



**November 2-4, 2021**  
**National Mine Health and Safety Academy**  
**Beckley, West Virginia**

**Visit the Mine Safety and Health Administration  
Website at [www.msha.gov](http://www.msha.gov)**

# Welcome

Welcome to the National Mine Health and Safety Academy and to the 2021 Training Resources Applied to Mining (TRAM) Virtual Summit. This conference has become a very important event on the Academy's calendar, and this year is no different. This year's TRAM Conference will give participants the opportunity to learn about new developments in health and safety training, to share ideas in small group sessions, and to share new materials all while safely social distancing.

Thank you for joining us online. We hope you will have a productive and enjoyable experience.

## Acknowledgments

We wish to thank all of the presenters who volunteered their time and knowledge with others for the promotion of mine safety and health. Without the efforts of these experts, it would be impossible to present a conference of this magnitude. They always come forward so willingly to assist us with this program and for that we are grateful.

# MSHA Leadership

## Jeannette J. Galanis

### Deputy Assistant Secretary for Policy



Jeannette J. Galanis is the Deputy Assistant Secretary for Policy, Mine Safety and Health Administration. She was appointed by President Biden, effective Monday, February 1, 2021.

Prior to this, she was the owner of her own consulting firm, representing a broad array of clients including Mayor of Denver, Michael Hancock; the National Conference of Democratic Mayors; Senator John Hickenlooper; Tom Steyer, Kamala Harris and Michael Bloomberg. She also served as the Public Affairs Director for the Denver Public School District, Chief of Staff of the U.S. Mine Safety and

Health Administration under President Barack Obama, and the National Deputy Field Director for the AFL-CIO, managing political and organizational matters for the federation in 23 states in the Eastern and Southern U.S.

Ms. Galanis holds a Bachelor's degree from the University of Colorado at Boulder and two Masters degrees from Harvard University, School of International Affairs and the University of Denver, School of Communications.

## **Patricia W. Silvey**

### **Deputy Assistant Secretary for Operations**



Patricia W. Silvey is the Deputy Assistant Secretary for Operations, Mine Safety and Health Administration. She was appointed to the position in December 2010.

Before her appointment as Deputy Assistant Secretary for Operations, Mrs. Silvey served as the Director of Standards, Regulations and Variances for MSHA. Prior to this, Mrs. Silvey served as the Deputy Administrator for Metal and Nonmetal Mine Safety and Health, and on an Intergovernmental Personnel Act assignment to the National Safety Council.

In October 1998, she held the position of Director, Office of Administration and Management. In July 1983, she was appointed to the Senior Executive Service as Director of Standards. In early 1978, she played an integral role in the transition of MSHA from the Department of the Interior to the Department of Labor and the establishment of the Office of Standards.

Mrs. Silvey earned her B.S. degree from Tuskegee Institute; M.A. degree from the University of Alabama; and J.D. degree from Georgetown University Law Center. She is a member of the District of Columbia Bar.

# **Lincoln (Link) Selfe**

## **Superintendent**

### **National Mine Health and Safety Academy**

Lincoln (Link) Selfe began his mining career in 1974 as a Management Trainee with Clinchfield Coal Company. He worked as an Engineer, Industrial Engineer, Safety Specialist and Staff Assistant to the Vice President of Operations. He also served as a Section Foreman, Out-By Foreman and Assistant Mine Foreman while at Clinchfield Coal Company.

Mr. Selfe began his career with MSHA in 1982 as an Inspector and Accident Investigator in District 5, Norton, VA. From 1989 until December 2018 he served in various capacities within management. He served as a Field Office Supervisor in District 6, Staff Assistant, Field Office Supervisor and Roof Control Supervisor in District 3. He served for 17 years as Assistant District Manager in District 4 and also did temporary details as District Manager in District 3, 4 and 5.

