

# 2019



## Joseph A. Holmes Safety Association Holmes Mine Rescue Association Annual Meeting and Training Seminar



## PROGRAM

June 17 - 21 Virginia Beach, Virginia





# **2019 Joseph A. Holmes Safety Association National Executive Officers**

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**Robert Randolph (Federal)**

**1st Vice-President**

**William Gerringer, NC (State)**

**2nd Vice-President**

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**4th Vice-President**

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**Treasurer**

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# **2019 Holmes Mine Rescue Association National Executive Officers**

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**Acting Secretary – Jeff Kravitz**

**Treasurer – Richard West**

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## **Coal**

Vice President – Mine Rescue Teams – Chris Williams

Vice President – Trainers – Rob Asbury

Vice President – Management – Allen Dupree

Vice President – Labor – Josh Roberts

Vice President – States – Jim Vicini

Vice President – Federal – Tim Watkins

## **Metal/Nonmetal**

Vice President – Mine Rescue Teams – Steve Setzer

Vice President – Trainers – Sammy Linville

Vice President – Management – (None – President is a member of this group)

Vice President – Labor – Ken Ball

Vice President – States – Bill York-Feirn

Vice President – Federal – Tim Watkins

Vice President – Vendors – Kent Armstrong

# Welcome

Welcome to the 2019 Joseph A. Holmes Safety & Mine Rescue Association's Joint National Meeting and Seminar. We appreciate your dedication and commitment. As a way of carrying on the tradition of Dr. Joseph A. Holmes, our national committee hopes to impart its enthusiasm for mine safety and health onto others by offering this annual program. Our committee designed the program to enhance the new developments in mine safety and health, to give you the opportunity to network in small groups, and to share knowledge and experiences that will lead to a safer and healthier environment for our miners.

Dr. Joseph A. Holmes was passionate and determined to improve the health and safety of miners. His great ambition and remarkable diplomacy skills made it possible for him to accomplish amazing feats in a short time. He was an advocate for researching new and safer methods of using explosives and electricity in the mining industry as well as efficient methods of rescuing and educating miners.

As the one who proposed the creation and organization of the U.S. Bureau of Mines and having become its first Director, he was designated the Founding Father of Mine Safety. He had the Bruce-ton Mine built as a research laboratory in order to safely conduct experiments in a simulated mining environment. The Bruce-ton Mine is still being used for experiments today.

One of Dr. Holmes' greatest accomplishments was negotiating with the Pullman Company to donate railroad cars for use in mine rescue work. This was an innovation that brought mine rescue to a new level of existence. It provided an efficiency that was thought impossible. The efficient Dr. Holmes made the most of the new technology by activating the railroad cars during idle times for educational purposes. The cars along with experts traveled to mining operations to train miners in first aid and mine rescue techniques including the use of a breathing apparatus that supplied oxygen to the rescuer.

The research he set in motion on explosives resulted in major discoveries that changed the mining industry. It led to the development of "Permissible" explosives that reduced the danger of disastrous explosions in mines where gas or dust was found.

Dr. Holmes demonstrated the explosibility of coal dust by setting off an explosive charge in the Bruce-ton Mine. This was done to educate miners and others that coal dust has explosive qualities even without the presence of methane. Dr. Holmes said, "No amount of writing or talking could be so forcible in the teaching of such a great lesson."

About a year after his death, 24 leading national organizations formed the Joseph A. Holmes Safety Association. In the 1920s, the Association began to organize local chapters throughout the United States.

The Joseph A. Holmes Safety Association consists of a national council, state councils, district councils, and local chapters. The chapters are made up of Holmes members at a single organization, for instance, a mine or supply company. Members from the various chapters assemble at the council meetings to network with others to find solutions and to overcome their common challenges.

The objectives are to prevent fatalities and injuries and to improve health and safety among officials and employees in all phases of mining. These objectives guide and inspire all of the Association's activities.

In recent years, the Association formed the Professional Miner Program where successful experienced miners are encouraged to mentor and educate the new inexperienced miners. These professional miners embrace safety and health as values, which are critical to mining the many natural resources needed to keep this country strong and growing.

On June 6, 2013, in Virginia Beach, Virginia, the members of the Joseph A. Holmes Safety Association overwhelmingly approved a constitutional amendment and changes to their by-laws to create a mine rescue organization within Holmes – the Holmes Mine Rescue Association. This action reestablished mine rescue as an important function within the Joseph A. Holmes Association, which was created in 1916.

For several years, the Mine Safety and Health Administration has sought, within the mining community, to address the gaps in mine emergency response, particularly those identified in recent tragedies. At three mine rescue summits and several other events held with the mine rescue community on mine emergency response gaps, we have discussed the need for a national mine rescue structure to address many mine emergency response issues. The re-establishment of Holmes as a national organization to support and provide needed guidance for mine rescue is the solution.

Together, we can continue to improve the health and safety of our Nation's miners.

**JOSEPH A. HOLMES**



**SAFETY ASSOCIATION**

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Welcome to the 2019 Joint National Meeting and Training Seminar of the Joseph A. Holmes Safety Association and the Holmes Mine Rescue Association!

I'm proud to join you for this event and proud too of the heritage we share of over 100 years dedicated to health and safety improvements for our miners. I'm impressed that you are taking precious time away from other distractions to focus on the valuable solutions shared at this seminar.

If you're like most other attendees, you have come looking for new ways to prevent injuries and illnesses among the miners you serve – or to share your knowledge about effective solutions.

You've come to the right place.

I'm looking forward to meeting more of you as my term as 2018-2019 Joseph A. Holmes Safety Association President draws to a close. At meetings such as this, we form the fellowship and connections that will magnify our work now, and for years to come.

Please enjoy with me the conference events and the wonderful setting of Virginia Beach.

