

**The United States Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health (NIOSH)
Mine Safety and Health Research Advisory Committee (MSHRAC)**

Fall Meeting

NIOSH Mining Program, Atlanta, GA

Virtual on Zoom

Open to the Public

Thursday, December 8, 2022

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Summary Proceedings

The Fall 2022 meeting of the National Institute for Occupational Safety and Health (NIOSH) Mine Safety and Health Research Advisory Committee (MSHRAC) was convened via Zoom on Thursday, December 12, at 10:00 a.m. EST, Kyle Zimmer, Jr., Chair, presiding. The meeting was also open to the public by video teleconference.

Attendees

Members Present

Kyle Zimmer, Jr., International Union of Operating Engineers; Chair

Kristina Behringer, M.D.

Ronald Bowersox, United Mine Workers of America

Andrea Brickey, South Dakota School of Mines and Technology

Tom Duffy, United Steelworkers of America

Marifran Mattson, Purdue University

Elizabeth "Libby" Prichard, National Stone, Sand & Gravel Association

Steven Schafrik, University of Kentucky

Matt Stewart, R.T. Vanderbilt Holding Company, Inc.

Ex Officio Members Present

Melanie Calhoun, Mine Safety and Health Administration, Ex Officio

Invited Non-Members Present

George Luxbacher, Designated Federal Official, NIOSH Deputy Associate Director for Mining

John Howard, NIOSH Director

Doug Johns, Director, NIOSH Spokane Mining Research Division

Cara Halldin, Deputy Director, NIOSH Spokane Mining Research Division

Jessica Kogel, NIOSH Associate Director for Mining

Pauline Benjamin, NIOSH Office of the Director (OD)

Bob Randolph, NIOSH Shared Services Director

Steven Sawyer Jr., Director, NIOSH Pittsburgh Mining Research Division

Christopher Williamson, Assistant Secretary for Mine Safety and Health Administration (MSHA), U.S. Department of Labor

Todd Moore, CONSOL Energy (Membership Nomination Pending)

Members Unable to Attend

Giovanna Biscontin, National Science Foundation, Ex Officio

Aubrey Miller, National Institutes of Health, Ex Officio

DFO Introductions, Announcements, Roll Call

Dr. George Luxbacher

Deputy Associate Director for Mining

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

Dr. Luxbacher, as the Designated Federal Official for the Committee, called to order the open session of the fall 2022 meeting of NIOSH MSHRAC at 10:00 am Eastern Standard Time (EST) on Thursday, December 12, via Zoom. A roll call of all MSHRAC members confirmed that a quorum was present. The roll was also called following each break and lunch to ensure that a quorum was maintained. A quorum was maintained throughout the day.

No conflicts of interest (COIs) were declared. Committee members were instructed that if a conflict of interest arose at any time during the meeting, they were to declare that conflict and recuse themselves from any discussion or voting on that matter.

Members of the public on Zoom were notified that they would only be able to listen to the meeting, not comment or ask questions, until the Public Comment period, scheduled at the end of the presentations, although questions could be submitted online via the Zoom chat feature at any time, to be addressed in the Public Comment period.

Dr. Luxbacher welcomed everyone and briefly reviewed the structure and history of MSHRAC, initially established in 1969; this meeting is the 89th NIOSH meeting of MSHRAC, now in its 52nd year. He then reviewed the agenda for the meeting.

Chair Remarks, Approval of Minutes

Mr. Zimmer, MSHRAC Chair, welcomed the Committee members. Mr. Zimmer then asked for an approval of the minutes from the prior meeting. Dr. Brickey made the motion, seconded by Mr. Bowersox. The floor was opened for discussion and the motion was then approved. Mr. Zimmer then introduced Dr. Howard for his remarks.

NIOSH Director's Remarks

Dr. John Howard, MD

Director

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

Dr. Howard thanked the members of the Committee for their service on MSHRAC and expressed his appreciation to both the Committee and the Mining Program leadership and staff.

He then gave an update on COVID-19, influenza, and respiratory syncytial virus (RSV), noting that many NIOSH staff have volunteered to participate in the COVID 19 response at CDC and other government agencies.