Mr. Selfe became a member and Team Captain of MSHA'S Mine Emergency Unit in February 1991 and continued on the Mine Emergency Unit until April 2005. During this time he worked numerous Mine Emergencies such as fires, explosions, inundations and other emergencies in West Virginia, Virginia, Kentucky, Illinois, Pennsylvania, Alabama, Utah and Colorado while under oxygen in irrespirable atmospheres and in several elevated methane situations. He also responded to the Pentagon after the 9/11 attacks and to Hurricane Katrina, working with OSHA in 2005. Mr. Selfe also was selected from MSHA's Team to work with the Fairfax County Structure Rescue Team in Morgantown, WV when a coal silo collapsed and fatally injured one person.

Mr. Selfe has represented the United States internationally in various Mine Rescue roles. He served as a Mine Rescue Advisor in Ontario, Canada and Krakow, Poland. He competed as a map man on MSHA's Team in the International Mines Rescue Contest in Louisville, KY in 1999 where they won First Place. He also competed on MSHA's Team in Glogow, Poland in 2004.

**Richard B. Pagan**  
**Deputy Superintendent**  
**National Mine Health and Safety Academy**

Dr. Richard Pagan is the Deputy Superintendent of the National Mine Health and Safety Academy. He has extensive experience from higher education, business, and the military having held positions as vice president of academic and student affairs, corporate senior vice president, campus director, division chair (dean), program coordinator, faculty, senior noncommissioned officer in the military, and as a military advanced systems technical instructor. He has over 25 years of teaching and administrative experience in higher education in the operational and business aspects of running complex organizations.

In addition to his academic and student services experience he has experience in fiscal affairs, facilities management (including multiple campuses and sites), accreditation, assessment, workforce development, community engagement, shared governance, working with state legislatures, and community leaders. Prior to his career in academia, he served over twenty years on active-duty service in the United States Air Force retiring as a Master Sergeant. During his military career, he attained the highest certification under the Air Education and Training Command as a Master Instructor. Additionally, he has served on and chaired on a myriad of institutional and statewide committees.

Dr. Pagan holds a Doctorate in Education with an emphasis in Higher Education Leadership Studies, a Master of Science in Aeronautical Science, a Bachelor of Science in General Studies, and associate degrees in Avionics Technology, and Instructor of Technology. He is certified by the Federal Aviation Administration in Airframe and Powerplant Systems, the Federal Communications Commission, and holds certificates in Aerospace Human Factors and Aviation/Aerospace Safety. Dr. Pagan is dedicated to fulfilling the mission of the Mine Safety and Health Administration and the National Mine Health and Safety Academy.

# Agenda

## Tuesday, November 2

12:00 p.m. – 12:30 p.m. Opening Remarks .....See Workshop Schedule

### Welcome and Introductions

Mr. Lincoln L. Selfe, Superintendent  
National Mine Health and Safety Academy

### Opening Address

Jeannette J. Galanis, Deputy Assistant Secretary  
Mine Safety and Health Administration

12:30 p.m. – 12:45 p.m. MSHA Library Digital Archive Review & Materials Competition Awards

### Materials Competition Award Presentation

Ms. Melody Bragg, Competition Coordinator  
National Mine Health and Safety Academy

1:00 p.m. – 4:30 p.m. Workshops.....See Workshop Schedule

## Wednesday, November 3

1:00 p.m. – 4:30 p.m. Workshops.....See Workshop Schedule

## Thursday, November 4

10:00 a.m. – 12:00 p.m. Grants Meeting .....See Workshop Schedule

1:00 p.m. – 4:30 p.m. Workshops.....See Workshop Schedule



# Training Materials Competition

The year 2021 marks the 26th year that TRAM's Training Materials competition has been conducted. For more than a quarter century, the materials developed and entered in the competition have made lasting, positive impacts on health and safety training at mining operations.

Entries which met the highest standard of performance were awarded an MSHA Blue Ribbon of Excellence. The top scoring entry was awarded the Grand Prize.

This year's winners will be announced during opening ceremonies on Tuesday, November 2.