For the miners,

Robert F. Randolph





# Agenda

**Monday, June 17, 2019**

2:00 p.m. – 5:00 p.m.	<b>Registration</b>	<b>Atlantic Coat Room</b>
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**Tuesday, June 18, 2019**

8:00 a.m. – 4:00 p.m.	<b>Registration</b>	<b>Atlantic Coat Room</b>
9:30 a.m. – 11:30 a.m.	<b>Joseph A. Holmes Safety Association (JAHSA) Executive Committee Annual Meeting</b>	<b>York Room</b>
11:30 a.m. – 1:00 p.m.	<b>Lunch (on your own)</b>	
1:15 p.m. – 2:00 p.m.	<b>Welcoming Remarks</b>	<b>James Room</b>

**Robert Randolph**  
*President, Joseph A. Holmes Safety Association*

**Michael Peck**  
*President, Holmes Mine Rescue Association*

**David Weaver**  
*Acting Deputy Administrator for Enforcement/Coal, MSHA*

**Kevin Deel**  
*Acting Deputy Director, EPD, MSHA*

**Glen Poe**  
*Secretary, Joseph A. Holmes Safety Association*

2:00 p.m. – 2:15 p.m.	<b>Break</b>	
2:15 p.m. - 4:45 p.m.	<b>Keynote Speakers</b>	<b>James Room</b>

**Jessica Kogel**  
**Associate Director for Mining (NIOSH)**  
*NIOSH Innovations in the Mining Health and Safety Landscape*

**Sam Scribe, CMSP**  
**Alpha Safety USA**

5:30 p.m.	<b>Meet &amp; Greet</b>	<b>Mariner's Court</b>
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### Wednesday, June 19, 2019

8:00 a.m. – 9:00 a.m.	<b>Sam Scribe, CMSP</b>	<b>Mariner Room</b>
	<b>Kent Armstrong</b> <i>Challenges of Mine Rescue in Expanding Mine Operations</i>	<b>York Room</b>
	<b>Connor Brown</b> <i>Preventing Coal Dust Explosions - Best Practices and Current Research</i>	<b>Rappahannock Room</b>
9:00 a.m. – 10:00 a.m.	<b>Ben Hart, CMSP</b>	<b>Mariner Room</b>
	<b>Dave Yantek</b> <i>Refuge Alternatives: Blast Resistance of Pressure Relief Valves and Doors and Evaluation of a Cryogenic Air Supply as a Breathable Air Source</i>	<b>York Room</b>
	<b>John Hartwell</b> <i>Crane Standards</i>	<b>Rappahannock Room</b>
10:00 a.m. – 10:30 a.m.	<b>Break</b>	<b>Atlantic Foyer</b>
10:30 a.m. – 11:30 a.m.	<b>Bill York-Feirn, CMSP</b> <b>Dave Stalfort,</b> <b>Jeff Kravitz</b> <i>Why Do We Need a Risk Assessment? - Everything is Going Great!</i>	<b>Mariner Room</b>
	<b>Mike Guelich, Mike McDonald</b> <i>Accident Prevention – Motivating Safe Behaviors</i>	<b>York Room</b>
	<b>LaTasha Swanson</b> <i>To Trust or Not to Trust: Factors That Influence Mineworkers' Trust in Proximity Detection Systems for Mobile Machines</i>	<b>Rappahannock Room</b>
11:30 a.m. – 1:30 p.m.	<b>Lunch</b> <b>Tom Harman, Keynote Speaker</b> <b>Senior Director, National Mining Association</b> <i>The NMA and the CORESafety Program</i>	<b>False Cape and Cape Henry Rooms</b>
11:30 a.m. – 1:30 p.m.	<b>MSIA/NASMITA Working Lunch</b>	<b>TBD</b>

**Wednesday, June 19, 2019 (continued)**

1:30 p.m. – 2:30 p.m.	<b>Jim Vicini</b> <i>Kentucky Division of Mine Safety - Analysis Work</i>	<b>Mariner Room</b>
	<b>Adele Abrams, CMSP</b> <i>Legal and Considerations for EHS Professionals</i>	<b>York Room</b>
	<b>Michael Trevits</b> <i>Development of an Underground Aerial Reconnaissance System Designed to Assist in Mine Rescue</i>	<b>Rappahannock Room</b>
2:30 p.m. – 3:00 p.m.	<b>Break</b>	<b>Atlantic Foyer</b>
3:00 p.m. – 4:00 p.m.	<b>Margaret Ryan</b> <i>From Time-Based to Competency-Based Self-Escape Training: First Steps and Considerations</i>	<b>Mariner Room</b>
	<b>Otis Russell</b> <i>General Electrical Safety in Mining</i>	<b>York Room</b>
	<b>Bill York-Feirn, CMSP</b> <i>Help Raise the Bar in Mine Safety and Health - the CMSP Credential</i>	<b>Rappahannock Room</b>
4:00 p.m. – 5:00 p.m.	<b>Jay Colinet</b> <i>Preventing Black Lung Requires Effective Dust Control</i>	<b>Mariner Room</b>
	<b>Mike Jude</b> <i>Powered Haulage/Mobile Equipment Accidents - Coal and M/NM Inspector Blurred Training</i>	<b>York Room</b>
	<b>Holmes Mine Rescue Association (HMRA) General Meeting</b>	<b>Rappahannock Room</b>

**Thursday, June 20, 2019**

8:00 a.m. – 11:30 a.m.	<b>State Grants Meeting</b> <b>Kevin Deel, Janice Oats</b>	<b>Mariner Room</b>
8:00 a.m. – 9:00 a.m.	<b>Joe Mackowiak</b> <i>Conveyor Belt Safety - Coal and M/NM Inspector Blurred Training</i>	<b>York Room</b>
	<b>Kyle Scribe</b>	<b>Rappahannock Room</b>
9:00 a.m. – 10:00 a.m.	<b>Cotton Jarrell</b> <i>Black Lung</i>	<b>York Room</b>
	<b>Jonathan Hrica</b> <i>Workplace Examinations with NIOSH EXAMiner Software</i>	<b>Rappahannock Room</b>
10:00 a.m. – 10:30 a.m.	<b>Break</b>	
10:30 a.m. – 11:30 a.m.	<b>Jeff Kravitz</b> <i>International Mine Rescue Body (IMRB)</i>	<b>York Room</b>
	<b>Debbie Combs</b> <i>Task Training</i>	<b>Rappahannock Room</b>
11:30 a.m. – 1:00 p.m.	<b>Lunch (on your own)</b>	
1:00 p.m. – 2:00 p.m.	<b>Mahiyar F. Nasarwanji</b> <i>Toolkit to Help Recognize and Remediate Slip, Trip, and Fall Hazards at Surface Mines</i>	<b>Mariner Room</b>
		<b>York Room</b>
		<b>Rappahannock Room</b>
2:00 p.m. – 2:30 p.m.	<b>Ice Cream Social Break</b>	<b>Atlantic Foyer</b>

2:30 p.m.	<b>Joseph A. Holmes Safety Association (JAHSA) General Meeting</b>	<b>James Room</b>
5:30 p.m. – 6:00 p.m.	<b>Reception</b>	<b>Atlantic Foyer</b>
6:00 p.m. – 8:30 p.m.	<b>Dinner &amp; Awards Banquet David G. Zatezalo, Keynote Speaker MSHA Assistant Secretary</b>	<b>False Cape and Cape Henry Rooms</b>

**Don't forget to visit our vendor exhibits located inside the hotel.**



**David G. Zatezalo**  
**Assistant Secretary for Mine Safety and Health**  
**Keynote Speaker**

President Donald J. Trump nominated David G. Zatezalo to be the 9th Assistant Secretary for Mine Safety and Health. He was sworn in on November 30, 2017.

