



WORKPLACE SAFETY NORTH MINING HEALTH AND SAFETY CONFERENCE 2024

APRIL 16 - 18, SUDBURY, ON

Inclusive mines, a safer future

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Welcome back!

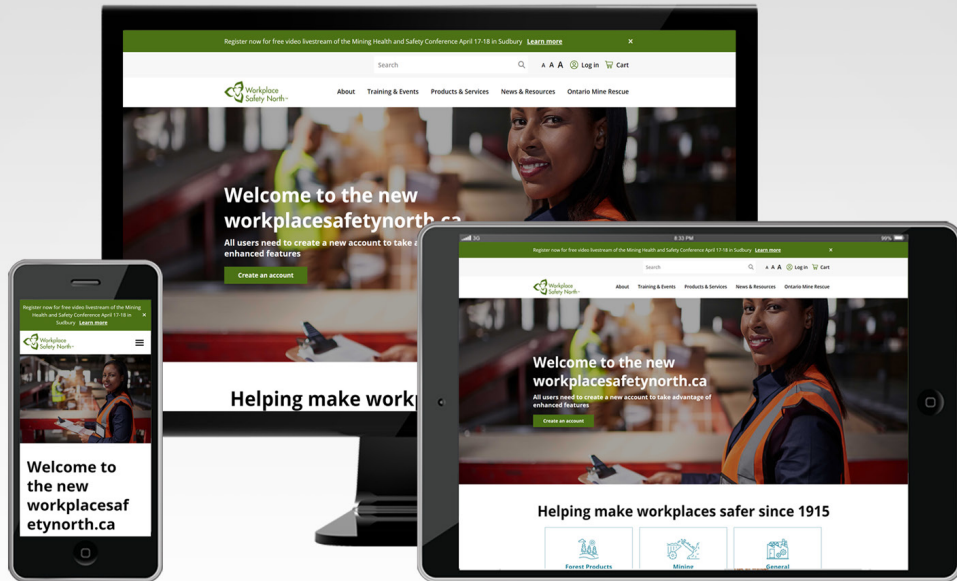
Thank you for joining the 26th annual Mining Health and Safety Conference hosted by Workplace Safety North from April 16 to 18, 2024, in Sudbury.

Themed 'Inclusive mines, a safer future,' this year's conference emphasizes the importance of diversity and equity in ensuring safer work environments. The conference features a variety of health and safety keynote speakers, and an industry panel discussing the latest in safety, diversity, and technology developments.

On Wednesday, April 17, Tina Varughese, a cross-cultural communication and diversity expert, opens the conference with a talk on inclusive leadership to foster employee engagement and open communication, and create a safe and health workplace.

Jeff Butler, workplace generation and technology expert, discusses how to build an effective multi-generational workplace by understanding the motivations, differences, and communication styles of the four different generations in the workplace.

On Wednesday and Thursday, you're also invited to visit with more than 25 vendors at the Information Exchange Trade Show and network with your colleagues. Thursday, April 18, features technical sessions in the morning, followed by an awards luncheon to recognize achievements in mining health and safety. Keynote speaker Jill Heinerth will wrap up the conference with a talk about improving safety culture in high-risk environments.



Welcome to the new workplacesafetynorth.ca

Streamlined navigation and enhanced features simplify user experience

Workplace Safety North has launched its new upgraded and accessible website. Packed with features designed to make booking training a breeze, this modern platform promises to simplify processes for businesses of all sizes.

New features for a smooth experience

The updated website features a clean and modern look, with diverse imagery. Its mobile-friendly layout ensures seamless navigation on any device, making it easy for users to access content on the go.



workplacesafetynorth.ca



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Your conference host

Workplace Safety North - Your local health and safety partner

An independent not-for-profit, Workplace Safety North (WSN) is one of four sector-based health and safety associations in Ontario. Headquartered in northern Ontario, WSN administers the provincial mine rescue program and provides province-wide Ministry-approved workplace health and safety training and services for the mining and forest products industries.

With health and safety specialists and mine rescue officers located across the province, WSN and its legacy organizations have been helping make Ontario workplaces safer for more than 100 years. A leading provider of health and safety training and consulting, businesses call upon WSN for expert advice and information.

Services

- Assessments: Conveyor, ground control, industrial hygiene testing, mobile equipment, radon, safety culture, ventilation
- Audits: Ground control, health and safety systems, legislative compliance, needs assessment
- On-site health and safety consulting
- Business health and safety program and culture audit
- Events, resources, and information on compliance initiatives, legislative changes, risk management research
- Workplace Safety and Insurance Board (WSIB) Health and Safety Excellence program

Training

Government-approved provider for the following courses:

- Mining Common Core for First Line Supervisors
- Joint Health and Safety Committee Certification (JHSC) Training
- Working at Heights Safety Training
- Related courses include Competent Supervisor, Workplace Mental Health Series, and Mine Rescue

For more information, visit workplacesafetynorth.ca.

Conference Advisory Committee

Workplace Safety North would like to thank the Mining Health and Safety Conference Advisory Committee for their guidance in developing this year's conference.

Aaron Duckworth
Compass Minerals

Joanne McGillis
Electrical Safety Authority

Julia Salvalaggio
MacLean Engineering

Michael Ferguson
Boart Longyear

Michel Levesque
Boart Longyear

Robert McVeigh
Compass Minerals

Tom Ranelli
GMS Mine Repair & Maintenance

Tyler Neeley
Dumas Mining

If you would like to join the Conference Advisory Committee, please contact Paige Jones at paigejones@workplacesafetynorth.ca.

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Tuesday Opening Reception

Tuesday, April 16, 2024

4:30 – 6:00 pm

Opening Reception – Everyone Welcome!

