14th Annual Southeast Mine H&S Conference
NIOSH Preconference Workshop November 4, 2019

Innovations in NIOSH Technologies

TOPIC	DISCUSSION POINTS	PRESENTERS	TIME
Introduction	Workshop overview, and overview of NIOSH, introduction of presenters and attendees	Emily Haas	8:00–8:15 am
An Evaluation of EXAMiner in the workplace	This session will discuss: • EXAMiner, a NIOSH-developed software tool that allows companies the opportunity to use NIOSH mine stock photos or upload their own pictures to create their own hazard recognition materials • Field results from evaluating the use of this software at mines to encourage research to practice	Brianna Eiter	8:15 am–9:45 am
Break			**9:45 am–10:00 am**
Proactive prevention of musculoskeletal disorders and slips, trips, and falls	This session will discuss: • Musculoskeletal disorders (MSDs) and risk factors associated with them • NIOSH tools that are available to help mine workers identify and reduce risk factors for MSDs • Slip, trip, and fall (STF) hazards commonly found at surface mines • Resources and tools NIOSH developed to identify and remediate STF hazards	Ashley Whitson	10:00–11:30 am
Lunch			**11:30 am–12:30 pm**
Application of an IoT monitoring system to improve conveyor safety	This session will discuss: • Why an intelligent monitoring system is needed (based on injury/fatality data) • What IoT is, how and why NIOSH designed a current monitoring system, how NIOSH deployed it, and what was learned • How the IoT may improve workers' situational awareness and overall safety on the job, and how NIOSH aims to evaluate whether the technology is having the intended impact on worker safety	Michael McNinch	12:30–2:00 pm
Break			**2:00 pm–2:15 pm**
An overview of control technologies to reduce respirable dust exposures at M/NM, and industrial mineral operations	This session will discuss: • New dust control technologies highlighted in NIOSH's dust control handbook 2nd edition, published in 2019 • An evaluation of engineering controls at bagging operations to reduce exposure to respirable silica dust • Next generation project information about smart sensing technologies for dust control	Kyle Louk, Justin Patts	2:15–3:45 pm
Wrap-up			**3:45 pm–4:00 pm**

Presenter Bios

Brianna Eiter, **Ph.D.** Dr. Eiter is a Research Behavioral Scientist working on the Mine Emergency and Organizational Systems Team at the National Institute for Occupational Safety and Health (NIOSH) Pittsburgh Mining Research Division (PMRD) located in Pittsburgh, Pennsylvania. In the six years that Brianna has worked at PMRD, she has been involved in research projects focusing on hazard recognition and risk perception, informational needs of the underground coal miner, and fatigue risk management for small surface mines. Brianna has over 15 years of experience in her research area of expertise which is human cognition and the use of eye-tracking to measure human behavior. Brianna graduated with a Bachelor's degree from Lehigh University and then went to Binghamton University where she earned both her Master's and Doctoral degrees in Cognitive Psychology.

Kyle Louk, Ph.D. Dr. Louk is a Mining Engineer in the Dust, Ventilation, and Toxic Substances Branch at the National Institute for Occupational Safety and Health (NIOSH) Pittsburgh Mining Research Division (PMRD) located in Pittsburgh, Pennsylvania. Kyle's research focuses on the design, development, and testing of engineering controls to reduce miners' exposure to respirable dust. His current projects include characterizing the performance of low-cost dust sensors and evaluating their use in operational environments, demonstrating smart filtration and pressurization systems for mobile equipment, and quantifying the effectiveness of emerging respirable crystalline silica dust and welding fume control technologies. Kyle earned his Bachelor's, Master's, and Doctoral degrees in Mining Engineering from Virginia Tech.

Michael McNinch, B.S. Michael McNinch is a Research Engineer on the Automation and Technology team at the National Institute for Occupational Safety and Health (NIOSH) Spokane Mining Research Division (SMRD) located in Spokane, Washington. Michael's research has included failure analysis for mobile proximity detection, LED lighting, and development work on the VR Mine. His current project is aimed at reducing fatalities and injuries to miners that operate and maintain belt conveyor systems. He specializes in the application of emerging technologies to improve system safety, and his current work centers on Internet of Things (IoT), machine learning, and virtual reality (VR) applications. Michael has a Bachelor's of Science in Mechanical Engineering from the University of Pittsburgh, and is presently working on a Master's degree in Computer Science, focusing on robotics and machine vision.

Justin Patts, B.S. Just Patts is Lead Mechanical Engineer at NIOSH's Pittsburgh Mining Research Division. Receiving his Mechanical Engineering degree from Virginia Tech, Justin has 17 years of experience spanning both private (transportation industry) and public sector (safety sciences) work. In his current position he leads a five-year research project entitled "Smart Respirable Crystalline Silica Dust Control Systems for Metal/Nonmetal Mines". Justin is working to advance the science of innovative, cost-effective engineering controls for respirable hazards. His past NIOSH work has included projects on float dust controls, proximity detection systems, improved underground tracking and cognitive engineering.

Ashley Whitson, M.E. Ashley is a Mechanical Engineer on the Musculoskeletal Disorders Prevention Team at the National Institute for Occupational Safety and Health (NIOSH) Pittsburgh Mining Research Division (PMRD) located in Pittsburgh, Pennsylvania. Ashley conducts research that aims to reduce mine workers' risk of traumatic injuries and fatalities. Her current work focuses on the prevention of slips, trips, and falls and improving workplace safety in the mining industry. She is currently serving as Task Lead for a study tracking the wear of mine workers' safety boots to try to determine when boot outsoles should be replaced. Ashley earned her Bachelor of Science and Master of Engineering degrees from the University of South Carolina in the field of Biomedical Engineering.