Assistant Secretary Zatezalo is a native of West Virginia and has spent a lifetime working in mining. He began his career as a union miner and since then has held positions at a number of companies as shift foreman, engineering superintendent, mine manager, vice president of operations and chief executive officer. Assistant Secretary Zatezalo has worked in mining all across the U.S. and internationally in Australia.

Assistant Secretary Zatezalo has a degree in mining engineering from West Virginia University and is a registered professional engineer in Ohio and West Virginia. He also has an MBA from Ohio University. He is the past chairman of the Kentucky Coal Association and the Ohio Coal Association. He's also been a member of the Mine Rescue Veterans of the Pittsburgh District.

**Tom Harman**  
**Senior Director of Safety and Health, National Mining Association**

Mr. Harman's mining career includes work as a divisional safety and health director in underground and surface coal mining in WV, as a corporate environment, safety and health director for an explosives and specialty chemicals manufacturer in Alabama and Wyoming, and as an employee relations director for an aggregates producer in the southeastern United States. Before joining NMA, he worked for industry trade associations that represent mining interests in Washington, DC, specializing in regulatory and government affairs, and he also worked as a special assistant at the Mine Safety and Health Administration in Arlington, Virginia. He holds two Master of Science degrees, one in Occupational Safety and Health Management and another in Environmental Management.

**Jessica Kogel**  
**Associate Director for Mining and the Director of the Office of Mine Safety and Health Research at the National Institute for Occupational Safety and Health (NIOSH).**  
**Keynote Speaker**

Dr. Jessica Elzea Kogel leads the institute's mining research program which focuses on improving mine worker health and safety through the development and implementation of innovative engineering controls, novel monitoring approaches and improved work practices. Her primary responsibilities include providing leadership and guidance to the Directors of the Pittsburgh Mining Research Division and Spokane Mining Research Division; directing major research and program activities; ensuring the overall quality of the mining science efforts conducted by the Institute; working closely with stakeholders representing labor, trade associations, industry, academia and government to ensure that existing research efforts reflect stakeholder interests and priorities; and serving as a Special Advisor to the Institute Director on all matters related to the NIOSH mining program's mission.

Before joining NIOSH, Dr. Kogel spent 25 years in the mining industry where she held positions in research and development and mining operations management for two global producers of industrial minerals. She holds four patents and has published over 30 peer-reviewed technical papers in mining, geology, occupational health and safety, and applied clay science. Dr. Kogel has served on the editorial board of several international journals and was Senior Editor for the 7th Edition of Industrial Minerals and Rocks, a technical reference book on industrial mineral geology, mineralogy, processing and marketing.

Dr. Kogel is a Distinguished Member of the Society for Mining, Metallurgy & Exploration (SME) and has served on several boards including SME, the SME Foundation, and the National Mining Hall of Fame and Museum. She currently chairs the World Federation of Engineering Organizations' Task Force on Mining and Sustainability. She has received numerous awards including the Hal Williams Hardinge Award, Joan Hodges Queneau Palladium Medal, SME Distinguished Member Award, A. Frank Alsobrook Distinguished Service Award, and the Robert Pierkarz Award. She received Ph.D. and M.S. degrees in Geology from Indiana University, Bloomington after earning degrees in Earth Sciences and Paleontology from the University of California, Berkeley.



## **Presentations**

### **Accident Prevention – Motivating Safe Behaviors**

*Presenters: Mike Guelich, Mike McDonald*

Not available at time of printing

### **Challenges of Mine Rescue in Expanding Mine Operations**

*Presenter: Kent Armstrong*

As mines are constantly growing and expanding, so do the challenges for emergency response teams. They have to keep up with the pace that is set by current and future production techniques. Although mines have now reached depths of several kilometers and their dimensions and complexity are of an entire city, mine rescue still must be able to reach the most remote areas within the mine in a swift and safe manner. The duration of breathing apparatus and physical human capabilities are natural limitations. Therefore, alternative methods have to be explored to extend the time under supplied air for mine rescue teams without putting additional stress on the team members. To address this global trend, Dräger, Goldcorp and Paus have partnered together to develop a mine rescue vehicle that allows mine rescue teams to travel for an extended period of time in a contaminated atmosphere without the use of their breathing apparatus, thus extending the range of their mission. By application of current available techniques, the safe expansion of production in a mine can be ensured by giving mine rescue teams the capabilities to respond to accidents in a safer and faster way.

### **Conveyor Belt Safety – Coal and M/NM Inspector Blurred Training**

*Presenter: Joe Mackowiak*

MSHA is currently modifying mine assignments across the country. Some Coal and Metal/Nonmetal mining operations are being reassigned to new offices, inspectors are receiving new assignments, and some offices are changing districts. This change has required MSHA inspectors to receive new training on regulations and hazards, as well as MSHA policies and procedures. MSHA has implemented a planned approach which includes expanding an inspector's abilities to identify hazards and prevent accidents. During the past 5 years, powered haulage accidents have accounted for approximately 50% of all fatal accidents, and conveyor belt accidents account for nearly 50% of all powered haulage accidents. In an effort to react to this trend, and to prepare MSHA inspectors to their new assignments, the Mine Academy has provided training using real life scenarios to better prevent conveyor hazards and accidents.

