no progress, mainly due to staffing capacity issues, scientific review, clearance, or partnership-related issues. And finally, 91% of the HESS indicators have been met or are on track to meet their targets, with only 9% delayed or having limited to slow progress, and again, due to factors like staffing capacity, review and clearance or partnership issues.

**Dr. Roberts** presented the progress NIOSH has made across divisions, labs, and offices on the HESS cross-cutting goals between August 2022 and September of 2023. NIOSH established 25 new scientific priorities. For example, one of its divisions and labs, one of the divisions and labs published the American Indian and Alaska Native Worker Safety and Health Strategic Plan, which describes priorities to enhance OSH among American Indian and Alaska Native workers. Further, NIOSH established 32 new policies and practices to facilitate work on health equity. For example, several divisions and labs updated their project proposal, project plans, and review templates to include specific health equity goals.

To continue, under the goal of transforming research approaches and data practices across divisions, labs, and offices, NIOSH identified 104 measures and methods that could be used to advance OSH equity work. For example, one of the divisions assessed the applicability of a research instrument that was developed in Australia to measure safety behaviors among immigrant and racial and ethnic minority workers there. And finally, between August of 2022 and September of 2023, NIOSH established 36 projects focused on health equity. For example, the project “Selecting appropriate pulmonary function test reference sex for transgender adults to address health disparities: Methods for data collection and interpretation" is one example of such a project.

Moving on to cross-cutting Goal 2, increasing and enhancing outreach and communication to advance health equity, NIOSH developed and disseminated 208 communication projects within that timeframe. One division or lab produced a NIOSH Science blog and disseminated 9 presentations and 2 publications focused on personal protective equipment or PPE equity issues.

**Dr. Roberts** explained that 32 communication channels for disseminating information were established across NIOSH. For example, a relationship with the National Council for Occupational Safety and Health was established, and one of the divisions is working closely with this group and discussing new channels for disseminating information to historically underserved working populations. And then finally, 12 communication priorities were established. One priority entailed restarting communication surveillance outreach to communities where underground miners are employed.

With regard to the HESS goal of building and sustaining institute and national capacity to advance health equity, NIOSH has established new, or has enhanced, 50 partnerships to facilitate this goal within the timeframe given. For example, one division hosted a virtual Equitable Personal Protective Equipment Workshop to highlight ongoing PPE equity activities and bring together internal and external partners to discuss prominent issues regarding the equitable PPE protections of US workers. Also, to facilitate this goal, NIOSH disseminated 54 trainings to build the capacity of staff to help conduct health equity science. Several of our divisions and labs offer quarterly seminars tailored to specific programmatic areas.

And finally, NIOSH developed and/or disseminated 13 new tools and resources to facilitate health equity. For example, some of our divisions and labs worked together to translate two infographics into Spanish, one being "Worker Safety Matters When Working Near Power Lines" and the other one "Worker Safety Matters During Lawn Care."

**Dr. Roberts** said in addition to these efforts across divisions, labs, and offices, NIOSH has undertaken a number of efforts to advance HESS Goals 1 through 3. For example, the OD launched NIOSH's first-ever pilot project intramural competition focused specifically on health equity science, and through that competition, the following projects shown here were funded. The competition was held for a second cycle, and these five more projects were funded through that competition as shown here.

The NIOSH OD also established for the first time a Community of Practice focused on health equity, titled Equitable Research & Partnerships with Diverse Populations, open to both internal and external participants. The Communities of Practice's mission is to facilitate the sharing of best practices for conducting and disseminating impactful research that benefits diverse worker populations that have been historically underserved through partnership development. And another piece of the mission is to address challenges related to reaching and including organizations that represent or support workers who have been socially, economically, or otherwise disadvantaged, without overwhelming or otherwise burdening these groups with outreach, as well as avoiding unintentionally exclusionary research processes.

The NIOSH OD has engaged in additional activities to advance the goals, including instituting a health equity—a NIOSH-wide health equity webinar series which is available to all NIOSH staff; disseminating a monthly newsletter which contains articles and other research-related information and promotes learning opportunities related to health equity. To supplement the newsletter, the OD provides e-blasts to provide additional resources and information related to health equity. And finally, the web is used to provide health equity science-related information to all staff. The NIOSH OD, for instance, has developed an intranet page and a Confluence site to share information with all NIOSH staff.

**Dr. Caban-Martinez** said it was really great to hear what NIOSH is doing in the health equity space. And I was curious about the inclusion of disability, both physical and nonvisible disability, in the definition of health equity.

**Dr. Roberts** responded that the populations that are included in NIOSH's health equity science strategy were guided by several Executive Orders that were put out in terms of the government increasing its focus on health equity in general. And persons with disabilities or workers with disabilities, whether those disabilities

are visible or not visible, are included in how we, in the NIOSH strategy, conceive of underserved populations or marginalized populations. So certainly that group of workers is included.

**Ms. DeGrasse** asked about plans to include some of these DEI-type guidelines in the grantee applications or in their proposals that they include what steps they are going to take to implement the guidance that you developed in their offerings.

**Dr. Roberts** said our Office of Extramural Programs is making a concerted effort to make sure that DEIA and health equity science has stronger language in the funding opportunities that are put out. There is right now a concerted effort for adding language to the funding opportunity requests coming out of that office.

**Ms. DeGrasse** said a lot of the grantees who develop training materials, etc., and so making sure that those materials are 508-compliant, making sure the materials are developed in different languages would be great as well, and then presented in ways that are accessible.

**Dr. Reponen** commented on the extramural Education and Research Centers. The funding announcement is asking for plan for DEI and diversity recruitment. Every component has to have explanation and plan for DEI.

**Dr. Tenney** asked about the focus on communication and products, and I commend you in the way that this is outlined. It's really amazing progress. And it seems to me that the partnerships piece is a great opportunity to really have a participatory approach in the design of these products so I'm wondering how you're doing that and also how you're ensuring or evaluating that these products are reaching the intended audiences.

**Dr. Roberts** responded that some of the efforts to increase communication and dissemination are going on at the division and lab levels, and I do know that some of the divisions and labs are attempting to engage the public and also to engage partners in the production of these communication products. So that is going on at the DLO level. The NIOSH OD itself is not disseminating and communicating information; it's really coming from the divisions and labs and through the research and other programs. But I do know that there are efforts at those levels to engage various organizations that have connections to underserved populations or community-based organizations to develop the materials. As far as evaluating the communication products, I think that's probably a weaker point of this, and something that we need to be doing more of is just finding ways to evaluate the impact of communication products and services that we're generating. So I don't think that we're quite there yet but it's something that we're working toward.

**Dr. Huang** said thank you for a great presentation. I was really very happy to see all the advancement that you've made, your team in NIOSH having accomplished. So really appreciate that. And you mentioned like there are over 100 measures and indicators, and I wonder whether you have a chance to share with the other Total Worker Health Center, ERC centers? Are there any—your group or website, people are very interested to see what you have accomplished, have more detail to share with us? Again, that's a great work, very happy.

**Dr. Roberts** said there hasn't been a particular effort to disseminate that information to the Total Worker Health Centers but that's something that we can certainly consider in our discussions as we're moving

forward on the strategy so that people outside of NIOSH can be more aware of what's available to conduct this kind of research. But yes, thank you for that. That's a great suggestion.