Dr. Howard then noted that the federal government is still under a Continuing Resolution through December 16 while Congress finalizes the budget. During the pandemic, there was increased interest from Congress and stakeholders in worker mental health/wellbeing. As a result, CDC received \$20 million from Congress to look at mental health in the working population, and NIOSH was assigned that task, building on its long history of psychosocial research, together with other parts of CDC, to develop a mental health program. The work done by the NIOSH National Personal Protective Technology Laboratory (NPPTL) in protecting both workers and the general population from inhalational hazards such as COVID 19 has received significant attention.

He then talked about the increased emphasis on cybersecurity and the need to modernize data acquisition, data collection, data storage, and data exchange. This significant push by the federal government to bring all of both hardware and software up to current standards has challenged NIOSH research.

At the conclusion of Dr. Howard's remarks, he asked for questions. Chair Zimmer commented in support of NIOSH's work on worker mental health issues to remove the stigma associated with these issues.

Chair Zimmer then called upon Christopher J. Williamson to address the Committee, since Mine Safety and Health Administration (MSHA) has an ex officio seat on the Committee and Mr. Williamson was online with the MSHA representative.

Comments from the Assistant Secretary of Labor; Mine Safety and Health Administration (MSHA)

Christopher J. Williamson
Assistant Secretary of Labor
Mine Safety and Health Administration
U.S. Department of Labor

Assistant Secretary Williamson thanked the Committee for the opportunity to speak, noting that Tuesday was National Miners Day, celebrating the importance of their work to our country and their commitment to health and safety. He highlighted the work the Committee does and its importance in bringing different partners together in collaboration. The MSHA health initiatives were briefly reviewed, in particular the high-priority work on a new silica rulemaking.

Report from the Associate Director for Mining

Dr. Jessica Kogel
Associate Director for Mining
Director, Office of Mine Safety and Health Research (OMSHR)
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention

Dr. Kogel welcomed everyone to the meeting. Since Fiscal Year (FY) 2022 had ended, she began with a high-level summary statistics overview about the program, currently operating under a Continuing Resolution with funding equal to 2022. She discussed the issues with flat funding at a time of rising costs, in particular the CDC Working Capital Fund, salaries (including the President's proposed 4.6% increase) and benefits, and IT modernization and cybersecurity, reducing discretionary funds used for new hires and research. The Mining Program's good organizational health plan targets discretionary funds at 20 percent—a level that is difficult if not impossible to attain currently. Staff departures are outpacing hiring and in the past year there was a net loss of 22 employees; while this is critical in terms of impacts to the program, it also permits strategic hiring to meet stakeholders' priorities and needs. Facilities costs amount to \$6 million/year between Pittsburgh and Spokane and cover maintenance, upgrades, and demolition of antiquated buildings on the Pittsburgh campus.

Dr. Kogel then covered the addition of a Shared Services group at the Office of the Director (OD) level, completing a process first proposed in 2018, and the program outputs for FY 2022, totaling 242 between both Divisions. Science outputs (presentations, proceedings, papers, and journal articles) made up 54% of the outputs and the remaining 46% were translational (presentations such as webinars). With regard to mining sectors, 41% of the outputs were related to coal. While this sector has seen a decline in terms of the number of operations and employees, health and safety issues remain; the fatality and injury incident rates for coal continue to lead other sectors.

She then briefly covered the four partnership events this past year—two conducted by the Mine Automation and Emerging Technologies Partnership and two by the Miner Health Partnership, all held virtually. Dr. Kogel then asked Bob Randolph to demonstrate a newsletter being developed in response to requests from the Committee. Mr. Randolph explained the steps that have been taken to date to develop the newsletter, which will be in a format similar to the NIOSH eNews and available by subscription, as well as be posted on the NIOSH Mining website along with the archives of past issues. He then previewed a copy of the current issue.

Chair Zimmer then asked if there were any questions, and hearing none introduced Dr. Steven Sawyer.