### **Crane Standards**

*Presenter: John Hartwell*

Not available at time of printing

## **Development of an Underground Aerial Reconnaissance System Designed to Assist in Mine Rescue**

***Presenter: Michael Trevits***

In response to a major underground mine emergency, an Underground Aerial Reconnaissance (UAR) system would convey sensors into the mine prior to and/or ahead of entry by rescue personnel to provide timely, accurate, and reliable information upon which the mine rescue team can base their actions. The UAR could be used to make detailed measurement of underground atmospheric and ground conditions, assess the condition of mine ventilation controls, advance or re-establish damaged underground wireless communication or monitoring systems, and possibly locate trapped miners. An aerial system approach potentially offers a smaller, faster, more agile, longer range, and more economical means of information collection than ground-based reconnaissance options which may encounter impassible post-event conditions. Providing mine rescue teams with the ability to assess conditions well ahead of their current location should permit them to advance more rapidly and safely under circumstances where minutes may make the difference between life and death for any trapped miners. Four major subsystems have been identified as necessary to enable an effective UAR system: (1) an Aerial Vehicle Platform (AVP), (2) Underground Navigation, (3) Data Communications, and (4) Sensor Payload(s). A project was initiated through funding by the Alpha Foundation for the Improvement of Mine Safety and Health, Inc. to develop and demonstrate the feasibility of an appropriate design for the AVP necessary for effective overall UAR system performance. This presentation presents the technical approach to this project founded upon a thorough understanding and analysis of actual UAR mission requirements to develop a safe, mission-specific proof-of-concept AVP design.

## **From Time-Based to Competency-Based Self-Escape Training: First Steps and Considerations**

***Presenter: Margaret Ryan***

The National Academy of Sciences urged, in its 2013 report “Improving Self-Escape from Underground Coal Mines,” that mines should adopt a train-to-mastery system with competency standards instead of focusing on fulfilling time-based training requirements. Competency-based self-escape training and assessment focuses on outcomes, such as the mastery of critical self-escape knowledge, skills and abilities (KSAs), thus placing the emphasis on task performance and individual proficiency instead of training duration.

Over the past four years, NIOSH’s Self-Escape Study has contributed to the possibility for implementing competency-based self-escape training and assessment through the identification of the critical self-escape KSAs that all miners must have and the development of a set of competency profiles for self-escape, including task performance criteria for 4 different employee roles (e.g. escape group leader, responsible person, face crew, and outby workers).

A necessary next step will be to determine how mines can utilize these materials. After a brief review of the research efforts and findings of the Self-Escape Study, this presentation will detail a case study of how one mine has utilized the identified critical self-escape KSAs to develop and implement competency-based training and assessment procedures at their mine, providing an example for how all mines can do the same.



## **General Electrical Safety in Mining**

***Presenter: Otis J. Russell***

This presentation will discuss arc flash hazards – procedures, PPE requirements 11 calorie, 65 calorie Arc Flash clothing demonstration, MSHA electrical inspection requirements (Coal/MNM), electrical qualification and competence requirements (Coal/MNM), proper electrical grounding, and permanent/portable power systems.

## **Help Raise the Bar in Mine Safety & Health – The CMSP Credential**

***Presenter: William C. York-Feirn***

As an industry, we are committed to creating safe and healthy work environments for both employees and the communities in which we operate. From management culture to the science of safety and health, there is a myriad of knowledge necessary to be a competent safety and health practitioner. Developed by industry subject matter experts, the CMSP certification program frames the knowledge necessary to demonstrate your mine safety & health proficiency and lead your organization to a safer future. In this presentation you will learn more about advantages of certification, qualifications to Become a CMSP, how to apply, testing dates/locations, best practices in safety and health, competency Areas for practitioners, and ways to get involved in the mining safety and health community. The new CMSP program is administered by the International Academy of Mine Safety and Health of the Society of Mining, Metallurgy and Exploration (IAMSH of SME). Learn more about CMSP certification at [www.smecmsp.org](http://www.smecmsp.org).

## **The International Mine Rescue Body (IMRB)**

***Presenter: Jeffery Kravitz***

The IMRB was formed after 10 mine rescuers were injured (6 fatally) at the Niwka-Modrejow mine in Poland in 1998. The investigation of that mine disaster pointed out that there is a tremendous amount of mine rescue knowledge that exists globally, and that information should be shared to improve mine rescue preparedness and response. An outgrowth of that collaboration resulted in the International Mine Rescue Contests (IMRC). The first contest was held in Louisville, Kentucky in 1999. Subsequently, numerous contests have been held globally. This presentation describes the origin and present-day status of both the IMRB and IMRC.

## **Kentucky Division of Mine Safety - Analysis Work**

***Presenter: Jim Vicini***

The Division of Mine Safety assists Kentucky's miners by creating an environment where issues of safety awareness become the backbone of daily work routine. The Division's mine safety specialists directed by Jim Vicini is the only division of its kind in the nation. The agency's safety specialists strive to ensure that Kentucky miners have the training necessary to do their jobs safely. Recent regulatory change in Kentucky allows its mine safety specialists to perform three of its annual mine visits observing miners on-the-job for risk behavior as well as systems, conditions and equipment that

often cause risk to occur. This move greatly enhances the opportunity for face to face contact with the miners performing work in underground and surface mines.

In addition to mine inspections, the primary responsibility of a safety specialist is to prevent mine injuries and fatalities by observing and evaluating the work habits of individual miners. Each time a safety specialist enters a mine, he/she confers with the foreman about mine conditions and work practices of the employees. The specialist provides on-the-job feedback to the individual miners and assists in correcting risk behaviors seen during the individual observations and also assists in eliminating potentially hazardous conditions. Studies have shown that performing this type of on-the-job behavioral analysis significantly reduces injuries and fatalities in underground and surface mines.

## **Legal & Ethical Considerations for EHS Professionals**

*Presenter: Adele Abrams*

Environmental, health and safety professionals have a responsibility for many activities, including management of regulatory and proactive programs, performing audits, and training employees and contractors. These activities also carry significant legal liability exposure, for in-house EHS professionals, third-party EHS consultants, and even government inspectors! In addition, unethical activities or allegations can cost EHS professionals their hard-earned certifications. This session will address the legal and ethical considerations for EHS professionals, strategies for effective management of liability exposures, and proactive solutions. We'll discuss legal privilege issues, preparation of accident reports, management of inspections and OSHA/MSHA conferences, and more. If you don't like this one, I've also been speaking on Medical Marijuana, the ADA and Workplace Safety, which covers different state laws on cannabis, testing protocols, OSHA's new policy on drug testing injured workers (and protections under 11C and 105C), MSHA's MNM rule, and the ADA "Direct Threat to Safety" defense and what is required to prove it.