**Dr. Graber** said great presentation and really exciting to see this work, and how much work you've done. I had a similar question to Lili around the evaluation. I think it would be really great to see the work back here and have a year or longer to see how the evaluation plan develops. And then my other question is really about how you're thinking about workplace culture in this shift because we know that's how this happens, right? And I'm wondering what sort of guidance you're giving?

**Dr. Roberts** said these are really great insights and the question about culture I think is a really good one. And I do think that it needs to be taken into account, and it actually ties into some of the questions that I had, in terms of what should be doing, what we should be measuring and taking a look at in terms of what's driving disparities and inequities. And I would figure that culture, workplace culture, is one of the things that we really need to be taking a look at in terms of a driver.

**Dr. Roberts** moved on that as NIOSH continues to focus on health equity and build on the efforts that have been described today, I wanted to get your thoughts and perspectives as BSC members on what you think drives disparity and inequity in the workplace, and how NIOSH should go about studying and/or helping to reduce the inequities beyond workplace culture, that was mentioned.

**Dr. Horn** commented that in terms of disparity and inequity, and particularly my background comes from the fire service, most of this is driven by resources and, quite honestly, dollar amounts—the ability to fund some of the things for a fire service just to have the equipment and the resources and the training in order to operate safely and work safely. So not exactly sure how to study that lack of funding that's available to resource it, or possibly to focus on how to prioritize that. How do we help these communities, both rural and in the large cities, to resource the training and opportunity and funding towards the equipment and the training as oppose—for safety and health as opposed to response? And then in particular, how they can be working together, how we can do a better job by also doing it more safely. I'm sure that probably resonates with several other occupations but particularly a challenge in the fire service.

**Dr. Roberts** said okay, great. So what driver is a lack of equipment and resources, and the suggestion is to work with communities to try to identify more resources to protect safety and health and to prioritize those.

**Dr. Huang** said I'm glad to hear you mention the workplace culture or climate and that's really my passion and my whole career is about. And I'm happy to share, actually support from NIOSH have extended our safety culture and climate work to Total Worker Health culture and climate, and also we currently have a project funded by Oregon State to extend that Total Worker Health culture and climate to respectful workplace culture and climate. So we put in a lot of effort to how to help organizations build a respectful workplace culture and climate, and looking for the impact to bring in the diversity, equity, inclusion into the workplace. So we are developing a tool, the climate tool, a climate assessment, that can bring in the metrics to help organizations to measures, provide metrics, quantitative number, in terms of the quality of the respectful workplace and eventually move on to interventions. So very happy to see and very appreciative to

see the effort NIOSH is making and would love to share the project we work with Oregon State, to share if there's an opportunity to share that outside of Oregon.

**Ms. DeGrasse** said one of the metrics that we've used is psychological in nature, and so we partnered with the University of Illinois Chicago and Dr. Peter Orris to conduct stress studies in some of our parcel delivery workforce. And a lot of that is, a lot of the questioning is related to, "Do you feel valued in your workplace? Do you feel like your thoughts or ideas are heard? Do you…" a lot of around psychological feeling, processing, emotions relative to your place in the workforce. And so that can be used as a metric to kind of understand or translate that data into what disparity and inequity may look like, coupled with questions on, "Does your employer provide different types of shifts, your ability to choose your shift?" which is, like, translates to work-life balance type scenarios, right? And so I think conducting, having research that is conducting these type of psychological surveys, if you will, can be a useful metric in understanding inequity and disparity in different populations, and union shops versus nonunion shops, in primarily male-dominated workforces or not, etc. But also in partnering with organizations that promote diversity in the workplace and getting more folks into nontraditional roles, for instance we partner with a group out of Seattle, Washington that gets more women into like the construction and heavy equipment operating trades. And so understanding how they are navigating once they get these jobs, like doing post-job, post-employment type surveys could help with understanding the needs and where they are in the workforce, how they're feeling, they've been received, etc.

**Dr. Graber** said building on part of what Enjoli was saying about context, I think we really at NIOSH, as we move forward in thinking about how to understand and study this, we have to keep the regulatory and political environment that we're in today in mind, and keep that as part of our measurement and understanding how the environment we're working in impacts the workplace, and making sure, you know, measures go across from psychological to physical outcomes. I would also probably disagree with Gavin a bit on resources as being one of the primary driver for disparity in the fire service. I think priority comes first and resource direction flows after, but that may just be, you know, not a disagreement, more of a refining.

**Dr. Caban-Martinez** commented I was thinking when you were presenting too if there's value or utility in doing an exercise with each of the NIOSH NORA Sector Councils including the cross-working groups because they're like sort of these heterogenic foci of industry, academia and government that might be able to give some additional insights into some of these really great questions you wrote here. I feel like these are the million-dollar questions. Like if we could really advance the needle in some of these spaces, that we could really, you know, beyond just a finding and doing surveillance of it. Because I feel like every industry and occupation will have, to Dr. Huang's point, organizational culture and climate that needs to be tapped in and not use a cookie-cutter approach but provide the necessary prongs for each occupation and industry to really dive deep into understanding some of the pain points. Especially for like small mom-and-pop shops that have five or six employees and there are opportunities for individuals with disabilities that could be supporting, you know, and enhancing participation in the workforce. I'm curious if those Sector Councils might be a good option of digging deeper.

**Dr. Roberts** said yes, I think they certainly can be. Yes, so thanks for that. That's certainly an option that we can pursue.

**Dr. Tenney** continued that this is a great conversation, and I just wanted to mention, in regards to what Krista and others have discussed around really the psychological safety and occupational health psychology dimensions of equity, I think it's what the ILO has put out, and the way that we're considering a lot of our projects that are really working with organizations and improving equity around work has been directed to ILO's Decent Work Agenda and looking at how they really have outlined an umbrella for what we consider a lot of the core domains around the psychological/psychosocial stressors that workers face that lead to disparities are viewed around income, security, protections. And so I just wanted to mention that because I think that there's a lot of synergy in what we're talking about, and that's something that the ILO has done a really nice job in creating a framework for.

**Dr. Roberts** agreed and said this is a framework that came out a couple of years ago; definitely agree that that's extremely useful.

**Dr. Pieretti** followed up comment with what Dr. Graber had said about one of the things that being in the State of Florida every conversation about this is going to touch the political environment. I think mostly that's in order to be sustainable and able to build the national conversation, you have to definitely touch that, the political fiber if you will, and try to be sensitive. So in other words, you don't have good participation or efforts in, just for the sake of the argument, Northern states versus Southern states. So I just want to point that out that something that just because the politics that we have right now, some of the efforts—important efforts—is just made, may get diluted in—or people may take it out of context and actually think about the focus, make it at a focus that is not what actually you want to do it.

**Ms. DeGrasse** reiterated the comment about the politics that a few other participants mentioned, and just metrics in some states where there is active political legislation going on right now that is more promoting inequity and disparity on many fronts. But just specifically in safety and health where we have some states where their leadership is outlawing businesses' ability to provide heat safety protection for their worker, a lot of whom may be people of color, right, or folks who are, you know, just in the labor workforce in general. And so you're going to find that there are some laws on the books that are leaning toward inequity in treatment in classes of workers, in labor versus folks who are in office-type setting. So looking at just state laws and how politics is playing out can be an indication, regionally, kind of where folks may be on that spectrum as well, inequity and disparity. And in right-to-work states versus non-right-to-work states.