## TRAM 2021 Training Materials Competition Entrants

### Entrants:

- ◆ Ash Grove Cement Plant - Louisville, North (A CRH Americas Material Company)
  - Improving Communication
- ◆ Cementation USA Inc.
  - Supervisor Mine Act Training
- ◆ Florida Mine Safety Program (MSHA State Grants)
  - Stop the Fire In Its Tracks!
- ◆ Ohio Department of Natural Resources – Mine Safety
  - Ohio Surface Mine Training
- ◆ South Dakota MSHA State Grants Program
  - Hazard Awareness - Virtual Reality Training

# TRAM 2020 Materials Competition Winners

## Blue Ribbon Awards

- ◆ Virginia Department of Mines, Minerals, and Energy – Electric Motor Installation & Calculations
- ◆ Virginia Department of Mines, Minerals, and Energy – Virginia 2019 Surface Foreman Continuing Education Training
- ◆ CRH Americas Material Companies – MSHA Annual Refresher Education: Vol. 9 and Vol. 10
- ◆ Florida Mine Safety Program – Powered Haulage - Get Them On Board
- ◆ Virginia Department of Mines, Minerals, and Energy – Virginia 2019 Underground Foreman Continuing Education

## Grand Prize

- ◆ Blackhawk Mining, LLC – Proximity Training/Dust Parameter Training

## Previous Grand Prize Winners

2020 – Blackhawk Mining, LLC  
2019 – Florida Mine Safety Program  
2018 – Florida Mine Safety Program  
2017 – South Central College Center for Business & Industry  
2016 – Virginia Department of Mines, Minerals and Energy  
2015 – South Central College Center for Business & Industry  
2014 – Virginia Dept. of Mines, Minerals and Energy  
2013 – Kentucky Office of Mine Safety and Licensing  
2012 – Virginia Dept. of Mines, Minerals and Energy  
2011 – South Central College  
2010 – Lafarge North America, Inc.  
2009 – Alliance Coal  
2008 – Kentucky Coal Academy  
2007 – Safe Steps Training, LLC  
2006 – AGC for Heavy Equipment Operations, Vermont Chapter  
2005 – Colorado Division of Minerals and Geology  
2004 – Virginia Department of Mines, Minerals and Energy  
2003 – Colorado Division of Minerals and Geology  
2002 – Commonwealth of Virginia  
2001 – Commonwealth of Virginia  
2000 – Colorado Division of Minerals and Geology  
1999 – The Illinois Office of Mines and Minerals  
1998 – Pittston Coal Company  
1997 – Zeigler Coal Holdings, Inc.  
1996 – The Pennsylvania State University

# Workshops

## **A New Approach to Conducting Required Training Joseph McGuire and Lucas Simpson**

Current barriers to conducting safety training require organizations to adapt in order to facilitate learning and skill building. They must decide how training can be effective and build skills while protecting workers' health and safety. This presentation provides an example of how Ash Grove Cement provided MSHA training in a modified face-to-face manner throughout 2020 and 2021. Presenters will share successful takeaways for future training considerations. Discussions and participation in small groups, shorter training modules, interactive sessions and adding soft skill development to class content are discussed. This presentation is important because, in times of stress and anxiety, it is easy to default to easier training options.

## **Engaged Workers - The Key to a Successful Safety Program! Scott McKenna and Heidi Williams**

When it comes to safety, employee engagement is vital! If you work in the average organization, Gallup studies show 85% of your employees are not engaged or are actively disengaged. Three hundred billion dollars is lost every year in the United States due to unengaged employees. On the other hand, employee engagement can kick your safety program into high gear and set the state for continuous safety improvement. According to Gallup reports, engaged employees have 48% fewer safety incidents, 41% fewer patient safety incidents, 37% decrease in absenteeism, 25% decrease in turnover, 21% increase in productivity, and 22% improved profitability. Join us while we explore employee engagement and how to create it within your workforce.