## **Powered Haulage/Mobile Equipment Accidents – Coal and M/NM Inspector Blurred Training**

*Presenter: Mike Jude*

Since 2007 over 60 mining fatalities have involved mobile equipment. MSHA has put in place initiatives to better understand and prevent these accidents in the future. With nearly 40% of the fatalities in 2017 involving mobile equipment and over 30% of injuries involving mobile equipment, solutions are needed to prevent these accidents and to reduce injuries and fatalities in the accidents that do occur. Some methods of reducing these accidents include Collision Avoidance Systems and Collision Warning Systems. For the accidents that do occur, MSHA estimates that three to four miners' lives could be saved each year if adequate seat belts were provided and worn. In an effort to prepare MSHA inspectors to better identify these hazards, the MSHA National Mine Health and Safety Academy has provided training using real life scenarios to better understand the current hazards and controls available to prevent them.

## **Preventing Black Lung Requires Effective Dust Control**

*Presenter: Jay Colinet*

Coal Workers' Pneumoconiosis (CWP), commonly known as black lung, is a disabling and potentially fatal lung disease resulting from the inhalation of respirable coal mine dust. Historically, CWP has taken a tremendous human and financial toll in the U.S. coal mining industry. Recent health surveillance data from NIOSH and others indicates that the prevalence and the severity of CWP are again at elevated levels. Once contracted, there is no cure for CWP so prevention through reduced respirable dust exposure is critical. The Pittsburgh Mining Research Division of NIOSH conducts research to identify and evaluate control technologies that can be used by the mining industry to reduce respirable dust levels in mining. An overview of disease trends and impact, a recommended approach for dust control, and examples of effective control technologies for longwall and continuous mining operations will be presented.

## **Preventing Coal Dust Explosions - Best Practices and Current Research**

*Presenter: Connor Brown*

Eighty percent total incombustible content is to be maintained within 40 feet of the face via the liberal application of limestone rock dust during the mining process. 30 CFR 75.2 details the required attributes of rock dust to be effective. Current research efforts focus on the size and dispersibility attributes dictated by the regulation. The principal role of rock dust is to act as the primary heat sink and absorb the energy of the ignition source. This can only be achieved if the rock dust is suspended in the mine entry to render the mine atmosphere inert. Additionally, the inert particle must remain suspended and have enough surface area to efficiently draw the heat out of the reaction. Samples of current rock dust from several mines have found large variations in size distribution which resulted in a number of unsafe coal/rock dust mixtures being labeled as safe. Samples which met both the 80% incombustible requirement and size stipulation none-the-less exploded in the BOM 20-L chamber. Additionally, no standard rock dusts meet the dispersion requirements under wet or damp conditions. For this reason NIOSH researchers have lead a number of projects such as developing treated "hydrophobic" rock dust, classified "engineered" rock dust, and foamed rock dust. This presentation will summarize the methods and findings of these projects as well as future efforts being undertaken.

## **Refuge Alternatives: Blast Resistance of Pressure Relief Valves and Doors and Evaluation of a Cryogenic Air Supply as a Breathable Air Source**

*Presenter: Dave Yantek*

NIOSH has been conducting research on refuge alternatives (RAs) for underground coal mines. In the event of a mine disaster, RAs for underground coal mines must be capable of providing miners with a survivable breathable air environment for at least 96 hours. RAs and their components must remain functional after a mine explosion and must provide a source of breathable air for their occupants. Pressure relief valves (PRVs) are a vital component of an RA's breathable air supply system that are used to prevent contaminants from entering an RA. One potential air source for RAs is a cryogenic air supply. A cryogenic air supply is a device that uses a cryocooler to maintain nitrox as a liquid until breathable air is needed by RA occupants. This presentation will discuss the blast tests conducted on

PRVs for RAs and the evaluation of cryogenic air supplies as a source of breathable air for RAs. The presented information will help mine health and safety personnel to understand the types of PRVs that are appropriate for RAs and to learn about the potential for cryogenic air supplies to be used as a source of breathable air for RAs.

## **Task Training**

***Presenter: Deborah Combs***

This workshop will focus on the importance of providing task training, fatal accidents that have occurred due to a lack of effective task training, the possible causes for failing to provide this most critical training, some guidelines for providing effective task training and assistance available to operators and contractors in developing and implementing a task training program that not only complies with Part 48/46, but provides quality training for our miners.

## **To Trust or Not to Trust: Factors That Influence Mineworkers' Trust in Proximity Detection Systems for Mobile Machines**

***Presenter: LaTasha R. Swanson***

A proximity detection system (PDS) is an automated technology that helps to prevent machine-human collisions by alerting workers and slowing or disabling a mobile machine when someone is detected in an established hazard zone. According to the Mine Safety and Health Administration (MSHA), PDSs installed on mobile machines in underground coal mines have the potential to prevent 70 injuries and 15 fatalities over the next 10 years. While this automated safety technology offers a promising solution to reduce human-machine collisions, recent accidents and implementation challenges have raised questions about mineworkers' trust in, and use of, PDSs. This presentation will discuss the effects of training, mine of employment, workers' age and experience, and mobile PDS type on mineworkers' trust in mobile PDSs at seven underground coal mines. In addition, the presentation will explore how trust in automated technologies can influence behaviors and technology use, and explore ways to potentially improve mistrust and overreliance.

## **Toolkit to Help Recognize and Remediate Slip, Trip, and Fall Hazards at Surface Mines**

***Presenter: Mahiyar F. Nasarwanji***

For the past few years NIOSH Pittsburgh Mining Research Division (PMRD) researchers have been investigating the second leading cause of nonfatal incidents in the mining industry; slips, trips, and falls (STFs). STFs pose a significant burden not only to the mining industry but also pose a burden to other industries ranging from oil, gas, and construction to mail delivery and healthcare. Our investigations at PMRD have focused on the causes and contributing factors for fatal incidents, hazards in the work environment that can lead to nonfatal STFs, and ingress and egress from mobile equipment which is a known hazard in the mining industry. Research from the various studies will be discussed briefly and the developed STF toolkit will be introduced, including infographics, stickers, interactive web graphics and web resources, and a mobile app to help mine operators and mine workers recognize and remediate STF hazards in the mining industry.

Learning Objective:

- Identify the causes, contributing factors, and hazards related to fatal and nonfatal slips, trips, and falls in the surface mining industry.
- Identify how ingress and egress from large mobile equipment can be hazardous.

- Know what new resources are available to help prevent slips, trips, and falls in the mining industry, and where to find them.

Disclaimer: The findings and conclusions in this work are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health (NIOSH). Mention of any company or product does not constitute endorsement by NIOSH.