**Dr. Roberts** responded that it's those sort of structural determinants of health that do need to be attended to in this particular area.

**Dr. Reponen** read a question from **Dr. Patel** "So additional parameters to think of diversity in all forms: age, race/ethnicity, sexual orientations, is this related to LGBT communities and how workplace policies and practices impact each group. For example, data modernization and automation is the way forward for many organizations but that may bring certain challenges for aging workforce and so that needs to be considered when creating or reshaping jobs."

**Dr. Roberts** responded absolutely and said Dr. Patel also agrees with Dr. Martinez's point in the context of no one sits—no one-size-fits-all approach as there can be variations by employer size and industry/occupation groups when it comes to health equity and social determinants of health. And as I had stated before, the populations that are covered under the strategy do include the groups that were listed there.

She then asked the next question, "What role do you feel NIOSH can play in stimulating more scientific workforce diversity in the occupational safety and health field?"

**Dr. Reponen** said as some of you might know the Supreme Court decision last year that ended the affirmative action. So when we think about scientific workforce and training the next occupational safety and health professionals, this potentially could influence the pipeline that we can get from the undergraduate programs. As this is just very new, I don't know how this is affecting and probably now this Spring when—or maybe they already did in the Fall, when they are admitting new students, so that's to be seen how that, how much influence that decision might have.

**Ms. DeGrasse** responded that it may be worthwhile for there to be research conducted on how the ruling is affecting recruitment in the workforce in STEM fields, since we're talking about STEM mostly, and just to see if there are downward trends in student populations but also in workforce populations going forward. I know that there is some HBCUs that do have programs and public health partnerships and maybe that could be a way to increase the pipeline from HBCUs into other advanced degree programs that have the public health type of degree-seeking program. And so just encouraging research institutions to create those pathways and those pipelines, which I'm a product of from Xavier University to Tulane University, and that's how I met Dr. Reponen through one of those studies.

**Dr. Roberts** agreed and said certainly partnering more with HBCUs I think is really one important strategy to undertake.

**Dr. Horn** added that even driving it farther down really in the education chain. There's been a lot of great advancements that's been made in STEAM in the high school and even in the grade school. My daughter was introduced to Girls Who Code and 3D printing and all these things in the time she was fifth and sixth grade, and there's a lot of that effort that's been put around the country but most of that focuses more on traditional engineering, at least what my kids have been exposed to in Illinois and in Oregon is focused on really kind of more traditional engineering—civil, mechanical, electrical engineering types of projects. But trying to drive down some of this information or developing modules for those STEAM organizations that build it, that look at statistics or epi or industrial hygiene or any of the other topics that might interest them at a young age, toxicology, many of these things that they see on TV or on videos or TikTok or what have you, to understand some of the science behind it could really engage in them fifth, sixth grade and move them into these universities.

**Dr. Roberts** agreed and said great suggestion. Thank you.

**Dr. Graber** responded that trying to think a little bit out of the box here. We're doing some very community-engaged work with the fire service. I'm also working in a community engagement project with an environmental justice community in New Jersey that has high levels of industrial pollution over many, many

decades. And one of the things that we do when we work with these occupational and other communities is we engage them on many levels. And I think one thing we don't think about doing enough is engaging their families in health promotion in the workplace. And then can we expand that to engaging their families and their children in education around science, right? So going into the workforce and reaching, especially as we more and more are working with vulnerable working populations, you know, how do we think about that? I think, you know, we've been to some degree, a lot of the work that's been done with farmworker families has by definition been with families as well as the workers. So just really trying to think about how we work with working communities and vulnerable working communities.

**Dr. Roberts** said that's a great insight.

**Dr. Reponen** responded suggesting NIOSH consider some targeted internships for diversity, or somebody who has just graduated from undergraduate college for example, or even high school kids, to be targeting certain of these disparate populations?

**Dr. Roberts** thanked her for the suggestion and then asked the next question, "what other key efforts can NIOSH undertake to help build and sustain national capacity for advancing OSH equity?"

**Dr. Patel** responded that while I am always for R2P, which is reaching to the community, developing our capacity from ground up when we start talking about educating our younger generations about the science itself. But I also feel like there is one large piece that we undersee is the data piece. We all use different kind of health systems data, whether it's in occupational context or otherwise, and I feel like when it comes to looking at metrics, whether it's disease metrics—what's the burden of a particular disease condition in certain population group or occupational group, so to speak—or are we doing fairly well if we are implementing certain interventions for, you know, preventing a particular exposure or hazard in this industry or occupation, how impactful is it over time? How effective is it? I don't think so we are able to assess that because there are major data gaps in our data systems where either we do not collect a required amount of information about race, ethnicity, sexual orientation, and so many other aspects that are social determinants of health into our existing data systems and the new ones that we are designing, none of the data systems talk to each other so we can't assess a lot of these things. And last but not the least, industry and occupational, we're kind of repeating the same things. "When can we add industry and occ to other systems?" or, "How can we best use existing systems to look into things?" Because when you start talking of Total Worker Health, what are the disease burdens in a population and which segments of, you know, industry and occupation is impacted, I think that needs to be assessed.

For example, last point is, CDC has these great tools called Social Vulnerability Index. ATSDR came up with the ADI index and stuff like that. Terrific. But I feel like occupational, or industry and those aspects have not been captured anywhere. And I feel like that's a major drawback that NIOSH could play a role in too when it comes to indicators or developing indexes that can measure as an, you know, equity issue.

**Dr. Roberts** said that's a great point and something that NIOSH has recognized as an issue, the lack of information on occupational and industry in some of these large data collections, and have recognized it as a

major stumbling block, and have tried to advocate for the inclusion of those points so that we can actually get the data. But yes, those are really great points, a lot to it, but I think excellent point.

**Dr. Reponen** added that this was actually brought up in Dr. Howard's written comments. There is a publication, Council of State and Territorial Epidemiologists has published a recommendation that industry and occupation should be included as a core demographic variable in public health surveillance, and NIOSH has developed an industry and occupation computerized coding system to facilitate that. So there is already activities, and just to kind of make sure that that's going to be used, and that will help a lot when—in addition to the, when you're collecting other public health surveillance data, then we can connect that to industry and occupation.

**Dr. Tenney** added to the topic of building capacity, I think one of the things that we've seen as such a major challenge was acknowledged in Dr. Howard's remark around mandates that create barriers around pipeline programs to even get people to graduate degree programs that are supported through ERCs and other training mechanisms that NIOSH funds. And so I just want to echo what Alberto said earlier, which is the need to focus on these partnerships and really thinking through how some of those partnerships with either colleges or, for example, our ERC has a big focus on working with HBCUs to advertise and recruit for our training programs. But just thinking through how potentially, not only through internal programs but through the external programs, NIOSH can be doing more to encourage those types of partnerships.