Join us in the Solarium for the conference kick-off. Check in early to beat the Wednesday morning rush. Enjoy appetizers, bar service, and live music.

Opening Reception sponsored by:



Wednesday at a Glance

7:00-8:00 am

Breakfast - Georgian ABC

8:00-8:30 am

Conference Welcome

Alicia Woods, Founder and CEO of Covergalls Workwear, Conference M.C.

8:30-9:00 am

State of the Industry

Mike Parent, WSN Acting President and CEO

9:00-10:00 am

Inclusive Leadership: From Silos to Safety

Tina Varughese, Cross-Cultural Communication and Diversity Expert

10:00-10:30 am

Health Break and Trade Show – Solarium

10:30-11:30 am

It's on Us: Sharing Learnings and Opportunities to Become Better Human Beings

John Ryan, Manager of Garson Mine at Vale

11:30-12:30 pm

Lunch – Georgian ABC

12:30-1:30 pm

Industry Panel: Forging the Future: Safety, Diversity, and Technology in the Mining Industry

Gus Minor, Sofvie; Stella Holloway, MacLean Engineering; Rod Cook, WSIB, Sandra Haddad, Haddad and Associates, Moderator: Samantha Espley, Stantec

1:30-2:30 pm

Building an Effective Multi-Generational Workplace

Jeff Butler, Workplace Generation Expert and Technology Speaker

2:30-4:30 pm

Information Exchange Trade Show – Solarium and Hallway

Mining Health and Safety Conference 2024

Wednesday – Plenary Sessions

8:00-8:30 am

Conference Welcome

Alicia Woods

Conference M.C. Founder and Chief Executive Officer

Covergalls Workwear



8:30-9:00 am

State of the Industry

Mike Parent

Acting President and Chief Executive Officer

Workplace Safety North



9:00-10:00 am

Inclusive Leadership: From Silos to Safety

Tina Varughese

Cross-Cultural Communication and Diversity Expert



Creating a great organization isn't just about breaking down cultural barriers. It's about building a workplace where everyone works towards a common purpose; feels a sense of belonging (not a sense of longing to be), and feels included despite title, rank, or position. Inclusive leaders understand people do not leave jobs; they leave people. Today's inclusive leaders believe not only in investing in themselves, but encouraging others to grow, to learn, and to build inclusivity and trust. Why? To breakdown silos, foster employee engagement, encourage open lines of communication, promote creativity, offer a safe place to land, and create a healthy, happy, and inspiring workplace.

10:00-10:30 am

Health Break and Trade Show – Solarium

10:30-11:30 am

It's on Us: Sharing Learnings and Opportunities to Become Better Human Beings

John Ryan

Manager of Garson Mine Vale



Embark on a candid exploration of the mining industry's evolving landscape, where health, safety, diversity and inclusion form the bedrock of our collective journey. Through first hand insights and real-life experiences from Vale Base Metals John Ryan, Manager, Garson Mine, learn how and why embracing diversity, equity and inclusion isn't just essential to becoming better employees – it's fundamental for our growth to be better human beings.

11:30-12:30 pm
Lunch – Georgian ABC

12:30-1:30 pm
Industry Panel: Forging the Future: Safety, Diversity, and Technology in the Mining Industry
Gus Minor, Sofvie; Stella Holloway, MacLean Engineering; Rod Cook, WSIB; Sandra Haddad, Haddad and Associates, Moderator: Samantha Espley, Stantec

An insightful exploration of the dynamic mining landscape, where industry leaders delve into the intersections of mining health and safety, diversity, and the need to attract fresh talent while embracing cutting-edge technology. Gain valuable perspectives on the evolution of safety practices, encouraging diversity, and leveraging technology for sustainable growth in the mining sector.

1:30-2:30 pm
Building an Effective Multi-Generational Workplace
Jeff Butler
Workplace Generation Expert and Technology Speaker



Jeff Butler explores how to effectively manage a multigenerational workforce. Drawing from extensive psychological research, Butler offers insights into motivations, differences, and communication styles across four generations. Discover how organizations leverage this diversity for success and gain actionable strategies to transform your multigenerational team into a competitive advantage.

2:30-4:30 pm
Information Exchange Trade Show – Solarium and Hallway

Thursday at a Glance

Thursday, April 18, 2024

7:00-8:00 am
Breakfast – Georgian D/E

8:00-12:20 pm
Technical sessions – Georgian A, B, C (lower level) and Regency Room

10:00-4:30 pm
Trade Show – Solarium and Hallway

12:20-1:00 pm
Awards Luncheon

1:00-1:10 pm
Ontario Mining Contractors Safety Association Innovation Awards

1:10-1:30 pm
Workplace Safety North Awards

1:30-2:30 pm
Improving the Culture of Safety in High-Risk Environments
Jill Heinerth, Explorer-in-Residence, The Royal Canadian Geographic Society

2:30-2:45 pm
Closing Remarks
Lydia Renton, Chair, WSN Board of Directors
Director, Occupational Hygiene, Safety and Security, BluMetric Environmental, Conference M.C.