## **Expanding Opioid Hazard Awareness In the Stone, Sand and Gravel Sector Cora Roelofs**

Opioid overdoses are on the rise in the midst of the COVID-19 pandemic. The mining sector has been seriously impacted by opioids and there are several mining work-related risk factors for opioid overdose. However, training can play a role in raising awareness and preventing opioid harms in the sector. This presentation will discuss a nationally-applicable training module on opioid hazard awareness suitable for refresher or new miner training. This short module is available for use by trainers either as a slide deck with a trainer guide or as a full-narrated on-line presentation for use by trainers and trainees. The presentation will also discuss an employer guide to managing opioid hazards, including training and policy elements.

## **Haul Truck Safety: NIOSH Research Update**

### **Jonathan K. Hrica and Timothy Orr**

Each year, haul truck accidents account for a large portion of mining injuries and fatalities. To understand why these accidents continue to occur, NIOSH utilized cognitive task analysis methods to identify: 1) the routine task requirements of surface mine haul truck operators, 2) differences in perceptions of goals, skills, and training between operators, managers, and work areas, and 3) cognitive demands required during non-routine incidents. The preliminary results of these analyses, along with solutions offered by participants, are currently being used to inform the development of simulation-based recreations of near-miss incidents and identify creative interventions that can be used by mine operators to address haul truck safety issues.

## **Hazard Awareness - Virtual Reality Training**

### **Purushotham Tukkaraja and Clint Kling**

This presentation provides an overview of the Hazard Awareness virtual reality training module developed by SD MSHA State Grants Program. The traditional mining workplace safety is an overly complex subject difficult to convey in a classroom or even in an on-the-job setting due to the potential dangers involved. The VR training aims to simplify the topic, allowing people to train in a risk-free environment. The objective is to improve safety training outcomes by creating more conscious workers.

## **How People Learn and Designing Training to Match**

### **Jeff Dalto**

Learn about the "information-processing" model of how we process, make sense of, store, and later retrieve information; how we develop skills (from novice to competence and from competence to expertise); and how to design training accordingly.

## **Mobile Applications for Interactive Training And Performance Assessment**

### **Leonard Brown**

Smartphones and tablets offer great potential as vehicles for active learning and performance assessment. In this talk, we discuss three emerging apps to help trainers and operators improve outcomes: 1) Very Good Day is an online version of our popular card game which provides training for hazards and critical controls; 2) Coming Home Alive is a multi-user "hybrid" app based on a popular mystery game, Among Us, which helps users learn SOPs and hazard mitigations; and 3) the Small Mine Activities Reporting Tool (SMART) helps small operators track and meet their MSHA reporting requirements and visualize health and safety performance. Workshop participants may evaluate beta versions of these apps and provide feedback to enhance future versions.

## **Revisiting the Role of the Responsible Person (30 CFR 75.1501)** **Cassandra L. Hoebbel and Joseph A. Scaffoni**

It has been nearly two decades since the Mine Safety and Health Administration issued an Emergency Temporary Standard requiring “operators of underground coal mines to designate, for each shift that miners are working underground, a responsible person in attendance at the mine to take charge during mine fire, explosion, and gas or water inundation emergencies.” In recent years, NIOSH researchers have begun to examine the role of the responsible person and how it is being operationalized within the industry. Findings suggest disparate approaches to and perceived effectiveness in meeting this requirement. This presentation will summarize these efforts and offer practical solutions to aid mine safety and health professionals in meeting the intent of the final rule.

## **Rigging and Lifting Mishaps** **Terence M. Taylor**

This presentation will cover multiple investigations where rigging components or lifting equipment failed resulting in injuries, near misses, and fatalities to miners. The lessons learned from these investigations can be used to prevent injuries to employees at your mine.

## **Selecting and Using Online Safety Training** **Jeff Dalto**

Learn how to know when training of any sort is a reasonable solution for a workplace performance problem; what the research says about the effectiveness of online training; the evidence-based “secret sauce” of all effective training; the value of blended learning and some different blended learning approaches, including the “five moments of need;” micro learning and other, less-well-known forms of technology-assisted training; learning management systems (LMS); online courses; and, if time allows, a little more.