And my second comment on this is actually more of an overarching comment for the identity of NIOSH is in thinking through how the branding or rebranding of who NIOSH is and what NIOSH does, and how the careers within NIOSH are explained as real opportunities to marginalized groups and students earlier so that they have not only more awareness about it but just more attraction to the field. And every year we do undergraduate and high school day, where we have students come to our campus and learn about the different health careers, and across the board, everyone's like doctor, nurse, maybe public health, but definitely not occupational and environmental health. And so I think again, coming back to the partnership piece, relying on the extramural programs and specifically the ERCs to think about how to really develop the pipeline, and then having some of these programs within the nine divisions leverage the partnerships that they have to connect the dots of those that they're working with in these communities to some of the training programs across the country.

**Ms. DeGrasse** added one other point I thought about, I had a conversation with the statisticians from OSHA yesterday regarding OSHA and BLS data, and I'm not sure if it's possible but it may be worth a conversation on including identifiers on OSHA 300 reports regarding race. And also, voluntarily, as a pilot this could be done. Not just race but nationality, English as a first or second language, etc. And that could yield metrics on who's experiencing a lot of the injuries and maybe why.

**Dr. Huang** responded that in terms of to help build and sustain national capacity, your projects to share with the ERC center, Total Worker Health Center from the tools, the methods, to identify the articles, just to share through those channels, I can say that would be a great impact to what you have been doing, if you can share that with those centers. And the other part I'd like to share, I've been moving to Oregon for five years now, and I do find different states to have different efforts and their focus. And I'm very proud to see Oregon

actually putting a lot of effort in trying to build a state with bringing the diversity, equity, inclusion to the workforce such as the state have been funded a Respectful Workplace Initiative that's trying to summarize all the training, tools, all the resources available to help build the respectful workplace, including the scientific articles, resources, and also those practitioners and the tools they use. So again, if NIOSH can potentially partner with different states that have different efforts, and then NIOSH can partner with those state-funded projects or tools, I think that can be another source to help build a national capacity.

**Dr. Roberts** thanked her for the suggestions and said this has been absolutely fantastic and I really do appreciate all of the insightful comments and things that perhaps we haven't been thinking of. So, really appreciate this conversation and your time today, and I'd just like to thank you for having me. And if you have any questions or think of anything else for how NIOSH can build on the health equity science work, please feel free to reach out to me.

# National Firefighter Registry Subcommittee Update

**Dr. Reponen** introduced Dr. Kenny Fent who she said would give an update on the National Firefighter work and specifically talking about the Subcommittee and what Subcommittee has been up to.

**Dr. Fent** said I'm going to be giving an update on the progress we've made over the last year or so. I want to just begin with a brief overview about the NFR for Cancer. The National Firefighter Registry came about through an act of legislation, the Firefighter Cancer Registry Act of 2018, and it was really motivated behind, you know, trying to better understand firefighters' risk of cancer and what is it about firefighting that, you know, increases the risk of cancer.

And so, our mission is to generate detailed knowledge about cancer in the fire service through a voluntary registry that reflects our nation's diverse firefighters, and then really to take that knowledge and share it back with the fire service and public health communities so that they can take measures to reduce cancer in firefighters.

Our key components are to collect self-reported information from firefighters about themselves and their work, through a secure web portal. It does take about 30 minutes to enroll, and I'll talk more about that in a bit. Another component is to obtain records from fire departments or agencies so that we can better understand firefighters' exposures and how they change over time then ultimately linking with health information databases, including state cancer registries and the National Death Index so that we can look at both cancer incidence and mortality. And then lastly, to make deidentified data available for external researchers.

So, we are required to have a subcommittee, an NFR subcommittee. This is a subcommittee of the NIOSH Board of Scientific Counselors. It's comprised of 11 rotating experts and two co-chairs that provide guidance to the project team. Our co-chairs previously were Pat Morrison and Dr. Grace LeMasters, and we sincerely thank them for their service as co-chairs. Our current co-chairs are Drs. Gavin Horn and Judith Graber, and we thank them for taking on this new responsibility.

We are required to meet with the subcommittee at least once per calendar year, and this subcommittee is charged with advising the NIOSH Director on a variety of topics, including increasing awareness about the NFR; and maximizing participation; considering the unique data collection needs that we have; you know, encouraging participation especially from groups of firefighters who have been under-represented in research, and this would include minorities, female firefighters, and volunteer firefighters; and then helping us to, you know, consider how the information is collected and stored and accessed later, and how it's maintained and updated over time; and then lastly, helping us to consider methods for estimating the number of fire incidents responded and the types of incidents that firefighters respond to throughout their work career.

So, the last time we met with our NFR Subcommittee has been a little while ago; on June 13th, 2023. Before that meeting, we provided an updated protocol to our Subcommittee and then we summarized the progress that we made over the last year at that time, which I'm presenting many of the same slides here to you today. And specifically, we discussed three topic areas: One, our communications campaign; two, our targeted enrollment plans; and then three, our follow-up - future follow-up questionnaires, and I'll be going over those three topics with you today.

Just a real brief overview of the progress that we've made over the last year. So, we did make finishing touches to the enrollment questionnaire, in consultation with the Subcommittee and other experts throughout the fire service and scientific communities. We finalized the Assurance of Confidentiality, which is the highest level of protection for this kind of data that we're collecting. We updated our website. We were able to obtain written support from several fire service organizations. We did user acceptance testing for the enrollment website or web portal. We then conducted soft rollout testing of that web portal at seven different fire departments. We created and staffed the NFR helpdesk. We launched the NFR nationally in April of 2023 and then we also, at the same time, rolled out our comprehensive communications plan. And I'll go more in-depth in each of these in the subsequent slides.

**Dr. Fent** continued that in terms of the written support, we have right now written support from 18 fire service organizations and that includes the largest organizations. So, we have written support from the International Association of Fire Fighters, which is the firefighters' union, representing over 300,000 career firefighters. We have support from the National Volunteer Fire Council, which represents volunteer firefighters, which outnumber career firefighters in the United States. We have written support from the International Association of Fire Chiefs, which of course represents fire leadership in the United States. Those first three groups represent the vast majority of the fire service, but we also have written support from many other organizations and affinity groups for the fire service, as well as the U.S. Fire Administration.

Before the end of 2022, we were very busy in doing a lot of the internal testing of the enrollment website and questionnaire. We did a lot of testing for data integrity to make sure that data that is entered shows up in the database properly, and then we did a lot of back-and-forth finetuning of the web portal with the developers. Then at the start of 2023, we pushed the web portal to production. We conducted the soft rollout testing with firefighters at seven fire departments. Those seven fire departments were selected to represent various sizes of fire departments and geographic diversity as well. We are very grateful to those

seven departments. This was obviously a voluntary thing that they did in helping us to do that testing, but it was really effective in helping us to identify some minor issues that we were able then to correct before we moved forward.

We also went to a conference in Florida in January, the Fire Department Safety Officers Association Conference, that allowed us to do some additional in-person testing with firefighters and leadership at that conference and got some good feedback and we were able to do some updates based on that feedback. We implemented the final changes and pushed that final version to production in April of 2023, and then we got busy notifying the fire service that we were about to launch.

We have a quarterly newsletter that actually has the highest open rate of any newsletter at CDC. We notified many of our partners through that newsletter on April 13th that we were about to launch. We put out a press release, CDC and NIOSH press release, started our social media campaign on April 17th and then we did the big announcement that we were launching at the Fire Department Instructors Conference in Indianapolis on April 27th.