10:00-4:30 pm
Trade Show – Solarium and Hallway

Thursday at a Glance

Thursday, April 18, 2024

Georgian A	Georgian B	Georgian C	Regency (main floor)
8:00-8:35 am			
<p>Why Employee Wellness Needs to Change</p> <p>Cara Lachance, Founder, Innovative Health Pathways (IHP)</p>	<p>Reduce Worker DPM Exposure Through Filtration of Diesel Exhaust</p> <p>Ralph Deayton, Sales - Technical - UG Mining, Mammoth Equipment & Exhaust</p>	<p>The Applications of Distributed Fibre Optic Sensing Technology for Improving Safety in Mines</p> <p>Zara Anderson, Vice President Mining, Silixa</p>	<p>The Gender Gap in Personal Protective Equipment</p> <p>Anya Keefe, Occupational and Public Health Consultant / Adjunct Faculty, Anya Keefe Consulting / University of British Columbia</p>
8:40-9:15 am			
<p>The Full Circle Journey of Management System Design and Implementation</p> <p>Daryl McIntyre, Senior Consultant (Safety and Risk), SRK Consulting (Canada) Inc.</p>	<p>Digging into the Data: Top Occupational Disease Risks in Ontario Mining</p> <p>Dr. Paul Demers, Director and Senior Scientist, Occupational Cancer Research Centre</p>	<p>Sleeve Fracturing for In-Stress Measurement: A New Paradigm</p> <p>Sia Taghipoor, Ground Control Supervisor, KGHM International</p>	<p>Occupational Health, Risk, and Safety Management in Canada: Technological Solutions</p> <p>Ian Saker, Managing Director, Mineware Consulting</p>
9:20-9:55 am			
<p>Improving the Equipment Utilization Culture</p> <p>Gus Minor, COO Sofvie; Mathieu Lachance, Asset Manager, Technica Mining</p>	<p>Occupational Whole-Body Vibration Exposure in Mining: Health effects and possible control strategies</p> <p>Katie Goggin, Senior Scientist, CROSH</p>	<p>Introducing the ABI Bolter – A Next Generation Bolting Solution</p> <p>Steve Denomme, Product Manager of Ground Support, MacLean Engineering</p>	<p>Opportunities and Challenges for Wearable Technology in Underground Mining and Mine Rescue Operations</p> <p>Sandra Dorman, Director, CROSH at Laurentian University</p>

Thursday at a Glance

Thursday, April 18, 2024

Georgian A	Georgian B	Georgian C	Regency (main floor)
9:55-10:25 am			
Health Break and Trade Show – Refreshments in Solarium			
10:25-11:00 am			
<p>Harmony Below the Surface: Integrating Psychological Practices for Health, Safety, and Culture</p> <p>Jonathan D. Miller, Industrial Psychologist, Miller & Associates</p>	<p>Overview of a CSA Standard (M424.4) for self-propelled, electrically driven, non-rail bound mobile machines for use in non-gassy underground mines</p> <p>Nam (John) Le, Senior Engineer, NRCan - CanmetMINING</p>	<p>Transforming Worker Safety with Digital Emergency Response</p> <p>Brett Smith, Vice President, Sales, SafeSight</p>	<p>Reshaping Occupational Heat Stress Management Guidelines to Keep Ontario’s Diverse Workforce Safe</p> <p>Emily J. Tetzlaff, Ph.D. Candidate; Katie E. Wagar, MSc Student; Roberto C. Harris-Mostert, MSc Student Human and Environmental Physiology Research Unit, University of Ottawa</p>
11:05-11:40 am			
<p>Some Thoughts on How to Optimize the Effectiveness of the Internal Responsibility System</p> <p>Robert Barclay, Retired professional mining engineer</p>	<p>From 2014 to 2023: Evolution of Workplace Risks and Risk Management in Underground Mining</p> <p>Tom Welton, Director Health and Safety Services and Education Programs, Workplace Safety North; Sam Barbuto, Health and Safety Specialist; Robert Marin, Open Pit and Surface Plant Health and Safety Specialist, Workplace Safety North</p>	<p>Panel: Breaking Ground: Women’s Perspectives in Mining</p> <p>Ashley Kirwan, President and CEO, Orix Geoscience; Kaitlin Elliott, Training Superintendent, Redpath; Trina Hayden, Chief Advisory Officer, NORCAT; Cindy Schiewek, Director of Health and Safety Services, Workplace Safety North</p>	<p>(Continued:) Reshaping Occupational Heat Stress Management Guidelines</p> <p>Emily J. Tetzlaff, Ph.D. Candidate; Katie E. Wagar, MSc Student; Roberto C. Harris-Mostert, MSc Student Human and Environmental Physiology Research Unit, University of Ottawa</p>

Thursday at a Glance

Thursday, April 18, 2024

Georgian A	Georgian B	Georgian C	Regency (main floor)
11:45-12:20 pm			
<p>Supervisor Common Core Refresher Training</p> <p>Tom Welton, Director Health and Safety Services and Education Programs; Sam Barbuto, Health and Safety Specialist; Robert Marin, Open Pit and Surface Plant Health and Safety Specialist; and Allison Roy, Writer, Workplace Safety North; Jake Hughes, HSE Superintendent, Technica Mining</p>	<p>Machine Learning to Predict and Prevent Fatigue-Related Accidents in Mining</p> <p>Andrew Morden, President and CEO, Fatigue Science</p>	<p>(Continued:) Panel: Breaking Ground: Women’s Perspectives in Mining</p> <p>Ashley Kirwan, President and CEO, Orix Geoscience; Kaitlin Elliott, Training Superintendent, Redpath; Trina Hayden, Chief Advisory Officer, NORCAT; Cindy Schiewek, Director of Health and Safety Services, Workplace Safety North</p>	<p>One Question, Two Answers, and Five Metrics for Health and Safety Performance Management</p> <p>Michael Hartley, Managing Director, Mining & Energy, Interknowlogy</p>

Awards Luncheon – Georgian D/E

12:20-1:00 pm
Awards Luncheon

1:00-1:10 pm
Ontario Mining Contractors Safety Association Innovation Awards

1:10-1:30 pm
Workplace Safety North Awards

1:30-2:30 pm
Improving the Culture of Safety in High-Risk Environments
Jill Heinerth, Explorer-in-Residence, The Royal Canadian Geographic Society

Good leaders create a safe culture in the workplace, but how is it accomplished? Jill Heinerth addresses three primary categories that relate to risk assessment, leadership, and safety culture, including strategies and tactics for reaching a sustainable, incident-free workplace. By drawing on her experiences cave diving into some of the most dangerous places on earth, listeners will learn how to apply universal risk management strategies in their own teams and organizations.