## **Why Do We Need Risk and Preparedness Assessments? Everything is Going Great!**

***Presenters: William C. York-Feirn, David Stalfort, and Jeffery Kravitz***

People often ask: “Why do we need to do a risk assessment?” or “Why do we need to prepare for emergencies?” Organizations and their management are often lulled into a false sense of security due to complacency, and a feeling that “Everything is Going Great” and ask, “What could possibly go wrong here?” Risk assessments can add value to almost any situation, especially when the possibility exists for serious or catastrophic outcomes. This presentation will illustrate where some things have gone terribly wrong at some mines, leading to several major mine disasters. Risk and preparedness assessments for major mine emergencies could have helped mitigate potentially dangerous situations. These assessments are necessary to prevent major mine emergencies and to ensure proper responses can be made in the event an emergency does occur. These assessments pinpoint individual mine risk and preparedness deficiencies for mine emergencies and help mine management prioritize the gaps and devise action plans to quickly address them.

## **Workplace Examinations With NIOSH EXAMiner Software**

***Presenter: Jonathan Hrica***

Hazard recognition and risk assessment are critical skills for all mineworkers. These skills are especially important during pre-shift and workplace examinations when examiners are tasked with finding and fixing hazards at their workplace. To help ensure mineworkers are able to effectively perform workplace examinations, NIOSH developed an interactive training tool called EXAMiner. EXAMiner is a NIOSH-developed software application that gives mineworkers the opportunity to practice their hazard recognition skills by performing simulated workplace examinations. The tool utilizes several training strategies to address key mineworker hazard recognition competencies including general hazard knowledge, site-specific hazard knowledge, visual search skills, and pattern recognition. This presentation will provide a demonstration of the software’s capabilities and offer ideas on how to incorporate EXAMiner into your training plan.



# Presenters

**Abrams, Adele L. CMSP** – Ms. Abrams is President of the Law Office of Adele L. Abrams P.C., a multi-attorney firm with offices in Beltsville, Maryland; Denver, Colorado, and Charleston, West Virginia. The firm represents employers in OSHA and MSHA litigation nationwide, and her firm also handles employment law matters in a large number of states. Adele and her firm colleagues provide employment and safety law consultation, safety audits, industrial hygiene assistance, and training services to companies in a variety of industries. She is a graduate of the George Washington University's National Law Center (JD degree), received a Graduate Certificate in Public Relations from American University, and earned her B.S. in Journalism from the University of Maryland, College Park. She serves on the adjunct faculties of the Catholic University of America in Washington, DC, and the University of Colorado-Boulder, where she teaches on employment, labor and occupational safety law. She has been a professional member of ASSE (now ASSP) since 1997 and has been a SPY award recipient at the practice specialty, chapter, and regional level. She was an original member of Women in Safety Excellence (WISE), and has been an officer in the former Mining Practice Specialty group. She is an active member of the National Safety Council, where she was awarded the Distinguished Service to Safety Award (DSSA) in 2017. She was an initial co-chair of the NSC's Women's Caucus. She serves on the NSC Board of Delegates nationally and is a member of the Chesapeake Region Safety Council's Executive Committee. She is also a member of the American Bar Association, SHRM, and the National Employment Lawyers Association. She has co-authored several textbooks on employment law, occupational and mine safety and health, and is a regular columnist on safety law issues for multiple magazines.

**Armstrong, Kent** – Mr. Armstrong is the Global Business Development Manager for Draeger Safety, Inc. He has been responsible for Draeger mining safety products in the mining market for 24 years, specializing in mine rescue and mine emergency applications. Previously, he worked 12 years in the Canadian mining market for MSA Canada. He also spent time as an underground miner with Falconbridge Nickel Mines Sudbury Operations. Presently, he sits on the Canadian Standards Association Technical committees CSA Z94.4 Use, Care and Maintenance Respiratory Protection Standard and CSA Z180.1 Compressed Breathing Air Standard. He has served on the NMA Safety Committee and has served as Vice President for the Holmes Mine Rescue Association for the Vendor and Education interest group since 2013. He has served on the International Mine Rescue Body and International Mine Rescue Competition organization team since inception. For over 36 years, he has supported mine rescue contests in Canada, the USA, and internationally. He has participated in numerous mine rescue events, and his counsel has proven invaluable. He has participated on the U.S. National Coal Rules Committee for 5 years, and on the National M/NM Rules Committee for numerous years. He is a recognized international mine rescue expert, and has visited many mining countries including: Australia, Mexico, Bolivia, Peru, Venezuela, South Africa, Czech Republic, UK, China, Turkey, Chile, Poland, Ukraine, and Russia.

**Brown, Connor** – Mr. Brown joined NIOSH's Pittsburgh Mining Research Division in June 2015 after receiving his Master's degree in Mining Engineering from Virginia Tech. In this short time, he has been integral on a number of tasks. These tasks include assessing the effect of specific surface area on coal dust explosibility, measuring re-entrainment of treated rock dust and the use of mitigation techniques, testing the selective dust deposition of trickle dusters, and the development of a foamed rock dust formulation.

**Colinet, Jay** – Mr. Colinet has a B.S. degree in Mining Engineering from West Virginia University and an M.S. degree in Industrial Engineering from the University of Pittsburgh. He is a registered

Professional Engineer in Pennsylvania. He began his career by conducting health and safety mining research as a Project Engineer at Bituminous Coal Research. He then started working with the Federal government as a Mining Engineer for the U.S. Bureau of Mines and is now a Principal Mining Engineer with NIOSH. The focus of his research with the government has been to conduct and lead laboratory and mine-site research to identify and evaluate control technologies that successfully reduce the respirable dust exposure of mine workers.

**Combs, Debbie** –Ms. Combs is a training specialist with MSHA’s Educational Field and Small Mine Services (EFSMS). She began working for MSHA in the Hazard, KY sub-district office in September 1982 and has served in several support positions until becoming an Education and Training Specialist in MSHA’s Barbourville, KY District in 1996. Ms. Combs was later reassigned to the Educational Field Services (EFS) Division of the Educational Policy and Development (EPD) Directorate when it was established in 1998. From 2002 through 2009, she served as a Job Task Analysis team member assisting Coal and Metal and Non-metal (MNM) operators in conducting task analysis. Ms. Combs continue to serve as a training specialist providing education and training assistance to the mining industry.

**Guelich, Mike** – not available at time of printing

**Hart, W. Ben, CMSP** – Mr. Hart is currently serving as National President of the Joseph A. Holmes Association. After a successful career as a teacher, salesman and trainer covering more than 40 years, he retired in 2013. After 25 years’ public service as the Program Coordinator of Florida’s MSHA State Grants Program, he embarked on a ‘new’ career path as a safety consultant. He is the Principal/Owner/Chief Consultant/Sole Employee of W. Ben Hart & Associates in his hometown of Tallahassee, where he provides MSHA training, training plan development, and safety audits. He also assists his clients with contesting MSHA citations. He earned his Certified Mine Safety Professional (CMSP) credential in 2000, and served as General Chairman of the International Society of Mine Safety Professionals in 2006-2007.