We knew that it was important to have a helpdesk up and running before we launched, and so we got this set up and staffed by a contractor. We developed a process to gather information from firefighters, any technical issues that they were experiencing, and made it a priority to respond within 24 hours to those technical issues that were reported.

**Dr. Fent** said, as I mentioned, the big announcement was at FDIC 2023 in Indianapolis. This is the largest firefighter conference in the country. We worked with the conference organizers to help us get the word out. I was able to give remarks during the opening ceremony that was attended by thousands in person and thousands virtually. I was joined on stage by representatives of IAFF, the firefighters' union, Firefighter Cancer Support Network, National Fallen Firefighters Foundation, and the conference organizers FDIC. It was a very successful announcement during that opening session. We also had an exhibit booth at the conference that was there from Thursday to Saturday which was also very successful. We collected over 350 emails, distributed more than 5,000 NFR items, and then later observed more than 2,000 people accessing the web portal during the week of FDIC. So, a very successful launch for our program.

Some other activities since the launch - we have updated the NFR web portal. The landing page of the web portal is a little bit more straightforward. It has informational videos, that firefighters can watch before they confirm their eligibility and move on to the enrollment process. We also removed a feature that was preventing participating from editing responses in the Work History section, and then we added a new feature that provides an NFR participant number after firefighter's consent, and that will be useful if down the road we are linking to other data sources, for example, exposure tracking programs. Firefighters would be able to provide their NFR participant number and then that provides a linkage back to the NFR.

We've been busy continuing to go to conferences throughout the country. We've set up exhibit booths at eight large conferences over the last year and a half. We've presented at more than 20 conferences across the country over the last year and a half. And then we're working very closely with our fire service partners to deliver messaging via social media, ads, podcast, news interviews. We have been very effective. We've had

more than 5 million social media impressions, more than 100,000 video views, and more than 125,000 visits to our NFR website over the last year.

So, as I mentioned, we're very interested in reaching groups of firefighters who have been underrepresented in research. Women, minorities, and volunteer firefighters are specifically called out in the Firefighter Cancer Registry Act. So, we are developing communication products that really try to speak to these audiences. We're working with Paul Combs, who's a famous illustrator in the fire service, to develop some products, as shown here with the women.

Communication: we're using imagery of wildland firefighters on some of our posters and ads, and we're working with organizations that represent some of the groups of minority firefighters such as the National Association of Hispanic Firefighters. And these efforts have been performing quite well. This poster of the women firefighters was released for five days back in February, and it resulted in around 5,000 visits to our web portal over a five-day period. So, we're going to continue to work on doing more to reach these audiences.

One of the big months for firefighter cancer is January which is Firefighter Cancer Awareness Month. This past January, we worked closely with the Firefighter Cancer Support Network and IAFF, who leads that initiative, to really promote the importance of the NFR. Both those organizations shared some of the materials that we had developed and even produced some of their own communication materials for us. So, this is one that Firefighter Cancer Support Network produced for us, and it was a popup that was on their website that took firefighters directly to the NFR web portal. So these were released throughout the month, and we did witness a very large increase in participation during the month of January.

By February of this year, we had well over 10,000 firefighters who had enrolled. That includes around 8% female, around 2,000 firefighters who reported wildland as their primary job, and this continues to grow at a steady clip.

So, we presented many of these slides to our Subcommittee back in June. Of course, some of these are new. But during the discussion with our Subcommittee, we had these discussion topics like, who are we missing in our marketing? How do you feel our initial launch is going? And do you think our current messaging is effective?

The feedback we got from our Subcommittee included, consider conducting more outreach through state and local organizations, so that includes state governors' offices, state fire marshals, state fire academies, and then other state and local organizations.

In terms of the progress that we've made since June, we have presented at the Michigan Fire Marshal's monthly meeting back in November. That fire marshal is heavily involved in the national organization of fire marshals. We also formed a working relationship with the New York Department of Homeland Security Emergency Services. They are actively reaching out to firefighters throughout the State of New York regarding exposure reduction and at the same time, they're sharing information about the NFR to firefighters in New York. We are actively pursuing other relationships with state fire marshals, and we have also obtained support - written support - from the North American Fire Training Directors, NAFTD, which

represents training, state training directors from all 50 states, and several of the state training directors are providing information about the NFR. We actually provide printed materials directly to those training academies. They're sharing that with their students, and we are trying to grow that even further.

I'm going to pause here and see if there is any additional feedback or input that the Subcommittee—or the BSC rather—would like to provide.

**Dr. Reponen** asked if there was any additional feedback. I think we're going to do the overall discussion at the end, if there are any specific questions. But it's good to have feedback at this point so, does anybody have any additional feedback for the questions that were posted. She asked Dr. Fent if he wanted feedback to the Subcommittee's recommendations.

**Dr. Fent** responded, I'm happy to continue and we could have a deeper conversation at the end. So, the next topic that we discussed with the Subcommittee was our targeted enrollment plans. The NFR really has two different enrollment methods. We have open enrollment, which is basically it's open to any firefighter in the country, whether they're active or retired, career/volunteer, with or without cancer. They basically can go to our web portal and enroll. It's a convenience sample. And then we also have a targeted enrollment method that we've been planning for a while.

Our targeted enrollment - and really the purpose behind the targeted enrollment, is to address the selection bias associated with open enrollment. Our original design was to select fire departments across the country, to reach out to leadership at those departments and collect detailed roster and contact information from the fire departments that would include, name, email, phone number, residential address. And then using that contact information we, NIOSH, would reach out to the firefighters on the roster and encourage participation. Then we would have the information to track participation rates on an individual level. And we would also request incident and employment records from the fire department for those who enrolled.

So that was our original design, but we reached out to several fire departments and discussed this with them, and what we heard fairly consistently from these fire chiefs is that there is a hesitancy, or even an inability, to share roster, detailed roster information with us. They had concerns about privacy. They had potential legal challenges to sharing that detailed information with us. There were some differences based on geographic locations but overall, what we heard is that this would be potentially a big lift for a fire department, and that it could also be a big lift to provide incident and employment records at the same time as roster information. They also expressed some concerns with us reaching out to firefighters, that there may be mistrust, you know, having a government agency reach out to them versus, if the fire department leadership was to reach out or union or something like that, it might be firefighters may be more receptive to those communications.

So, we came up with an alternative design that we presented to the Subcommittee, and the alternative design would be to again, reach out to select fire departments, but then work with leadership and actually have the leadership of those fire departments reach out to their own members with initial and follow-up emails that they would send to their rosters. The department could just simply provide workforce counts to us, as well as, if possible, breakdown by demographic factors. And then we could use those workforce counts to estimate participation rates, and we could actually provide, feedback to department leadership, on how

it's going with their department, and then they could follow up with the members of their fire department to further encourage participation.

And then in terms of incident and employment records, we could explore those at a later date with the fire department. It wouldn't have to be something right off the bat. And at the same time, we—it's important that we closely follow what the U.S. Fire Administration is doing because they are in the process of updating the incident reporting system, which is now going to be called NIRS, and that new system potentially may provide a pathway to these incident records without necessarily burdening the fire department.

So that was the alternative design that we came up with. Then we had a discussion with our Subcommittee and the main discussion question was what their thoughts were on the original versus the alternative design for targeted enrollment.