2:30-2:45 pm
Closing Remarks
Lydia Renton, Chair, WSN Board of Directors
Director, Occupational Hygiene, Safety and Security, BluMetric Environmental, Conference M.C.

10:00-4:30 pm
Trade Show – Solarium and Hallway

Thursday Technical Sessions

Georgian A

8:00-8:35 am

Why Employee Wellness Needs to Change

Cara Lachance, Founder, Innovative Health Pathways (IHP)

Discover why and how of why employee wellness needs to change despite great efforts. There will be a review of critical issues affecting employers and employees, from work-related stress to challenges in their personal lives. Participants will gain insights into a holistic approach that goes beyond conventional wellness programs, addressing the core elements that impact employee well-being.

This presentation is a must for companies and employees seeking innovative solutions to enhance employee wellness and foster a healthier, more productive workforce. Join Cara as she shares her expertise, lessons learned, and the transformative journey that led her to pioneer change in employee wellness.

8:40-9:15 am

The Full Circle Journey of Management System Design and Implementation

Daryl McIntyre, Senior Consultant (Safety and Risk), SRK Consulting (Canada)

This presentation will discuss the overall importance of designing fit-for-purpose management systems within an organization. It will discuss the struggle smaller organizations and ones with less mature safety cultures and systems will face when trying to design and implement management systems with robust organizational requirements and the difficulty it becomes to maintain with limited resources.

The concept of diminishing returns on safety performance vs. time and resource investment as well as the need to have systems mature over time will be reviewed. How planning and setting of appropriate objectives and targets can help advance system elements based on performance reviews and initiatives will be discussed.

9:20-9:55 am

Improving the Equipment Utilization Culture

Gus Minor, COO, Sofvie

Mathieu Lachance, Asset Manager, Technica Mining

This presentation is an insightful review of how subtle updates to the workplace culture can significantly reduce personal harm and equipment damage, and help shift things drastically when it comes to equipment proactive care and maintenance. Beyond leveraging advanced sensors and other technologies, we know an engaged human being in the workplace is the ultimate marker for safe productivity.

10:25-11:00 am

Harmony Below the Surface: Integrating Psychological Practices for Health, Safety, and Culture

Jonathan D. Miller, Industrial Psychologist, Miller & Associates

Explore the integration of psychological health and safety programs within the mining industry, encompassing the incorporation of on-site psychotherapy and the establishment of psychological safety measures. This paper delves into strategies for fostering cultural change within organizations, emphasizing the importance of prioritizing mental well-being to enhance overall workplace resilience and effectiveness.

11:05-11:40 am

Some Thoughts on How to Optimize the Effectiveness of the Internal Responsibility System

Robert Barclay, Retired professional mining engineer

The Internal Responsibility System (or “IRS”) is widely recognized as being a foundational component of workplace health and safety. A key finding that came out of a formal review of occupational health and safety in underground mining in Ontario that was led by the Ontario Ministry of Labour in 2014 and 2015, is that “the IRS is being applied inconsistently in the Ontario Mining Sector, likely because there is a lack of common understanding of how the IRS should function.”

Thursday Technical Sessions

This paper has been written primarily in response to this finding. It attempts to trace the origins of the IRS and to shed light on its original intent. Moreover, it provides some thoughts on how the IRS could be executed according to a more formal structure and framework, while preserving its original intent.

11:45-12:20 pm

Supervisor Common Core Refresher Training

Tom Welton, Director Health and Safety Services and Education Programs; Sam Barbuto, Health and Safety Specialist; Robert Marin, Open Pit and Surface Plant Health and Safety Specialist; and Allison Roy, Writer, Workplace Safety North; Jake Hughes, HSE Superintendent, Technica Mining

This presentation reviews the development and industry need of the new Supervisor Common Core Refresher Training program. Based on legislative changes and industry advancements, industry identified a need for supplemental training for supervisors in the field. The purpose of the competency refresher course is to provide underground mining supervisors with a review of the key components of the WSN Supervisor Common Core suite of programs. To ensure WSN captured the most pertinent information, surveys were conducted with the Mining Advisory Committee, Mining Legislative Review Committee, and the Mining Tripartite Committee, WSN Health and Safety Specialists, and others. The information gathered was used to form the draft course outline. We will look at some of the content in the newly developed program, which includes seven sections with a focus on the OHS Act and Reg. 854 updates, supervisor responsibilities, and due diligence, as well as the risks/hazards (the top mining risk assessment/root cause analysis hazards), along with leadership skills including culture and management skills.

Georgian B

8:00-8:35 am

Reduce Worker DPM Exposure Through Filtration of Diesel Exhaust

Ralph Deayton, Sales - Technical - UG Mining, Mammoth Equipment and Exhaust

With the update to Regulation 854 last year, many underground mine sites have been exploring options for meeting the new worker diesel particulate matter (DPM) exposure limits. While there are many options for reducing DPM exposure (Ventilation/Dilution, BEV equipment), diesel particulate filters (DPF) can reduce DPM emissions by 98 per cent. This presentation seeks to lay out a practical roadmap to show how a mine site can evaluate their fleet to see which machines are the biggest contributor to underground DPM levels, and the effects/results of adding filters to equipment.