## **Sleep Deprivation and Stress In the Mine Site** **Irvin Gill**

Sleep deprivation describes the cumulative effect of a person not having sufficient sleep. Insufficient sleep adversely affects the body, brain, mood, and cognitive function. All aspects of health can be impacted by sleep deprivation. This presentation will focus on the realities of how sleep deprivation affects the mental and physical health of the mining industry's most crucial component - the miner.

## **The 7 Habits of Highly Effective Safety Teams**

### **Richard Wobby, Jr.**

Best-in-Class teams manage accountability on every mine-site, and their miners become the safety managers for their site. If a mine has problems, we don't make excuses by blaming everyone else. Companies can create accountability by having senior management actively involved in the periodic, rigorous examination of job status. This does not mean just a cursory review of mining costs; it also includes a narrative of the following: Create accountability, be responsible, begin with the end in mind, put first things first, think win – win, seek first to understand then to be understood, synergize, sharpen the saw. We have taken Stephen Covey's famed leadership model, thrown in a little Scott Gellar, mixed it around, and created our version of AC4P 2.0.

## **Training Outside the Box**

### **Marnee McCormick**

This session has interactive training ideas to get miners involved. Safety and health training are not the easiest topics to train and hold students' attention. Training an average of 45 MSHA annual refreshers a year we had to get creative! What can we do to get students involved? We have a few ideas to share that help hold attention and measure retention, for both online and in-person trainings.

## **What Do MSHA Accident Reports Tell Us About Inexperienced Mineworkers' Risk of Serious Injury?**

### **LaTasha R. Swanson**

Since as early as 1988, mine safety and health research has shown that mineworkers with less experience may be at increased risk of injury (Butani, 1988). Preliminary analysis of MSHA incident data from 2006 to 2017 showed that miners with less experience made up a high number of the injured in both coal and non-coal sectors (MSHA, 2017). While previous work has raised concerns and questions about the role of inexperience, there is still limited information describing how inexperience may influence injury risk. In this presentation, we will use final and preliminary MSHA fatality reports from the last 10 years to explore how specific factors such as experience in current job, in mining, and at the mine of employment may influence mine workers' risk of serious injury. We will also explore the influence of age and employment as a contractor.

# Presenters

**Brown, Leonard D., Ph.D.** - Leonard Brown is an Assistant Research Professor at the University of Arizona's Mel and Enid Zuckerman College of Public Health. He has over 15 years of experience in instructional design and technology innovation for health and safety training and has published numerous technical papers on these topics. He currently serves as a co-director for the NIOSH-funded Western Mining Safety and Health Training Resource Center, where he develops computer-based serious games and predictive data analytics tools for the mining industry. He teaches courses in human-computer interaction, data science, and gaming for the UA's School of Information.

**Dalto, Jeff** - Jeff Dalto is an instructional design, workplace learning, and performance improvement professional. He has worked in safety training for 20+ years and is a frequent presenter at MSHA TRAM conferences. He helped to create the ANSI/ASSP Z490.2 standard for Online EHS Training and is currently on the committee revising the Z490.1 standard for all EHS training as well. Jeff was recently recognized as Safety Professional of the Year by the ASSP's Training and Communications Practice Specialty. He's a regular contributor to the ASSP's Professional Safety Journal, and is currently pursuing a Master's degree in Organizational Performance & Workplace Learning at Boise State University.

**Gill, Irvin** – Irvin Gill is the president of Catamount Consulting of Pennsylvania in Wyomissing. He has over 25 years of experience in the mining industry as well as safety management and training, most recently serving as the area coordinator for a large mining company overseeing all aspects of their open pit mining operations. His combination of knowledge, real world experience, and expertise bring our clients a unique perspective in both training and consulting. He is also a certified trainer or instructor in a broad range of disciplines.