The feedback was that a few members thought that the alternative approach is likely to be more successful, especially if we work with department leaders, state leaders, unions—if we can get union buy-in. All of those are likely to be more successful. A few members recommended that we explore other options before making a decision, such as a hybrid approach, potentially a pilot test, or potentially looking at other sources of data as well for roster information.

**Dr. Fent** continued, in terms of the progress that we've made, we did explore other options. We held additional calls with fire department leadership regarding the feasibility of them sharing roster information, and we still heard that it was potentially a problem. So based on our exploration of options and the conversations we had, we decided to proceed with the alternative design. However, we do want to leave open the option of collecting more detailed roster information in the future. But by at least starting with the alternative design, getting those workforce counts from departments and working with department leadership to send out the emails and other notifications, we can really get started pretty quickly. I already identified an initial list of possible fire departments for targeted enrollment, and we should be moving forward with that in the next few months.

**Dr. Graber** said, Thank you, Kenny. This is really exciting. Congratulations to you and your team. Amazing rollout and work on getting the information out. I have two questions. First, just how many departments are you looking at for this targeted approach? Secondly, do you see these leadership people as sort of champions and to be delivering your information during membership meetings. What is that process? And thirdly, do you also envision these folks to possibly be anchoring wider outreach in their areas for the NFR?

**Dr. Fent r**eplied**,** those are great questions. Miriam Siegel is our lead Epidemiologist, and she can probably answer your first question about how many departments, because I don't remember. We would be working with the leadership to be the champions, but it may not be a fire chief. It might be somebody else at the department who ends up being that champion and really leads the effort to send out the information. Now, we do want to make sure that the way that the outreach is happening is consistent, for scientific reasons, so across all the departments we want the same messaging to go out, and work through similar channels. But every department is different in terms of how they manage that department. So, it may not be a fire chief, it

may be a captain, it may be a training director or whatever. We would work with them to get that information out.

In terms of wider impact, that is definitely top of mind. We do think that if we can get some fire departments that participate and get high participation rates and we actually want to recognize departments at high participation rates, then departments around them will take notice and that will actually be a force multiplier for what we're trying to achieve. Now that would be open enrollment for those other departments, not targeted, but it would be a force multiplier.

**Dr. Siegel** explained, so, related to the number of departments we're hoping to involve in our targeted enrollment, it's really going to depend on the participation rates we're seeing at those departments. I think there's going to be a continuous feedback loop throughout this whole process. We've developed an initial list of roughly 30 departments to approach to get started off, knowing that probably not all of those will be able to participate at the level we would like them to. And that initial list was focused on identifying those departments that had large numbers of women, then seeing what not only the participation rates looked like from those departments, but the subgroups of firefighters we're seeing that do enroll, whether it be women or non-White minorities or different kinds of job titles. That will dictate kind of the decisions we make in terms of which departments we prioritize next, the kind of geographic variability we're going to seek out as we pick our future departments, and how many departments we're looking to enroll. So, it's going to be a constant feedback loop depending on those factors.

We do have a hypothetical simulated sample size calculation in our protocol. I can't remember what the number of departments was off the top of my head, but it was really just kind of given these hypothetical factors of participation rates, and participation rates from the open cohort as well as if we get any statewide participation from any states.

**Dr. Graber** followed up, that's really helpful. That's a very manageable number. I'm wondering if the NFR is planning to have boots on the ground with those departments, because that would seem key.

**Dr. Fent** replied, yes, we are. We have a contract, and they're going to be the ones really reaching out to these departments, and then if they do need a little bit more in-person help, they would be able to do that as well.

**Dr. Pieretti** said, first of all, thank you so much for the presentation. What is your definition for the national? Are you thinking about reaching out to the departments within the 50 states? Are you thinking to incorporate the territories like Puerto Rico for example?

**Dr. Fent** responded, we are open to the territories as well as Tribal communities. Diversity is really important, especially when you think about groups of firefighters who have been underrepresented in research, so we would certainly include those groups of firefighters. Ww are definitely open to it. We haven't done a lot yet, but we certainly are interested in doing that.

**Dr. Pieretti** suggested that Puerto Rico definitely is a territory that you can get a good cohort of the non-White minorities, at least this portion of it.

**Dr. Fent** agreed.

**Dr. Patel** thanked Dr. Kent, for sharing information about that work. I just had a quick follow-up question. When you mentioned that you all are doing targeted kind of recruitment or outreach for enrollment, what does that entail? The direction that I am going with this question is I was wondering, with all these large wildfires and response that are occurring, I think, you know, a lot of times those are like a good avenue to talk about these platforms and initiatives, which I don't think gets told. For example, the Smokehouse fire which I am responding to right now. When we were sending out messages, we at least just shared as a resource or a tool that people should be aware about, especially the responder community. But I don't know if that is something that you all are considering doing.

**Dr. Fent** responded that we are considering it, and we were involved. NIOSH was involved in the Maui wildfire response, and part of that was sharing information about the NFR to the firefighters who responded. But I think we can do a lot more. We are in the process of growing our program so we'll have more personnel available so that when you have a natural disaster like that, or any sort of major event that impacts firefighters, we could potentially have a team that goes out or, at the very least, reach out to the leadership of that fire department and let them know, that this is a resource for their firefighters. I think, like you said, certainly with Maui. I think when you have an incident like that and you have exposures like you've never had before, it's kind of a wakeup call that perhaps we should be looking at the long-term health consequences of our occupation. I think it's a good opportunity to share the NFR like you said but we can definitely do more in that area.

**Dr. Horn** said, I guess I just want to provide a quick shoutout to Kenny and Miriam, Andrea, Alex, and the team. For those of you who are not familiar with the fire service, some of what they have done is incredible in terms of the activity. FDIC is a conference where there's—especially being on the main stage—20,000 members of the fire service from around the state. Rarely do you get to have science up on the big stage and address that many boots-on-the-ground firefighters. Paul Combs has a reach into the fire service that few others do. So, some of those targeted partnerships that the team has put together are very broad but also very effective in terms of getting to the group that has been done. It's truly an impressive effort. I would also commend the now need to move down to boots on the ground, and particularly boots on the ground that live and sound and work and talk like the people you're trying to recruit. It would be very challenging to send someone from New York City down to Texas and have an impact on the boots on the ground there to get them, but the local individuals will have a better chance of getting down into some of those other areas and recruiting than someone from the federal government. So whatever resources need to be spent to do that. The word has gotten out on a federal level or on a national level more so than I think anyone could have imagined at this point, but drilling it down is going to be critical, and having a broad group of people who can speak with the same accent as the people we're trying to recruit I think is critical. So great job, Kenny.

**Ms. DeGrasse** wanted to know if any thought had been put into partnering with different events like the Fire Safety Stand Down Week. There's the Firefighters Week on Capitol Hill and there are often a number of events that are organized around these different focus group weeks where you could potentially have the opportunity to target different audiences. Also, every year OSHA and AFL and Teamsters celebrate Workers'

Memorial Day, which talks about folks who died or have been injured on the job as a result of occupational exposure injury. And so having that event partnered with what you're trying to do as an education awareness, coupled with similar types of events where folks are highlighting occupational exposures and injuries in the media and on the Capitol legislative, and combining those efforts could get more visibility.