**Hartwell, John** - Mr. Hartwell has been a member of Operating Engineers Local 324 since 1991, when he started as an apprentice. He has spent almost 19 years working for Local 324’s Journeyman & Apprentice Training Fund, Inc.; six of which were instructing on cranes, rigging and other various pieces of equipment. For the past 12 years, he has served as the Apprentice Coordinator and Field Representative. He has most recently as of March 2019, transitioned to Career and Outreach Representative. He is an accredited NCCCO examiner, certified in six categories, as well as rigging and signalperson. He is also a mine safety instructor and certified in Hazmat, Forklift, 1st Aid/CPR/AED and OSHA 500.

**Hrica, Jonathan** – Mr. Hrica is a mining engineer with the Human Factors Branch of the Pittsburgh Mining Research Division. He currently serves as a team member on the project Enhancing Mine Workers’ Abilities to Identify Hazards at Sand, Stone, and Gravel Mines. Previously, he worked as a mining engineer at an open-pit copper mine in Arizona, and as an engineering consultant developing computer-based training programs for mines across various commodities. He has a keen interest in applying new technology to the mine work environment as well as developing interventions to improve mine worker safety and health. He has an M.S. in Technology from The Polytechnic School at Arizona State University and a B.S. in Mining Engineering from the University of Arizona.

**Jarrell, Cotton, CMSP** – not available at time of printing

**Jude, Terry “Mike”** – Mr. Jude is a training instructor at the MSHA National Mine Health and Safety Academy in Beaver, West Virginia. He teaches a broad range of classes for industry and government officials including Special Investigations, Mine Rescue, Inspection Procedures, Safety Programs and Surface Haulage for metal/nonmetal and coal mines. He has experience as a mine inspector, ventilation specialist, collateral special investigator and collateral conference litigation representative for MSHA. He has participated in multiple accident investigations. He has 14 years in the mining industry, was a member of a mine rescue team, is a veteran of the United States Air Force, and has held multiple mining and hazardous material handling certifications.

**Kravitz, Jeffery H., Ph.D., MBA, P.E.** – Dr. Kravitz is the President of JHK & Associates Consulting, LLC. He holds an MBA and Ph.D. from the University of Pittsburgh and a BSEE degree from the Illinois Institute of Technology. He is a registered Professional Engineer (PE) in Pennsylvania and has received many awards and accolades.

He worked at the Mine Safety and Health Administration for over 43 years. He served as the Chief, Mine Emergency Operations, and the Chief, Scientific Development for MSHA. He was responsible for seeking out and developing new technology for mine emergency operations and led MSHA’s mine emergency operations and respiratory protection programs. He has been involved in over 80 mine emergency responses in the United States and Internationally. His other responsibilities included the development and implementation of the Mine Emergency Response Development (MERD) training programs for MSHA, State, Labor, and mining companies. He chaired the MSHA Mine Rescue Training Review Committee and served on several rule-making committees. He is a past President for the Joseph A. Holmes Safety Association (Man of the Year) and is the Acting Secretary for the Holmes Mine Rescue Association. He is on the Board for the Pittsburgh Section of the Society of Mining, Metallurgy, and Exploration (SME), and he is also the past President for the Pittsburgh Coal Mining Institute of America (PCMIA). He now serves on the Board for that organization. He has also been President for the National Mine Rescue Association and the Veterans of Mine Rescue. He was also the past President of the International Society for Respiratory Protection (ISRP).

He was the MSHA representative for a joint seven-year China-DOL project which was designed to improve the safety and health of Chinese miners. He has made several trips to Chinese mines and has given seminars and presentations to high-ranking Chinese officials both in government and the coal industry. He has participated in mine emergencies for several countries, including Canada, Mexico, Austria, Argentina, New Zealand, and Chile.

**Mackowiak, Joseph, P.E. M.S.** – Mr. Mackowiak is a training instructor at the MSHA National Mine Health and Safety Academy in Beaver, West Virginia and an Adjunct Professor for Marshall University, College of Information, Technology, and Engineering. He teaches a broad range of classes for industry and government officials in both law and regulations for metal/nonmetal and coal mines, Safety Programs, Accident Prevention Techniques, and Mine Health and Safety Legislation. He has 27 years in the mining industry, has a B.S. degree in Mining Engineering from West Virginia University, a Master’s degree in Safety from Marshall University, is a Registered Professional Engineer, and holds multiple mining certifications.

**McDonald, Mike** – not available at time of printing

**Nasarwanji, Mahiyar** – Mr. Nasarwanji is an Associate Service Fellow at the National Institute for Occupational Safety and Health (NIOSH) in the Musculoskeletal Disorders Prevention Team which is part of the Workplace Health Branch at the Pittsburgh Mining Research Division. His interests are in improving work environments and products to make them safe and suitable for a diverse user population based on the principles of human factors and ergonomics. His current work focuses on the prevention of slips, trips and falls and musculoskeletal disorders and improving workplace safety in the mining industry. He has a Bachelor's of Engineering in Mechanical Engineering from the University of Mumbai and an M.S. and Ph.D. in Industrial Engineering from the University at Buffalo with a focus on human factors and ergonomics.

**Russell, Otis J.** – Mr. Russell is a master electrician with 37 years work experience in Industrial Electrical Maintenance in Mining, Manufacturing, and Electrical Power Generation & Distribution, with 32 years' experience in electrical skills and safety training. He is an MSHA-approved electrical safety instructor providing electrical training for qualification to perform electrical work in surface or underground coal mines and the annual 8-hr electrical Retraining for both surface and underground coal mines, and the 8-hr annual Electrical Safety training for electricians in metal/nonmetal. Currently retired from Duke Energy as a training contractor, he provided electrical safety/skill training for Duke Energy Plants in Indiana, Ohio, and Kentucky. From 2009-2011, as a Duke employee, he provided Arc Flash Safety training for all of Duke Energy's Midwest employees at generating stations as part of Duke Energy's 2009 Arc Flash safety implementation program.