**Hoebbel, Cassandra L, Ph.D.** - Cassandra Hoebbel is a Behavioral Research Scientist for the National Institute for Occupational Safety and Health (NIOSH) Pittsburgh Mining Research Division (PMRD). As a member of the Mine Emergency and Organizational Systems team, Dr. Hoebbel's research focuses on the characterization and improvement of the mine emergency escape system. Of specific interest to Cassandra is how mineworker competence might be improved through standardized self-escape training and assessment. Trained in psychology and school counseling, Cassandra received her B.A. (Psychology) from the State University College at Buffalo, her Ed.M. and her Ph.D. from the Graduate School of Education at the State University of New York at Buffalo.

**Hrica, Jonathan K, M.S., CMSP** - Jonathan Hrica is a mining engineer and Certified Mine Safety Professional with the NIOSH Mining Program. He holds a Bachelor's degree in Mining Engineering from the University of Arizona and a Master's degree in Technology from the Polytechnic School at Arizona State University. His research focuses on hazard recognition, risk perception, and training tool development.

**Kling, Clint** - Clint Kling is currently pursuing his doctoral degree in Mining Engineering at SD Mines. He was the director and developer of multimillion-dollar oil wells while working at Baker Hughes.

**McCormick, Marnee** - Marnee McCormick has worked more than 10 years in construction, holding positions as a General Laborer, On-Site Safety Representative, and Safety Trainer. She achieved Construction Health & Safety Technician certification from the Bureau of Certified Safety Professionals and currently provides on-site safety and safety training for oil & gas, power generation, paper mills, and general construction contractors on mine sites. She has training in Hazwoper, HazMat, OSHA Construction Industry, and MSHA, both Part 46 and Part 48; and has been an approved MSHA Instructor since 2015.

**McGuire, Joseph, Ph.D.** - Dr. Joe McGuire has 38 years' experience in the aggregates mining industry dealing with safety and environmental compliance. Joe received his Ph.D. in Education from Iowa State University and has conducted more than 150 presentations for State and National industry organizations. Joe was lead author on 12 MSHA Refresher Training Guides, several of which received awards during previous TRAM Conferences. He has had 36 research articles published on both safety and environmental topics.

**McKenna, Scott** - Scott McKenna is a certified instructor with the Mine Safety and Health Administration and is an OSHA certified construction trainer. With over 20 years' experience in the mining, construction and highway industries, he directs Catamount Consulting NY. Catamount Consulting provides training in all facets of OSHA, MSHA and Work Zone safety as well as On-Site Drug and Alcohol Testing, On-Site Hearing Test, Noise and Dust Testing, company management training and motivational presentations. Catamount Consulting has offices throughout the Northeast & due to increased needs is expanding nationally. Catamount has developed several national seminars including Supervisor Seminars and ACRI Training and consults with operations throughout the country.

**Orr, Timothy** - Tim Orr is a lead computer engineer in the NIOSH Pittsburgh Mining Research Division (PMRD), and has conducted research relating to the health and safety of miners for 30 years. He began his career with the U.S. Bureau of Mines in Spokane, WA, focusing on modeling and visualization of deep underground structures for stability while he was completing a Bachelor's degree in Mechanical Engineering from Gonzaga University. In 2011 he moved to Pittsburgh, PA, to work at PMRD and lead the development of the Mine Emergency Escape Training (MEET) virtual reality program. He also maintains PMRD's Virtual Immersion and Simulation Laboratory (VISLab).

**Roelofs, Cora, Sc.D.** - Dr. Cora Roelofs is a researcher with the Center for the Promotion of Health in the New England Workplace, a NIOSH Center of Excellence for Total Worker Health at the University of Massachusetts Lowell. She holds a Sc.D. in Work Environment and has been an occupational health and safety researcher for over 20 years. This project is funded by the Alpha Foundation for Mining Safety and Health.