**Dr. Fent** responded, thank you, yes. Great, great guidance. We're doing some of that, and certainly, I mentioned Firefighter Cancer Awareness Month, Fire Safety Week, stuff like that. We're doing a lot in terms of social media and that kind of thing. But you mentioned some events that we haven't thought of yet so I think there is a lot more that we could do around those special events.

**Dr. Reponen** suggested that the Workers' Memorial Day would be a good avenue.

**Dr. Fent** continued, the last topic that we talked about with our Subcommittee was the follow-up questionnaires. When you enroll in the NFR, there is an initial enrollment questionnaire, which I mentioned takes about 20-30 minutes. It collects information about demographics and work history up to the point when they register, and health history, and lifestyle information. We tried to make the initial questionnaire as short as we could but there are still topics that I think scientifically we would be interested in. These could be major events like we just talked about, special health topics, topics relevant to specific groups like female firefighters or wildland firefighters, emerging issues like electric vehicle fires for example, PPE and firefighter PPE. There is also the longitudinal information, the changes in workplace exposures and factors over time. There is a need to at least offer up follow-up questionnaires. With that, it is important to consider that follow-up questionnaires are voluntary, just like the initial enrollment process is voluntary, and because of that, it really depends on the interest level of the participants. Do they want to take on another questionnaire?

Another important consideration is that we are linking to state cancer databases and National Death Index. So, there is no need to report cancer to us. We will be able to capture that directly from the states. That said, we have been contacted by firefighters who are diagnosed with cancer, and they are interested in sharing that information with us.

In terms of potential topics, the longitudinal work information, incident responses, the types of fires that they've attended, or other types of events. health and comorbidities. You know, there is a lot of interest in the fire service and the scientific communities around reproductive health effects, mental health. Now that's not necessarily cancer, and the Firefighter Cancer Registry Act is, you know, very much focused on cancer, but we also know that some health effects are associated with cancer and so it might be important to collect more information about that. Lifestyle factors, smoking, diet, exercise, those are potentially related to cancer. And then, like I said, the subspecialties of the fire services where, you know, they may have unique workplace factors or unique exposures, and we might want to drill down deeper on those factors.

We talked about this with our NFR Subcommittee, and our topics were: what is the ideal length for the follow-up questionnaires? What topics should we really prioritize in the follow-up questionnaires? What is the best timeline for sending follow-up questionnaires? And just as a reminder, we launched in April 2023, so

this coming April, just a month away, will be one year. So, it's been one year since at least some people have registered.

The feedback we got from our Subcommittee was to really consider making those follow-up questionnaires short, and no more than once per year. Consider administering the questionnaires at the same time for all the participants. We heard that it might get difficult managing because we have an open enrollment. You could have firefighters that registered last April. You could have firefighters that register now or, two years from now. So, managing that process could get quite complicated. We might want to consider making follow-up questionnaires to coincide with events such as Firefighter Cancer Awareness Month, so it would be on the top of the mind. We might want to consider providing some space in the questionnaire to collect information about work exposures, at least until the USFA Incident Reporting System has been updated and it's up and running, which will probably be at least another year before that happens. And then consider getting some of the summary data back to firefighters when we ask them to complete the questionnaire. So, the idea is to give something when you ask for something.

In terms of progress, you know, we are committed to keeping the follow-up questionnaires short. You know, I think the enrollment, the initial enrollment questionnaire, 30 minutes is asking a lot, but we are getting good compliance with it but to do another questionnaire of that length I think would be asking probably too much. So, we're committed to keeping those follow-up questionnaires very short, you know, really focused.

I don't know if we've made a final decision—but certainly understand the limitations with trying to do a follow-up questionnaire at one year from the time that you registered. We understand how complicated that'll get if you have people registering at all different times of the year across multiple years. We are still working on what content would go into the first follow-up questionnaire, and we are following the progress of what the USFA is doing around NIRS. I am actually on that advisory workgroup, so definitely keeping an eye on that. And then we definitely want to share summary findings with the participants, certainly when we're requesting participation in follow-up questionnaires, but even aside from that, we are committed to being able to provide a summary of the data back to the participants in some form, whether that's a dashboard, an email, text message or whatever. We want to make sure that we're communicating back with the participants and keeping them engaged. I think that's it. So, let's see if we have any additional comments or feedback about this particular topic.

**Dr. Reponen** thanked Dr. Fent. I have to say, I strongly agree with this sharing some of the data, especially when you are asking them to fill in questionnaires. But it might take several years before you actually have some data, so what kind of—what kind of information can you meanwhile share before you get any actual data on cancer.

**Dr. Fent** responded, that's true, Tiina, when it comes to cancer, it'll take us a while to even do the linkages and then of course latency, the latency period of cancer, it's going to take multiple years before you would have enough cases to even do any statistics around it. But we do have information on, you know, control measures. So, to my knowledge, nobody - at least on a national level - no researchers have collected information on these control measures that many departments, many firefighters throughout the country have started to implement. So, I think that's really valuable information. I think there would be a lot of

interest, not just among individual firefighters but among fire department leadership. I think having like a public dashboard where we can summarize some of that information would be really valuable.

**Dr. Graber** said, I think I've mentioned this idea before, but have you had any thoughts on modular and split samples, given the sample size you're looking at? So, you would ask a core set of questions to everybody and then split the sample for many of your other questions as time goes by. Because you've got - you've got so many people, you've really got such flexibility. It's really fantastic. And then I am curious, very briefly, to hear about what you're planning for follow-up after you invite them because - and I don't want to get into the weeds, so I'm just sort of, on a high level, curious about what your resources are because, especially with these folks, if there are multiple follow-ups, you're going to get a very low response rate, as you know.

**Dr. Fent** responded, thanks, Judith. I think one thing that we are exploring is the idea of, like you said, the modular questionnaires or maybe having very short, like a set of questions, a very short set of questions that is sort of like you can answer this one and then if you want to, here's another one, or whatever. But that way, again, we don't want to overburden the participants with another lengthy questionnaire. And also recognizing, you know, participation rates are probably not going to be as high as that initial enrollment.

**Dr. Reponen** said, yes, I think you mentioned that you have well over 10,000 enrollees within less than a year, so congratulations. I think it was great effort. But could you remind of what the overall sample size for the open enrollment is? What kind of sample size? Do you have a target?

**Dr. Fent** responded, our target is 100,000 over the next - like three to four years, I would say. And then we probably will just keep it open. And if we can get - what we said at the beginning was 200,000, which would be about 10% of the eligible population. But yes, I would say over the next three to four years, 100,000, that's our goal, both open and targeted.

**Dr. Reponen** replied, so it sounds like you do need to boost the enrollment but probably word of mouth will also help to increase the number.

**Dr. Fent** responded, right, and keep in mind that the 10,000 that we have right now is purely open enrollment.

**Dr. Fent** said, we have not started the targeted. It's mainly working through our, fire service partners to get the information out. And anecdotally, when we've gone to conferences and met with firefighters - line firefighters, not leadership, many of them have not heard of this. So, I think it's still percolating. I think we have a long way to go before the majority of the fire service even knows about this.

**Dr. Reponen** said, we have time for a few more questions or comments. Enjoli had posted a couple of websites... Safety Stand Down website and Fire.