PMRD Overview

Dr. Stephen G. Sawyer, Jr.
Director, Pittsburgh Mining Research Division
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention

Dr. Sawyer welcomed the MSHRAC Committee and commented on how it was a pleasure to have hosted the Committee in May of 2022 at the Bruceton Research Facility where the Pittsburgh Mining Research Division (PMRD) resides. Dr. Sawyer then provided an introductory overview of his presentation starting with the current state of affairs within PMRD.

Dr. Sawyer presented the five-year trend of the budget ceiling for PMRD, noting where it had fallen each year and currently sitting at \$21.86 million. He then provided the average annual cost of a research project expense (including Labor) that came in at just over \$500,000. Dr. Sawyer followed up these financial numbers with current FTE levels of just under 130 for PMRD. Just two years ago, this number had been over 150, but due to budgetary constraints, these higher FTE levels could not be sustained. Dr. Sawyer also mentioned that PMRD historically carried 24 to 28 active research projects; however, with the constraints, this number was expected to drop.

Dr. Sawyer then offered the business approach that was being implemented in the strategic planning at PMRD. He started with the explanation of how a strategic placement of personnel to greater match skill sets within the Division was a continued effort. Dr. Sawyer also mentioned the plans for targeted hiring to aid in addressing voids within PMRD. He also explained how the Division was leveraging extramural research programs, such as the U60's Grants, and had initiated an internal "off-road map" creation for various research areas to help in the strategic planning of projects that would be most beneficial to the industry. Dr. Sawyer also explained the shift in mid-year and end-of-year project presentations to align with the business cycle within PMRD. In addition, a strategically planned "Call for Concepts" was introduced to utilize the off-road map information along with allowing the researchers to have a voice in the direction of the portfolio. Dr. Sawyer concluded this section of his presentation with an explanation of the strengths, weaknesses, opportunities, and threats (SWOT) analysis for PMRD that was put in place and periodically updated.

Dr. Sawyer progressed further into his presentation by providing updates on several selected projects currently being worked on in the Division. First, he discussed the virtual reality (VR) mine rescue training usability evaluations that were completed at the International Mine Rescue Competition held at the MSHA National Health and Safety Academy near Beckley, WV. The VR Team had over 25 mine rescue teams participate with overwhelming positive feedback delivered. From the VR project work, Dr. Sawyer transitioned into an explanation of a 5-year case study of CONSOL Energy's enhanced training program showing increased confidence in self-escape knowledge, skills, and abilities (KSAs). He then went on to mention that PMRD researchers are working with regulators and manufacturers to implement a novel approach to help eliminate electromagnetic interference (EMI) involving Li-ion batteries. Dr. Sawyer provided an update on the research that is advancing to help prevent material handling injuries with technologies such as exoskeletons. Another area of work that continues to develop within PMRD is the human-centered design for mine automation through establishing a foundation for future research in robotics and automation. Dr. Sawyer mentioned the field testing of emerging respirable dust sensing technology that was underway at metal/nonmetal mines. He then transitioned into the research on respirable crystalline silica exposure and the continued development of a near-real-time respirable crystalline silica monitor. PMRD is also continuing the development of the analytical enhancement of the rapid quartz analysis. Dr. Sawyer discussed the progression of the understanding of elongate mineral particle exposure in mining work within the Division. He concluded his updates on the research projects with by mentioning how the methods to mitigate fire and explosion hazards of lithium-ion batteries is expanding.

After the project update portion of the presentation was finished, Dr. Sawyer provided several recent influences PMRD has had on international standards and discussed industry collaborations. He mentioned the contributions to the International Electrotechnical Commission (IEC) 60079-11—Explosive atmospheres—Part 11: Equipment protection by intrinsic safety section and PMRD's continued involvement in the Center for Advanced Subsurface Earth Resource Models (CASERM).

Dr. Sawyer continued his presentation by highlighting several of the dissemination forums PMRD recently participated in, such as the Training Resources Applied to Mining (TRAM), SME/PCMIA Annual Joint Meeting, Underground Stone Safety Seminar, and a book contribution: *Developments in Ground Control in Mining; 1981-2020*. Dr. Sawyer concluded his presentation by thanking the committee for the influences that they had on PMRD and cited several examples such as the procurement of a scanning electron microscope (SEM), the reevaluation of noise/hearing conservation research, and continued collaborative opportunities.