8:40-9:15 am

Digging into the Data: Top Occupational Disease Risks in Ontario Mining

Dr. Paul Demers, Director and Senior Scientist, Occupational Cancer Research Centre

The top occupational disease risks in Ontario mining, based on results from the Occupational Disease Surveillance System (ODSS) and the potential exposures will be reviewed. Understanding and addressing occupational disease risks is crucial in safeguarding the health of workers in the mining. In October 2023, the government of Ontario announced the creation of Canada's first-ever Occupational Exposure Registry, an exposure data system to track harmful exposure levels, help diagnose workplace diseases faster, improve worker compensation, and reduce costs to the healthcare system. The Occupational Cancer Research Centre is working with the Ministry of Labour, Immigration, Training and Skills Development to establish this new exposure data system for Ontario. By implementing health and safety measures, conducting regular training, and promoting a culture of awareness, we can create safer workplaces for all employees.

9:20-9:55 am

Occupational Whole-Body Vibration Exposure in Mining: Health Effects and Possible Control Strategies

Katie Goggins, Senior Scientist, Centre for Research in Occupational Safety and Health

Thursday Technical Sessions

Learn the impact of occupational vibration exposure in mining on worker health and well-being, while exploring jobs with different levels of vibration exposure. The presentation will review control strategies for whole-body vibration, and provide an update on leading-edge research on foot-transmitted vibration.

10:25-11:00 am

Overview of a CSA Standard (M424.4) for self-propelled, electrically driven, non-rail bound mobile machines for use in non-gassy underground mines
Nam (John) Le, Senior Engineer, NRCan, CanmetMINING

Diesel-powered machines may impact environmental conditions, and related health and safety in underground mines through tailpipe emissions. This spurs opportunities for alternative technologies such as battery electric, diesel-electric, and hydrogen-fuel-cell-electric equipment. These alternative technologies have the potential to reduce carbon emissions and provide cleaner working environments. However, they also introduce new health and safety hazards to the underground mining environment, including but not limited to high-pressure gas handling and storage, explosion hazards, high voltage equipment that can lead to electric shock and thermal runaway which can then produce off-gas and potential fire.

To reduce these hazards, the CSA Group revised its underground mine mobile machine standards to incorporate elements pertaining to alternative technologies and added a new standard, M424.4 to the M424 standard series in 2022. This presentation highlights the content of the M424.4 standard which includes the base system configuration of the alternative technologies and addresses technical measures for eliminating or reducing risks arising from hazards during commissioning, operation, and maintenance. Also, a focus on machine design requirements that shall be met for self-propelled, electrically driven machines for use in non-gassy underground mines will be presented.

11:05-11:40 am

From 2014 to 2023: Evolution of Workplace Risks and Risk Management in Underground Mining

Tom Welton, Director Health and Safety Services and Education Programs;
Sam Barbuto, Health and Safety Specialist; Robert Marin, Open Pit and Surface Plant Health and Safety Specialist, Workplace Safety North

The presentation reviews research on the risks workers faces while working in underground mining. Risk management research analyzes the dangers in underground mines, why they happen, and ways to make things safer. In 2014 and 2023, mining industry experts from labour and management determined top risks in underground mining and why they happen. Comparing research results over ten years shows how things have changed over the years. We will share what we found and discuss the main things that can go wrong at mines and why they happen. Plus, we will discuss the ideas and safety measures suggested by experts to make sure everyone stays safe. We will look at improvements made to make workplaces safer. Attendees will gain a better understanding of how workplace safety has evolved in the Ontario underground mining industry.

11:45-12:20 pm

Machine Learning to Predict and Prevent Fatigue-Related Accidents in Mining
Daniel Fernandez, Sales Engineer, Fatigue Science

Throughout the mining sector, operator fatigue is a leading cause of accidents, safety incidents, and lost productivity. In recent years, best practices for fatigue management have shifted from purely “reactive” methods, such as cameras detecting microsleeps, to a combination of “reactive” and “predictive” methods, where technology predicts fatigue likely to occur later in a shift. Previous work by Fatigue Science has revealed a significant improvement to safety and productivity in the mining industry due to the use of predictive fatigue technology. However, previous iterations of this technology required the deployment of wearable devices (e.g. wrist-worn sleep trackers) in the field, limiting real-world adoption by some mining firms.

Thursday Technical Sessions

In this presentation, we will evaluate the predictive strength of a Machine Learning model that predicts both fatigue and personal accident risk in mining, without requiring the deployment of wearables. In lieu of sleep data captured from wearables, key inputs to the ML model include an operator's work schedule, commute, basic demographics, and a sleep questionnaire, which are then analyzed alongside a large training dataset of 5 million anonymized sleeps, which have been recorded by industrial shift workers using wearables on the Readi platform.

Georgian C

8:00-8:35 am

The Applications of Distributed Fibre Optic Sensing Technology for Improving Safety in Mines

Zara Anderson, Vice President Mining, Silixa

Distributed fibre optic sensing (DFOS) is an innovative, yet rapidly growing technology that enables continuous and high-resolution measurement of multiple parameters along many kilometres of optical fiber cables. Silixa has been working with mines to deploy Rockmass Response monitoring solutions based on fibre optics sensing technology. In this paper, we review the recent advances and challenges of DFOS specifically in the field of underground geotechnical monitoring as well as tailings storage facility monitoring.

8:40-9:15 am

Sleeve Fracturing for In-Stress Measurement: A New Paradigm

Sia Taghipoor, Ground Control Supervisor, KGHM International

Far-field in-situ stress magnitudes play a significant role in the type and level of geotechnical challenges that an underground mine can face during the life of the mine. Several methods have been introduced to the mining industry for in-situ stress determination, e.g., overcoring, flat jack, mini-frac, and so on. Each of these methods has its limitations due to their underlying assumptions and field

technical difficulties. The Canadian hardrock mining industry requires reliable and cost-effective stress measurement techniques. The sleeve fracturing method seems to be promising when it comes to measuring stress in hard rocks.