**Ms. DeGrasse** responded, yes, they are just the websites of organizations that, if you haven't partnered with them already, could potentially increase visibility by attending their functions. You can host now on their website like you do with the IAFF.

**Dr. Reponen** responded that it was great progress and she thanked Dr. Fent for presenting it.

**Dr. Fent** said If you scan that QR code it will take you to the enrollment web portal. And if you know any firefighters, please let them know about this. There are tons of communication materials that are free to download, videos, factsheets, flyers, etc. on our website.

**Dr. Reponen** wrapped up, so everybody spread the word of this good project.

# Summary and Wrap-Up, Future Agenda, Meeting Dates, Closing Remarks

**Dr. Reponen** summarized that we had very good presentations from the NIOSH staff, and lively discussion. Thank you to all the Board members for giving your feedback. Next is to discuss future agenda items. We will have the Evaluation Capacity Building Plan again in the Fall and will discuss with the National Firefighter Registry team if they'd like to update again in the Fall or wait until next Spring.

**Ms. Strickland** explained the makeup of the committee's quorum and schedule for next meeting. She shared that while the committee is losing 4 members, the total is 15, which would bring us to 11 even if we don't have the nomination package through before Fall. So, we will need to wait and see, but we're hopeful that we can have a Fall meeting.

**Dr. Tenney** asked if there are plans for having that meeting in person.

**Ms. Strickland** responded that we will likely still be having it virtually but that's certainly a conversation to be had.

**Dr. Tenney** expressed support for that.

**Dr. Pieretti**, **Dr. Reponen, and Dr. Graber** agreed.

**Dr. Pieretti** suggested NIOSH projects or endeavors related to AI for the next meeting topic. Specifically, about software and robotics having AI handling and what NIOSH is doing or thinking about doing regarding that, as more businesses are adopting that.

**Ms. Degrasse** agreed AI is a topic and it could be an entire session exploring the different facets of AI, the occupational stress that AI can have on a worker, the human-machine interface, and dealing with robotics and machine learning instrumentation. It could also include sensor data that comes with the AI and the machine sensors that are used to identify when they are near humans, working in and around humans. That is in warehousing, in transportation, just so many fields. So, I think the breadth that—the topics that we can explore on AI can be numerous.

**Ms. Degrasse** went on to add on the point of psychological safety because it is a topic that a lot of agencies are working toward, exploring, making it more mainstream, incorporating that into Total Worker Health, and so it may be important to have education, research, needs development on psychological safety, to try and prevent some of the occupational injuries and illnesses that we are seeing as a result of not just stress at the

incorporation of robotics and AI, but in production quotas, etc. I'd like to see some information about where we're going with identifying psychological safety metrics on that, education products, etc., research.

**Dr. Patel** said if we can add, in alignment with AI, data modernization initiatives just fit perfectly with that same theme because, there's a massive push by CDC and NIOSH, also at all the state and local level agencies, about how to best revamp their existing systems, how can they best, you know, disseminate the data to the public. I know OSHA and Department of Labor is, undergoing massive overhaul on that. I think if NIOSH can talk about that to this group, about not just NIOSH and CDC, how they're working with other federal and state partners on that too, I think that would be very beneficial.

**Dr. Tenney** suggested someone representing NORA to talk about the next agenda and what the plan is. I haven't sat on the Council for a while but I—a lot of what we discussed today is the areas or gaps in our—the current NORA agenda. And I think it'd be really interesting to talk about or learn more about how NIOSH—and what the plan is to really either focus on a reorganization of councils or—it's such an influential agenda to all we do. And I'd like to add that to the agenda potentially.

**Dr. Reponen** confirmed the next NORA is in 2026; so, they might not yet have a final plan for the new NORA.

**Ms. Strickland** thanked the members for the suggestion. She introduced Hadley Hickner as the next Designated Federal Official for the Fall meeting while Ms. Strickland is on maternity leave. Ms. Hickner as well as Marie de Perio, NIOSH Associate Director for Science, will be working with NIOSH leadership on determining the next agenda.

**Dr. Reponen** thanked Ms. Strickland for her hard work with this Committee and welcomed Hadley. She also acknowledged the outgoing Board members—Michael Foley, Laura Barton and Roy Robert. And this is also my last meeting, and so I want to express my—how honored I am to be able to contribute to this, this Committee. So thank you, everyone. And I hope it goes well, continues good work.

**Ms. Strickland** thanked Dr. Reponen for agreeing to chair one more meeting.

**Dr. Reponen** announced the conclusion of the meeting.

The meeting adjourned.

# Glossary

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| ACOEM | American College of Occupational and Environmental Medicine |
| ADI | Area Deprivation Index |
| ANA | American Nurses Association |
| ASPR | Administration for Strategic Preparedness and Response |
| ATSDR | Agency for Toxic Substances and Disease Registry |

| | |
|---|---|
| BLS | Bureau of Labor Statistics |
| BSC | Board of Scientific Counselors |
| CDC | Centers for Disease Control and Prevention |
| COSH | National Council for Occupational Safety and Health |
| DEI | Diversity, Equity, and Inclusion |
| DEIA | Diversity, Equity, Inclusion, and Accessibility |
| DFO | Designated Federal Officer |
| DFSE | Division of Field Studies and Engineering |
| DLO | Division/Laboratory/Office |
| DSR | Division of Safety Research |
| ECB | Evaluation Capacity Building |
| EPA | Environmental Protection Agency |
| ERC | NIOSH Education and Research Center |
| FACA | Federal Advisory Committee Act |
| FACE | Fatality Assessment and Control Evaluation |
| FAO | Food and Agriculture Organization of the United Nations |
| FDA | Food and Drug Administration |
| FEMA | Federal Emergency Management Agency |
| HBCUs | Historically Black Colleges and Universities |
| HELD | Health Effects Laboratory Division |
| HESS | Health Equity Science and Solutions |
| HHE | Health Hazard Evaluation |
| HHS | U.S. Department of Health and Human Services |
| IAFF | International Association of Fire Fighters |
| ILO | International Labor Organization |
| MMWR | Morbidity and Mortality Weekly Report |

| | |
|---|---|
| NAFTD | North American Fire Training Directors |
| NFR | National Firefighter Registry |
| NIOSH | National Institute for Occupational Safety and Health |
| NIRS | National Incident Reporting System |
| NORA | National Occupational Research Agenda |
| NPPTL | National Personal Protective Technology Laboratory |
| OD | Office of the Director |
| OEP | Office of Extramural Programs |
| OPPE | Office of Policy, Planning, and Evaluation |
| OSH | Occupational Safety and Health |
| OSHA | Occupational Safety and Health Administration |
| PPE | Personal Protective Equipment |
| R2P | Research to Practice |
| STEAM | Science, Technology, Engineering, Art, and Mathematics |
| STEM | Science, Technology, Engineering, and Mathematics |
| USFA | U.S. Fire Administration |

# Certification Statement

I hereby certify that, to the best of my knowledge and ability, the foregoing minutes of the March 13, 2024 meeting of the NIOSH Board of Scientific Counselors, CDC are accurate and complete.

Tiina Reponen

Digitally signed by Tiina Reponen
Date: 2024.04.19 15:28:00 -04'00'

Tiina Reponen, PhD

Chair, NIOSH Board of Scientific Counselors