At the conclusion of Dr. Sawyer's presentation, Chair Zimmer thanked him for a comprehensive overview, noting that much of the research transcends into different areas, occupations, and industries. In particular, he highlighted the battery research and the SWOT analysis being used to more effectively utilize resources.

Mr. Stewart commented in support of the noise mapping software, citing industry need, and asked about the progress on the application of the SEM. Dr. Sawyer responded that PMRD is still in the process of standing up that piece of equipment, which includes the training needed for the operators, but the anticipated use of the equipment is in 2023. He then made a plea to producers to encourage them to submit bulk minerals to NIOSH for quantification of quartz content, as part of the Field Analysis of Silica Tool (FAST) research work.

Chair Zimmer then introduced Dr. Johns.

Health Hazards Prevention Branch

Dr. Doug Johns

Director, Spokane Mining Research Division

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

Dr. Johns introduced himself as the Director of the Spokane Mining Research Division, noting this is a position he has held for the past three years. He thanked the members of MSHRAC and expressed appreciation for the work of various FACAs he has worked with over the entirety of his federal career. Dr. Johns briefly described his professional background in human health risk assessment and evaluating the health effects of exposures to environmental and occupational air pollutants, as well as his experience serving as the Deputy Director of NIOSH's Respiratory Health Division prior to joining SMRD. He noted that he would be providing a high-level overview of SMRD's research, and that more in-depth presentations would be given by SMRD project officers during the next MSHRAC meeting, tentatively planned to be held in Spokane in May or June of 2023.

Briefly introducing the Division's two Branches—the Miner Safety Branch and the Miner Health Branch—Dr. Johns described SMRD's three main research program areas: geomechanics, automation and emerging technologies, and miner health. Showing slides of various unique laboratory and field-testing equipment, Dr. Johns presented the breadth of Division research on ground control and seismic monitoring, including a new project on highwall stability. He then provided an overview of two projects within the Division's Automation and Technology team, a new project to assess the ability of wireless systems to coexist underground, and a recently completed pilot project to evaluate the potential for developing a real-time systems risk assessment and intervention framework for automated equipment in mining. Dr. Johns described several recent activities within the Miner Health Branch including work on heat stress, fatigue, and silica exposure. He highlighted a recently completed analysis of MSHA inspection data showing exceedances of silica exposures among miners in metal/non-metal mines as well as a new area of emphasis within the Branch on mental health, substance misuse, and suicide in the mining industry.

Dr. Johns described strategic planning efforts within SMRD and noted the demand for increased domestic production of critical minerals to support the expansion of the electrical vehicle fleet within the U.S., which may provide more opportunities to partner with mines in the west. SMRD has been active in strategic foresight efforts scanning for signals on what the future might bring to the Division. This includes changes in the industry, such as expansion of automation, and modifications in the day-to-day operations resulting from changing priorities in the federal budget. Developing nimble plans and maximizing opportunities for collaboration have been critical. Some research areas are likely to continue for the next 10-15 years, while others may need to be phased out in order to address emerging issues, both in the short- and long-term.

Adapting to changes in guidance and procedures throughout the COVID-19 pandemic, Dr. Johns presented photos of the Division-wide retreat in September 2021 with the majority of the Division participating remotely, and the retreat in September 2022 with almost the entire Division participating on-site. Similarly, although field and lab work was not completely halted in 2020, the Division has been able to gradually increase this work in 2021 and 2022. Dr. Johns highlighted support from Congress for the work of the Division and presented language from the Senate Labor, Health and Human Services, Education, and Related Agencies bill for FY 2023 that would provide additional funding for research to protect the health and safety of miners in the western U.S. He then provided an overview of some of the Division activities from the last year, describing work to address health and safety risks faced by underrepresented groups in mining, and also presenting example trade publications, journal articles, conference reports, and software that were released in 2022, noting that the total set an annual record for the Division.