**Sbaffoni, Joe** - Joe Sbaffoni holds an Associate degree in Mining Technology from Penn State University and has over 45 years of industry experience, including 15 years in operations with a focus on safety and production. Joe has held a number of positions including mine superintendent, bituminous mine inspector and chief, and has acted in several mine emergency response roles over his career. Joe is extremely proud of his participation in updating mine safety and health programs, the rescue of nine (9) miners at the Quecreek Mine in 2002 and enacting Mine Families First legislation in 2007 and Bituminous Mine Safety legislation in 2008. Joe retired in 2015 with 30 years of experience with the Commonwealth of Pennsylvania, spending the last 12 as Director of the PA Bureau of Mine Safety. Joe presently operates JAS Mine Consulting, LLC, offering services to the mining industry.

**Simpson, Lucas** - Lucas Simpson is the Health and Safety Manager of the Louisville, NE, Ash Grove Cement, a CRH Company Cement Plant. He has been with Ash Grove Cement in multiple roles including safety and production disciplines since 2018. Lucas graduated from the University of Central Missouri in Warrensburg, MO, with a Bachelor of Science in Occupational Safety and is actively pursuing his Master of Education in Adult Learning and Organizational Change from Park University in Parkville, MO.



**Swanson, LaTasha R. Ph.D.** - Since 2017, LaTasha Swanson has worked as an Associate Service Fellow in Behavioral Science with the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), Pittsburgh Research Mining Division (PMRD). Dr. Swanson's research has primarily focused on mineworkers' acceptance of proximity detection systems for mobile equipment. She is currently working to explore workers' views on using digital COVID-19 contact tracing applications in the workplace and how inexperience may increase mineworkers' risk of injury. Originally from Indianapolis, Indiana, Dr. Swanson has a B.A. and M.B.A. from Indiana University and a Ph.D. from Purdue University.

**Taylor, Terence** - Tery Taylor is a senior civil engineer and has 34 years of experience with MSHA's Technical Support Center in Pittsburgh. He earned his undergraduate degree from Penn State and Master's degree from the University of Colorado. Both degrees are in Civil Engineering with a specialization in Structural Engineering. He has been involved with numerous structural inspections, failure investigations, and technical assistance requests relating to surface and underground mine structures at coal, metal and nonmetal mines and has served as an expert witness for MSHA on citations relating to structural engineering. He also has a PE license in Pennsylvania.

**Tukkaraja, Purushotham, Ph.D., Q.P.** - Dr. Tukkaraja is an Associate Professor of Mining Engineering and the Director of South Dakota MSHA State Grants Program at South Dakota Mines. He is an ABET Program Evaluator (PEV) and a Qualified Professional (QP) Member of the Mining and Metallurgical Society of America (MMSA). He serves on the SME's Underground Ventilation Committee (UVC) Executive Board and was the Past-President of the Black Hills Chapter of ISEE. He is also an Associate Editor, Editorial Board Member, and Reviewer for several mining engineering journals.

**Williams, Heidi** - Heidi Williams is the Office Manager for Catamount Consulting offices. Catamount Consulting provides training in all facets of OSHA, MSHA and Work Zone safety as well as On-Site Drug and Alcohol Testing, On-Site Hearing Testing, Noise and Dust Testing, company management training and motivational presentations. Heidi's primary objective is to oversee all offices for the Catamount Group, the online training portal and development of future Catamount offices. Catamount Consulting has offices throughout the Northeast. Catamount has developed several national seminars including Supervisor Seminars and ACRI Training. Heidi has over 14 years of experience in the mining industry and is active in many safety associations.

**Wobby, Jr., Richard** - Richard Wobby is Executive Vice-President of the Associated General Contractors of Vermont (Ranked the #1 AGC chapter in the country for 2021). He has over 20 years' experience in the construction and mining industries as a safety management consultant and professional speaker, helping more than 100 companies or associations in their safety systems. Constantly in demand, Richard speaks to an average of 50 associations, companies, trade shows and conventions each year teaching his philosophy across New England. He continues to consult with an average of 50 clients annually, assisting in and improving their safety performance. He has developed both virtually and in-person programs and policies for the construction and mining industries.