This paper presents the results of a series of lab experiments conducted to evaluate the effectiveness of this method. The stresses applied to the samples simulate the conditions at shallow depths. The fracture pressure onset is detected using diagnostic plots. In addition to fracturing pressure, the fracture opening is also measured to confirm the results. The measurements are compared to the theoretical values calculated from stress concentration around a circular opening.

9:20-9:55 am

Introducing the ABI Bolter – A Next Generation Bolting Solution

Steve Denomme, Product Manager of Ground Support, MacLean Engineering

The ABI underground bolter has new ergonomic and diversity capabilities that offer mine workers the ability to increase equipment utilization and distance operators further from the development face and more challenging work environments. The capabilities, features, and options of this next generation equipment will be described and updates on the status of the first assembled model will be shared. Specific features of the equipment that have undergone focused operational testing at MacLean Engineering's research and development test site will be detailed. One such feature is the pumpable resin system agnostic with any resin suppliers' products.

10:25-11:00 am

Transforming Worker Safety with Digital Emergency Response

Brett Smith, Vice President, Sales, SafeSight

SafeSight will present the digital transformation of emergency response in mining, a digital solution that increases worker safety while protecting responders. By leveraging over six years of mining innovation, our operational experience and collaboration with industry subject matter experts, SafeSight has created a digital tool set of emergency response underground and on surface.

Thursday Technical Sessions

11:05-11:40 am

Panel: Breaking Ground: Women's Perspectives in Mining

Ashley Kirwan, President and CEO, Orix Geoscience; Kaitlin Elliott, Training Superintendent, Redpath; Trina Hayden, Chief Advisory Officer, NORCAT; Cindy Schiewek, Director of Health and Safety Services, Workplace Safety North

Join us for an insightful panel discussion where leading women in the mining industry share their perspectives on key topics shaping the sector. From diversity and inclusion to challenges and opportunities faced by women in traditionally male-dominated roles, this session delves deep into the critical questions that drive progress and innovation in mining. Explore how diversity strengthens the industry, the role of mentorship in fostering growth, and practical approaches for creating a more inclusive workforce. Gain valuable insights into the evolving landscape of mining and discover actionable strategies for driving positive change.

11:45-12:20 pm

(Continued) Panel: Breaking Ground: Women's Perspectives in Mining

Ashley Kirwan, President and CEO, Orix Geoscience; Kaitlin Elliott, Training Superintendent, Redpath; Trina Hayden, Chief Advisory Officer, NORCAT; Cindy Schiewek, Director of Health and Safety Services, Workplace Safety North

Regency Room (main floor)

8:00-8:35 am

The Gender Gap in Personal Protective Equipment

Anya Keefe, Occupational and Public Health Consultant, Adjunct Faculty, Anya Keefe Consulting, University of British Columbia

Significant numbers of women report that their personal protective equipment (PPE) does not fit properly, is uncomfortable to wear, and there is an inadequate selection of women-specific PPE. Despite evidence that anthropometric differences exist between the sexes, PPE continues to be designed for "all workers" based almost entirely on male anthropometry.

This is problematic as research on the gendered and sexual division of labour – and its impact on occupational health and safety – reinforce the need to pay attention to sex and gender differences in exposures and hazards as well as the unique needs of each sex in mitigating those hazards and risks. This presentation will discuss the gender gap in PPE, with an emphasis on the experiences that Canadian women in mining report having with their PPE.

8:40-9:15 am

Occupational Health, Risk, and Safety Management in Canada: Technological Solutions

Ian Saker, Managing Director, Mineware Consulting (Ply) Ltd

The Syncromine Risk Management Module by Mineware Consulting (Pty) Ltd is a system for improving health and safety in mining operations. It addresses the challenges and risks of the mining industry, which saw a rise in fatalities in the last few years. It helps identify, analyze, prevent, and mitigate hazards and risks that affect the organization and its employees. It uses a holistic risk-based approach and a closed loop control structure to manage and monitor risk at all levels. It is a comprehensive and integrated solution for risk management with AI enhanced assistance that helps the user cover all the bases.

9:20-9:55 am

Opportunities and Challenges for Wearable Technology in Underground Mining and Mine Rescue Operations

Sandra Dorman, Director, CROSH at Laurentian University

Hot work is a recognized hazard in many workplaces. Climate change is expanding the number of workplaces impacted by this hazard and the extent of that impact, with negative outcomes for workers' health and workplace productivity. To combat this issue, workplaces and workers are looking for enhancements to their hot illness prevention programs, and wearable technology is receiving attention because it offers monitoring that is individual, real-time, and can offer remote streaming of data for moment-to-moment decision making. However, little evidence is available on the

Thursday Technical Sessions

practical application of these tools and their functional use in the workplace. This presentation will give an overview of the challenges and opportunities of wearable technology for heat-illness prevention.

10:25-11:00 am

Reshaping Occupational Heat Stress Management Guidelines to Keep Ontario's Diverse Workforce Safe

Three presentations in this extended session include topics on gender, age, available research

Emily J. Tetzlaff, Ph.D. Candidate; Katie E. Wagar, MSc Student; Roberto C. Harris-Mostert, MSc Student; Human and Environmental Physiology Research Unit, University of Ottawa

Creating Equality in Physically Demanding Occupations: Defining Sex-Specific Safe Work Times for Women

Presented by: Kate Wagar, MSc Student

While the government aims to revitalize Ontario's approach to prevent occupational heat stress by introducing new heat stress regulation under the OHSA, they fail to consider sex-differences in physiological strain and fatigue that can affect heat tolerance. This is a critical shortcoming given the fact the number of women engaged in physically demanding jobs is rising rapidly in Ontario.