Dr. Johns presented information from a November 2022 NIOSH Science Blog that documented an increase in the risk of chronic obstructive pulmonary disease (COPD) among workers in specific industries, including mining. This was published by Paul Henneberger in NIOSH's Respiratory Health Division, and Dr. Johns noted this type of work reinforces the importance of one of SMRD's current projects, "Building an Evidence-Based Framework for Improving Miners' Health." Conducting analyses from national health databases that include information on industry and occupation are important in evaluating relationships between exposure and outcome, and can also assist in generating hypotheses to inform new research projects looking more closely at potential associations. Presenting a figure from a recently published book chapter he co-authored, Dr. Johns highlighted the relatively high work-related fatality rate among mine workers when compared with workers in other industries. He then commented that such data on morbidity and mortality from occupational illness are not captured systematically, and that we often do not understand the relationships between occupational exposures and health outcomes. This highlights the importance of the Miner Health Program, and Dr. Johns provided an example of the increased interest in miner health, noting that the lead of SMRD's Miner Health Branch, Dr. Jerry Poplin, was recently asked to participate on a panel of the National Academies of Sciences Committee on Earth Resources to discuss the Miner Health Program.

In the next several slides, Dr. Johns presented information on the model used by SMRD, and the NIOSH Mining Program more broadly, to work closely with partners in conducting research. He described the perceived advantages and efficiencies of the Environmental Protection Agency (EPA) where the research and policy/regulatory offices are housed within the same Agency, relative to the NIOSH/OSHA/MSHA model where the research and regulatory offices are housed in different governmental departments (HHS vs. DOL). Nonetheless, he noted that the occupational health and safety model has been quite effective in improving the health and safety of workers, and he described various sections of the U.S. Code of Federal Regulations that authorize CDC to conduct work to protect the health and safety of miners, either directly or indirectly. He first described the Specifications for Medical Examinations of Coal Miners under 42 CFR 37—a program administered by NIOSH's Respiratory Health Division that entitles underground and surface coal miners to receive medical screening (chest radiographs and spirometry) when they start work and at periodic intervals thereafter. He next described the Health Hazard Evaluation Program under 42 CFR 85 that allows an employer, labor union, or groups of employees to request to have investigators from NIOSH conduct exposure assessments or medical evaluations within a workplace. This is a very active program in most industries, though the last such request submitted from the mining industry occurred over ten years ago. Finally, Dr. Johns described 42 CFR 85(a): Occupational Safety and Health Investigations of Places of Employment, which provides NIOSH with the authority to conduct research in collaboration with industry partners in the workplace. This authority has been very successful in enabling the NIOSH Mining Program to conduct critical research and develop solutions to health and safety issues that can be put into practice.

Dr. Johns concluded his presentation by highlighting a number of active partnerships within the Mining Program and displaying a map of field site partners with whom SMRD works closely. He then presented a number of flyers developed by SMRD used to recruit potential partners to participate in research on heat stress, fatigue, silica monitoring, highwall safety, seismic monitoring, automation, and substance misuse prevention. Dr. Johns then thanked the Committee, expressed his enthusiasm at hosting the next MSHRAC meeting in Spokane, and asked if the Committee had any questions.

Committee Chair Zimmer thanked Dr. Johns for a great update and complimented the Division for the work being conducted to change the culture in the workplace. Committee Member Stewart then thanked Dr. Johns for the update, noting that Dr. Poplin had done an excellent job on the National Academies of Sciences panel, and noting that many small mines are constrained by resources and that it is important to keep these small operators in mind. Committee Member Mattson then asked a question of all three presenters—Dr. Kogel, Dr. Sawyer, and Dr. Johns—on the role of health communications specialists in the Mining Program. Mr. Randolph responded to this question in his capacity as Director of the Mining Program’s Shared Services. He coordinates the work of the health communications specialists within the Mining Program in both Divisions, primarily related to translating the research to practice. The Mining Program has always embedded behavioral scientists with engineers on project teams, taking a systems approach to health and safety issues, and developing dissemination plans to merge the technical advancements in the projects with achieving impact with the social systems that have to support it—a role of health communications specialists that is focused on the creation of translational outputs. Implementation science is now considered up front on all new projects to ensure uptake of the Mining Program’s research results.