**Ryan, Margaret** – Ms. Ryan is an associate service fellow in the Human Factors Branch at the NIOSH Pittsburgh Mining Research Division. Relatively new to the mining industry, she has worked primarily in the area of self-escape from underground coal mines and mine emergency preparedness. She graduated from the State University of New York at Oneonta with a Bachelor of Science in Psychology and from the University at Albany School of Public Health with a Master of Public Health (MPH), where her principal concentration was in epidemiology. She has worked at both the federal and state level conducting health surveillance research and analysis.

**Scribe, Kyle** – not available at time of printing

**Scribe, Sam, CMSP** – Mr. Scribe is the owner of Alpha Safety USA and a qualified instructor. He started his career as a miner and then transitioned to teaching safety. He has been an MSHA/OSHA instructor and motivational speaker for over 25 years. He promotes and motivates safe behavior through a unique style of training interacting with the class and making safety personal. His mission is not just to instruct people but to motivate them to make safety a way of life.

**Stalfort, David** – Mr. Stalfort has 32 years of experience leading people and managing organizational performance. He is currently a Senior Director at ABS Group, a wholly owned subsidiary of the American Bureau of Shipping. He is responsible for leading the development and execution of strategic management services for clients. Prior to coming to ABS Consulting, he was a senior officer in the United States Coast Guard, retiring in 2010 at the rank of Captain. During his 26-year career, he led a number of risk management initiatives including: development of models to assess and manage the risk of major accidents involving large passenger cruise ships and to assess the preparedness of the Coast Guard and maritime industry to respond to major oil spills; and development of curriculum to train Coast Guard personnel in risk-based decision-making. He has an M.B.A. from Colorado State University and a Bachelor of Science degree in Applied Technology from Florida Institute of Technology. He is also a licensed merchant mariner and holds a Project Management Professional certificate.



**Swanson, LaTasha, Ph.D.** – Dr. Swanson serves as a Behavioral Scientist for the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH). She works in the Human Factors Branch of the Pittsburgh Mining Research Division. She uses qualitative, quantitative, and mixed-methods approaches to explore health and safety issues affecting the mining industry. She is most interested in exploring how behavior and communication influence occupational health and safety. She has been involved in research examining health and safety concerns related to proximity detection systems for mobile machines and self-escape from underground coal mines. She received a Ph.D. in Health Communication from Purdue University, and an M.B.A. and B.A. from Indiana University.

**Trevits, Michael A., P.G.** – Mr. Trevits has been conducting mining research for more than 45 years and is currently the President of Xtraction Science and Technology, Inc. (XS&T), which he founded in early 2014. Drawing upon his wide and varied career experience in the extractive energy industries, his focus is to provide professional consulting services to the mining industry and enable development of new safety technologies. He retired in early 2014, after more than 39 years of government service. During his government career, he worked for the U.S. Bureau of Mines, U.S. Department of Energy and NIOSH. Prior to retiring, he served as a NIOSH Senior Research Scientist. In this position, he worked on the transfer of health and safety technologies into the mining industry. His work was also focused on technology for assisting in post-event mine rescue and response. He recently worked on projects associated with improving communication from refuge alternatives, development of a video designed to prepare responsible persons for effective MERD exercise participation and mine rescue operations and a project to develop the design of an underground aerial reconnaissance system. He has been very active in the Society for Mining, Metallurgy and Exploration, Inc., and was recognized as a Distinguished Member on both a local and national level. He holds an undergraduate degree in Geology and an M.B.A. from the University of Pittsburgh and is a registered professional geologist in North Carolina. He has made numerous technical presentations, has authored 133 publications and has been granted one patent.

**Vicini, James M.** – Mr. Vicini was appointed by Governor Matt Bevin as Director for the Division of Mine Safety in April 2017. He has the responsibility of leading the State of Kentucky's Mine Safety Division and its staff, safety specialists, accident investigators and instructors that are responsible for inspecting Kentucky surface and underground coal mines, providing training and education for the state's miners, and also providing mine rescue coverage for all Kentucky's mines. He had previously served on the Kentucky Mining Board for approximately 13 years and was President of the National Holmes Mine Rescue Association for 3 years. In December 2014, he retired from the mining industry after working for 45 years and has provided safety consulting work since his retirement. He was Corporate Chief Inspector for Arch Coal Inc. at the time of his retirement where he maintained extensive experience in Behavioral Based Safety and Mine Rescue activities. He served as a board member, committee member or officer with the Kentucky Mining Institute, the Kentucky Coal Association, the Virginia Coal Association, and the West Virginia Coal Association. He also received several distinguished awards for his work in mine emergencies and disasters.

**Yantek, Dave** – Mr. Yantek is a lead research engineer in the Electrical and Mechanical Systems Safety Branch at the National Institute for Occupational Safety and Health (NIOSH) Pittsburgh Mining Research Division (PMRD). He received a BSME from Penn State University in 1995, and an MSME from Penn State University in 1996. In addition, he has completed Penn State's Noise Control Engineering Program. In 2001, he joined NIOSH where he worked in the Hearing Loss Prevention

Branch on noise control projects on mining equipment. In 2013, he began performing research on heat buildup in refuge alternatives (RAs) for underground coal mines. In 2015, he transferred into the Electrical and Mechanical Systems Safety Branch. He is currently the principal investigator for PMRD's refuge alternatives research project, which involves research on several RA concerns including heat/humidity buildup, contamination ingress, purging, air delivery, built-in-place stopping/door systems, and communications. He has authored or co-authored over 30 publications related to RAs.

**York-Feirn, William C. CMSP** – Mr. York-Feirn is the Director of the Mine Safety Program for the Colorado Division of Reclamation Mining & Safety in Denver. He has been responsible for leading the development and delivery of nationally-recognized MSHA-compliant mine safety and health education and training, new and innovative interactive training resources, pro-active mine emergency risk/preparedness/readiness assessments, mine rescue training, certification of coal mine officials in Colorado, and tourist mine safety shared across the nation. He collaborates with mining trade associations, MSHA, mine health and safety organizations (over 24 years) to improve the health and safety of the nation's miners and mining contractors. Previously, he lead a team of geologists for 14 years with Anaconda, Gold Fields and Noranda at underground/surface mines and conducting gold/silver exploration. His team discovered the New World Au-Ag-Cu deposit near Cooke City, Montana. He has received the Safety Leadership Award from the Colorado Stone, Sand & Gravel Association and the Guiding Light Award from the International Society of Mine Safety Professionals. He currently serves as Director on the International Academy of Mine Safety and Health at SME with the goal of making the Certified Mine Safety Professional the most sought after professional credential worldwide.









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