In this presentation, we will review preliminary findings from laboratory-based work simulation trials directed at defining gender-specific safe work times for moderate-to-heavy intensity work in very warm to very hot ambient conditions (wet-bulb globe temperature of 26, 29 and 32°C). We will review how the data generated from this study can help employers improve scheduling during hot weather or extreme heat events which includes scheduling worker/ crew replacement, rest periods, job duty rotations, and other actions to prevent excessive heat strain.

Defining Safe Work Limits to Keep Young and Older Workers Safe during a Daylong Work Shift in the Heat

Presented by: Roberto Harris-Mostert, MSc Student

Employers in Ontario have a general duty to take every precaution reasonable to protect workers. However, they are given no advice for the implementation of heat-mitigation controls when work in the heat must be continued over a prolonged work shift. This includes a lack of consideration for age-differences in thermoregulation on heat tolerance to occupational heat stress in the context of current guidelines. In this presentation, we will overview preliminary findings from our laboratory-based daylong work simulation trials directed at defining safe work times for the morning and afternoon work shift in young and older adults performing their duties in very warm environments (wet-bulb globe temperature of 26°C).

We will review how the individualized heat exposure limits can be used as an important decision-aid to assist employers, crew chiefs and workers implement appropriate heat-mitigation controls when work in the heat must be continued over a prolonged work shift. With the number of older adults engaged in physically demanding jobs rising rapidly, the information generated from this work will also help employers promote targeted solutions to ensure equitable protection for all workers.

Making Occupational Heat Stress Management 'Manageable'

Presented by: Emily Tetzlaff, Ph.D. Candidate

Occupational heat stress poses a critical threat to worker health, safety, and productivity. To address this threat, individuals involved in occupational health and safety (OHS) are tasked with developing and implementing heat stress management programs, policies, and practices. However, with workplaces receiving guidance from multiple OHS system stakeholders (e.g., provincial/territorial ministries, health and safety associations, and sector-based safety

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agencies), there is an overwhelming amount of information available and deciphering appropriate and accurate information may prove problematic, especially when applying generalized guidance in unique work environments like mining.

Thus, to effectively manage and make informed safety decisions regarding heat stress, while simultaneously managing several other critical hazards, OHS specialists require information and resources that are accurate, accessible, and timely. Therefore, we are conducting three additional knowledge mobilization-oriented studies to ensure there is industry-appropriate guidance that supports personnel engaged on the ground in occupational heat management to make site- and worker-specific informed decisions. This includes (1) a content analysis of current heat management guidance, educational resources and materials published online by OHS agencies and industry associations across Canada; (2) an interview-based inquiry into the challenges experienced by OHS representatives with heat management; and (3) the development, validation, and dissemination of a questionnaire to evaluate OHS representatives' current heat stress knowledge.

11:05-11:40 am

(Continued:) Reshaping Occupational Heat Stress Management Guidelines to Keep Ontario's Diverse Workforce Safe

Emily J. Tetzlaff, Ph.D. Candidate; Katie E. Wagar, MSc Student; Roberto C. Harris-Mostert, MSc Student; Human and Environmental Physiology Research Unit, University of Ottawa

11:45-12:20 pm

One Question, Two Answers, and Five Metrics for Health and Safety Performance Management

Michael Hartley, Managing Director, Mining & Energy, Interknowledge

Interactive presentation with the goal of getting people to think differently about what they measure and how they communicate health and safety performance.

Mining Health and Safety Conference 2024

Georgian D/E

12:20-1:00 pm

Awards Luncheon

1:00-1:10 pm

Ontario Mining Contractors Safety Association Innovation Awards

1:10-1:30 pm

Workplace Safety North Awards

1:30-2:30 pm

Improving the Culture of Safety in High-Risk Environments

Jill Heinerth, Explorer-in-Residence, The Royal Canadian Geographic Society

Good leaders create a safe culture in the workplace, but how is it accomplished? Jill Heinerth addresses three primary categories that relate to risk assessment, leadership, and safety culture, including strategies and tactics for reaching a sustainable, incident-free workplace. By drawing on her experiences cave diving into some of the most dangerous places on earth, listeners will learn how to apply universal risk management strategies in their own teams and organizations.