Extramural Overview

Dr. George Luxbacher

Deputy Associate Director for Mining

**National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention**

Dr. Luxbacher opened his presentation by explaining the three types of mechanisms used in extramural research: grants, coordinated through the NIOSH Office of Extramural Policy (OEP); contracts, solicited through Broad Agency Announcements (BAA0 or Requests for Proposals (RFP); and Interagency Agreements (IAA) with government-related entities. He then discussed the current mining-related grants, including investigator-initiated grants (University of Arizona, Physical Sciences, Inc.) and the U-60 collaborative grants under the Western Mining Safety and Health Training Grants program (University of Arizona, Colorado School of Mines) and the Underground Mine Evacuation Technologies and Human Factors Research program (Missouri University of Science & Technology, New Mexico Tech).

The contracts program since starting in 2007 after the passage of the MINER Act has issued 143 Technology BAA contracts with a total value of \$52.4 million over the 16-year period, in addition to 34 Capacity Build BAA contracts with universities (\$41.3 million since starting in 2009) and RFPs and smaller contracts. There are currently 33 active contracts and the Mining Program manages these contracts using staff qualified as Contract Office Representatives (CORs); the lack of adequate CORs in difference areas of expertise complicates the management of the portfolio.

Ten contracts were issued in FY 2022—4 related to dust characterization, 1 on dust control, 2 in automation, 1 related to noise control PPE, and 2 in ground control. In comparison, 12 contracts were issued in FY 2021—5 in respirable dust, 3 in automation, 3 in big data analysis, and 1 in battery safety. The FY 2023 Broad Agency Announcement: Development and Demonstration of Mine Safety and Health Technology, the 16th annual solicitation, was posted in November. Because of increased NIOSH costs related to internal IT compliance, fewer contracts are expected to be awarded in FY 2023. Focus areas for this solicitation are disaster response (permissible borehole camera/audio/gas sensor and permissible real-time wireless camera); emerging technologies (large-format lithium-ion battery fire detection and suppression); and ground control (development of methodologies and calibration mechanisms for field-scale testing of active seismic monitoring systems as pillar failure precursory; development and prototype of in-situ stress measurement tools applicable to deep underground coal mines).

Dr. Luxbacher then reviewed the status of the current Capacity Build BAA contracts. These contracts with universities are designed to develop both faculty and graduate students in critical mining areas; past contracts have focused on mine ventilation and ground control and the current contracts are focused on mine design.

To improve the advancement of contracts from research to practice, the Mining Program is focusing on implementation science to maintain and improve the relevance and output of NIOSH’s mineworker health and safety efforts. As part of that effort, the Mining Program commissioned Rand Corporation to do a study entitled “Barriers to the Commercialization and Adoption of New Underground Coal Mining Technologies in the U. S.”; the final report

is pending to include input from a Workshop held on 10/12/21, but a draft of the interim report was circulated to MSHRAC previously. The contracts with Rohmac to develop a robotic support vehicle for underground mine rescue efforts based on its existing MICROTRAXX units was highlighted to the Committee for its high potential for adoption by the mine rescue community (teams).

Dr. Luxbacher then highlighted the IAAs that are currently in effect. The Mining Program has an IAA with NASA/JPL entitled “Advanced Sensors and Robotic Deployment Platform for Increased Safety and Rapid Response within Coal Mines” to develop an intrinsically safe mine rescues exploration platform. In addition, the Mining Program funds two IAAs through NIOSH NPPTL—one with the NASA Kennedy Space Center Cyro Test Lab and the second with the Naval Surface Warfare Center, Panama City Division; both of these are focused on using a liquid oxygen storage module (LOXSM) for the next-generation closed-circuit escape respirator (CCER) for use in underground coal.

At the conclusion of the presentation, and with no questions from the Committee, Chair Zimmer asked Mr. Bowersox to discuss the proposed Respirable Dust Subcommittee.

Respirable Dust Subcommittee

Mr. Rox Bowersox

MSHRAC Member

United Mine Workers of America

At the December 2022 Pittsburgh meeting, Mr. Bowersox had proposed the formation of a subcommittee to address some of the issues raised by Dr. Weeks during the public comment period. As Mr. Bowersox began to develop a charge for the subcommittee, he talked to the MSHRAC member who had volunteered to serve, Dr. Weeks, and NIOSH staff. He concluded that, since silica is on MSHA’s regulatory calendar and MSHA has stated that a Notice of Proposed Rulemaking (NPRM) will be issued in the near future, it made sense to defer the subcommittee formation until after the NPRM is issued. In that way, the subcommittee charter can focus on those aspects of the silica issue that are not addressed in the NPPRM. He made a motion to that effect, seconded by Mr. Duffy, which passed unanimously. Dr. Luxbacher briefly reviewed the aspects of subcommittee formation based on the MSHRAC charter for information.

Spring Meeting Planning

Dr. George Luxbacher

Deputy Associate Director for Mining

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

The Committee then discussed the dates, location, and format for the next meeting. The consensus was that the Committee would like to meet in Spokane in May, targeting May 24, 2023. A hybrid meeting will be planned to permit participation from both the Pittsburgh and Spokane Mining Program staff as well as members of the public. A field visit will be planned, if possible, for the following day, May 25, to a mine in the area for any members interested in attending.

At this point the meeting entered the public comment period.

Public Comment Period

Chair Zimmer asked if any member of the public attending via Zoom wished to address the Committee; there were none and the public comment period was closed.

Adjourn

Dr. Kogel made a brief closing statement, thanking the Committee for attending, as well as the committee members’ time investment and feedback in providing input to the Mining Program. She then wished everyone happy holidays.

At the conclusion of her comments, a motion was made to adjourn, seconded, and unanimously approved.

Appendix A—Attendees December 8, 2022

| <i>Name</i> | <i>Affiliation</i> |
|----------------------------|--|
| Kristina Behringer | Public—Committee Member |
| Ron Bowersox | UMWA—Committee Member |
| Andrea Brickey | South Dakota School of Mines and Technology—Committee Member |
| Tom Duffy | USW—Committee Member |
| Marifran Mattson | Purdue University—Committee Member |
| Elizabeth(Libby) Pritchard | NSSGA—Committee Member |
| Steven Schafrik | Univ. of Kentucky—Committee Member |
| Matthew Stewart | R.T. Vanderbilt—Committee Member |
| Kyle Zimmer | IUOE—Committee Member (Chair) |
| Melanie Calhoun | MSHA—Ex Officio Member |
| Todd Moore | Consol Energy—(membership nomination pending) |
| Anita Alston | NIOSH OD |
| Pauline Benjamin | NIOSH OD |
| Kelley Durst | NIOSH OD |
| John Howard | NIOSH OD |
| Jessica Kogel | NIOSH OD Mining |
| George Luxbacher | NIOSH OD Mining, DFO |
| M. Berni Metzger | NIOSH OD Mining |
| Randy Reed | NIOSH OD Mining |
| David Snyder | NIOSH OD Mining |
| Lisa Steiner | NIOSH OD Mining |
| Amanda Azman | NIOSH PMRD |
| Timothy Beck | NIOSH PMRD |

December 8, 2022 (continued)

| <i>Name</i> | <i>Affiliation</i> |
|-----------------------|--------------------|
| Joseph Bickson | NIOSH PMRD |
| Jacob Carr | NIOSH PMRD |
| Andrew Cecala | NIOSH PMRD |
| Linda Chasko | NIOSH PMRD |
| Nick Damiano | NIOSH PMRD |
| Emma Durham | NIOSH PMRD |
| Yousef Elmashae | NIOSH PMRD |
| Jonathan Fritz | NIOSH PMRD |
| Vasu Gangrade | NIOSH PMRD |
| Matthew Girman | NIOSH PMRD |
| Audrey Glowacki | NIOSH PMRD |
| Marcia Harris | NIOSH PMRD |
| Cassandra Hoebbel | NIOSH PMRD |
| John Homer | NIOSH PMRD |
| Jonathan Hrica | NIOSH PMRD |
| Zoheir Khademian | NIOSH PMRD |
| Scott Klima | NIOSH PMRD |
| Carin Kosmoski | NIOSH PMRD |
| Launa Mallett | NIOSH PMRD |
| Alan Mayton | NIOSH PMRD |
| Steven Mischler | NIOSH PMRD |
| Mahiyar Nasarwanji | NIOSH PMRD |
| Andrea Pascoe-Conteen | NIOSH PMRD |
| Eranda Perera | NIOSH PMRD |