2:30-2:45 pm

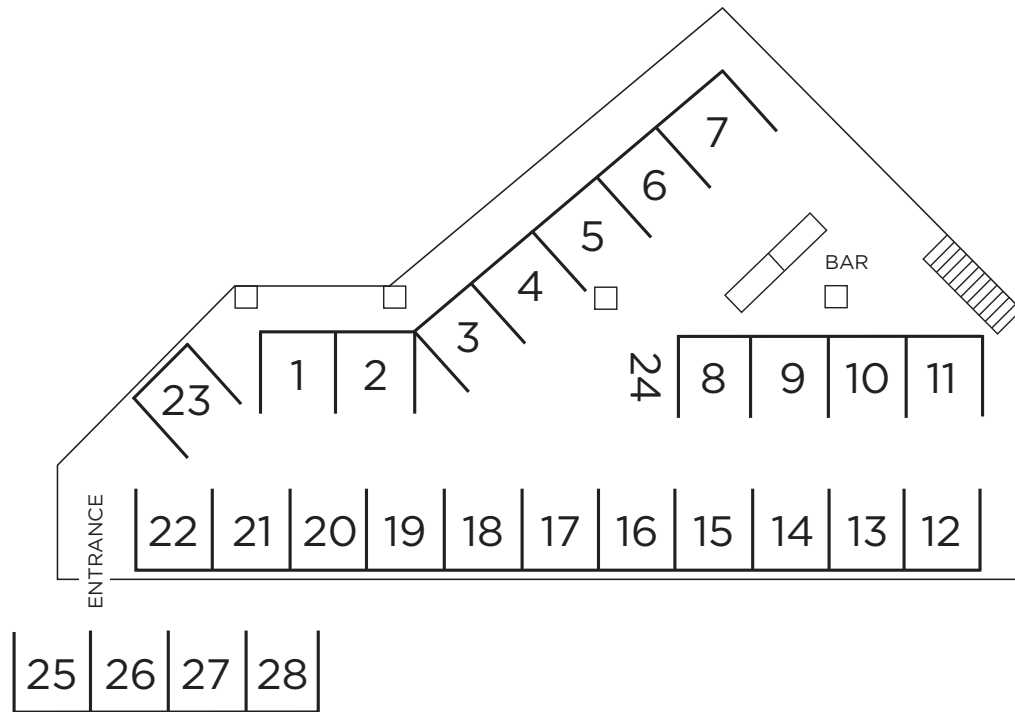
Closing Remarks

Lydia Renton, Chair, WSN Board of Directors

Director, Occupational Hygiene, Safety and Security, BluMetric Environmental, Conference M.C.

Trade Show Map

Trade Show Map Solarium



Trade Show Exhibitors

Solarium

1. Electrical Safety Authority
2. Kovatera
3. Workplace Safety and Insurance Board
4. Occupational Hygiene Association of Ontario
5. Methapharm
6. SGS Canada
7. Provix
8. NORCAT
9. Levitt Safety Ltd.
10. NATT Safety Services
11. Securo Vision
12. Vallen Canada
13. BluMetric Environmental Inc.
14. Accutron Instruments
15. TopVu
16. Draeger Safety Canada
17. SafeBox by Ionic
18. Sofvie
19. NEOMO Occupational Health
20. Becker Mining Systems
21. X-Glo North America
22. Mineware Consulting
23. Workplace Safety North
24. ASDR Canada

Hallway

25. Soucie Salo
26. SPI Health and Safety
27. Board of Canadian Registered Safety Professionals
28. STC Footwear

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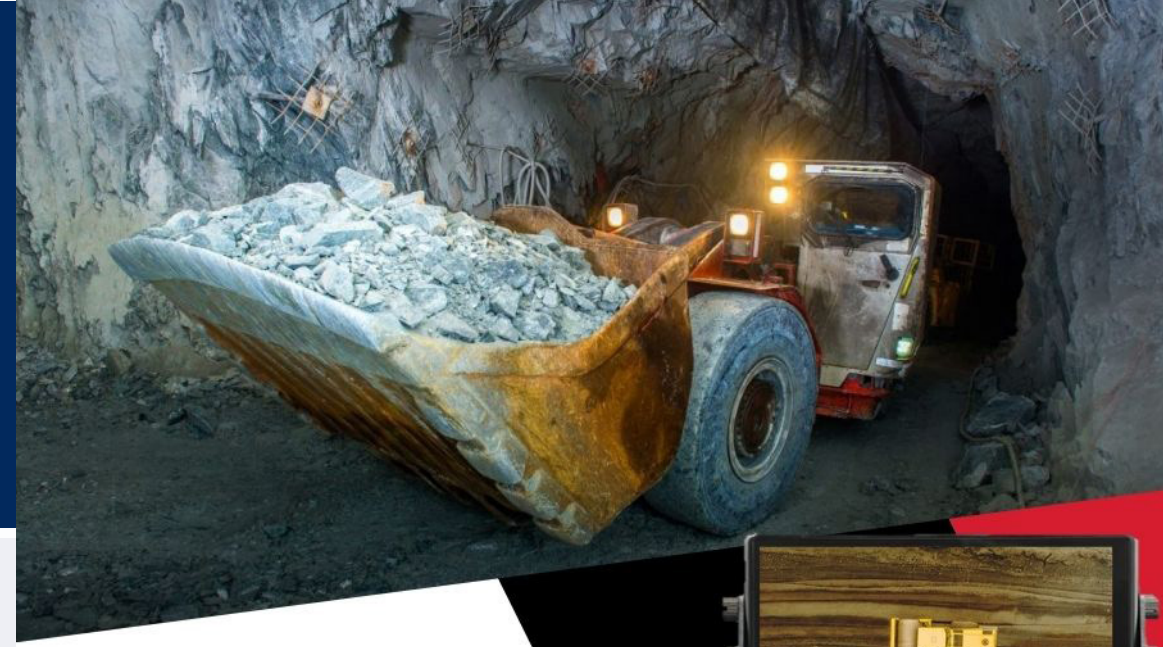
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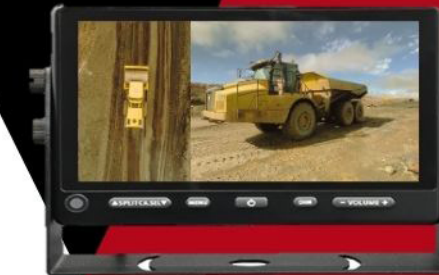
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PERSONNEL DETECTION

Here to help make workplaces safer

Workplace Safety North (WSN) is a not-for-profit health and safety association funded by the provincial government to provide approved health and safety training and services to the mining and forest products industries. A trusted safety advisor, WSN and its legacy organizations have been helping make workplaces safer since 1915.

As part of WSN, Ontario Mine Rescue (OMR) provides training to mine rescue team members throughout the province to continuously improve the skills and knowledge of mine rescue techniques and procedures. Since its creation in 1929, OMR has established a reputation for excellence in emergency response.

Headquartered in northern Ontario, Workplace Safety North knows the day-to-day realities of Ontario's resource industries. By including companies in research, risk assessments and root cause analyses, WSN builds and sustains close working relationships that ensure services and information stay relevant.



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