December 8, 2022 (continued)

| <i>Name</i> | <i>Affiliation</i> |
|------------------|----------------------|
| J. Drew Potts | NIOSH PMRD |
| Bob Randolph | NIOSH PMRD |
| Stephen Sawyer | NIOSH PMRD |
| Steve Schatzel | NIOSH PMRD |
| Paul Schmidt | NIOSH PMRD |
| Justin Srednicki | NIOSH PMRD |
| Jack Trackemas | NIOSH PMRD |
| Sue Wacaster | NIOSH PMRD |
| Dana Willmer | NIOSH PMRD |
| Candace Wolf | NIOSH PMRD |
| Cody Wolfe | NIOSH PMRD |
| Dave Yantek | NIOSH PMRD |
| Liming Yuan | NIOSH PMRD |
| Alan Zhang | NIOSH PMRD |
| Chenming Zhou | NIOSH PMRD |
| Jeff Welsh | NIOSH PMRD (retired) |
| David Blackley | NIOSH RHD |
| Noemi Hall | NIOSH RHD |
| Scott Laney | NIOSH RHD |
| Jacek Mazurek | NIOSH RHD |
| David Weissman | NIOSH RHD |
| Tim Bauerle | NIOSH SMRD |
| Josef Bourgeois | NIOSH SMRD |
| Brianna Eiter | NIOSH SMRD |
| Tyler Emery | NIOSH SMRD |

December 8, 2022 (continued)

| <i>Name</i> | <i>Affiliation</i> |
|------------------------|---|
| Cara Halldin | NIOSH SMRD |
| Doug Johns | NIOSH SMRD |
| Carol Nixon | NIOSH SMRD |
| Gerald Poplin | NIOSH SMRD |
| Vaibhav Raj | NIOSH SMRD |
| Todd Ruff | NIOSH SMRD |
| Samir Sbai | NIOSH SMRD |
| Joseph Seymour | NIOSH SMRD |
| Casey Stazick | NIOSH SMRD |
| Samantha Wilson | NIOSH SMRD |
| Gabriel Walton | Colorado School of Mines |
| Courtney Miller | CSE Corporation |
| Xiaoliang Wang | Desert Research |
| John Cowie | IMA-NA |
| Christopher Williamson | Mine Safety and Health Administration (MSHA) |
| Snehamoy Chatterjee | Michigan Technological University |
| Venkata Sriram | Missouri University of Science and Technology |
| Sekhar Bhattacharyya | Penn State University |
| Tom Harman | Portland Cement Association |
| Adele Abrams | Public |
| Kelly Bailey | Public |
| Bruce Watzman | Public |
| Rudrajit Mitra | South Dakota School of Mines and Technology |
| P.T. Tukkaraja | South Dakota School of Mines and Technology |

December 8, 2022 (continued)

| <i>Name</i> | <i>Affiliation</i> |
|------------------|--------------------------|
| Angelina Anani | University Arizona |
| Leonard Brown | University Arizona |
| Moe Momayez | University Arizona |
| Behrooz Abbasi | University Nevada Reno |
| Javad Sattarvand | University Nevada Reno |
| Xiaoshan Zhu | University Nevada Reno |
| Bahareh Nojabaei | Virginia Tech |
| Rohit Pandey | Virginia Tech |
| Qingqing Huang | West Virginia University |
| Deniz Talan | West Virginia University |
| Berk Tulu | West Virginia University |
| Deniz Tuncay | West Virginia University |

Total Attendees: 102

I hereby certify that, to the best of my knowledge, the minutes of the December 12, 2022 meeting of the Mine Safety and Health Research Advisory Committee (MSHRAC) are accurate and complete.

5/10/2023

Kyle F Zimmer Jr. Digitally signed by Kyle F Zimmer
Jr.
Date: 2023.05.10 06:26:32 -04'00'

Chair, Mine Safety and Health Research
Advisory Committee