

Safety by Design Symposium

May 22, 2014 | Vancouver Convention Centre

Presentation summaries and speaker profiles:

Keynote speaker: Mike Toole

Presentation title: “Safety by Design: A path towards sustainable leadership.”

This presentation will introduce the concept of Safety by Design (SbD; also called Prevention through Design) as emerging technique for improving occupational safety and health across many industries. The presentation will discuss the concept of SbD and how it is related to important organizational initiatives including sustainability, systems thinking, corporate social responsibility, and change management. In addition to illustrating PtD with practical examples from construction and providing an overview of PtD initiatives across the globe, the presentation will summarize the steps that each member of the audience can take to demonstrate sustainable leadership by introducing PtD within their organization.

Speaker profile - Mike Toole

T. Michael Toole is Associate Dean of the College of Engineering, Professor of Civil and Environmental Engineering, Senior Fellow within the Society and Technology Residential College, and Director of the Grand Challenge Scholars Program at Bucknell University. He served as the Co-Director of the Institute for Leadership and Technology from 2007-2013. He received his B.S. in Civil Engineering cum laude from Bucknell University and his M.S. in Civil Engineering and his Ph.D. in Technology Strategy from the Massachusetts Institute of Technology. Dr. Toole’s research areas include construction safety, construction innovation, and project management. He has published journal articles, book chapters and conference papers and received research grants on these topics since joining the Bucknell faculty in 1999.



British Columbia - Yukon Region



Association of Canadian Ergonomists
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For more information, please contact humanfactors@worksafebc.com. To register, go to ace-ergocanada.ca.

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Dr. Toole is a professional civil engineer registered in Pennsylvania and a member of the Order of the Engineer. He initiated and maintains www.designforconstructionsafety.org. His professional employment includes serving as a Company Commander in a Seabee Battalion and Assistant Resident Officer in Charge of Construction with the U.S. Navy Civil Engineer Corps, serving as the Purchasing and Construction Services Manager with a publicly traded homebuilder, and as a Vice President with a multidisciplinary engineering firm that specialized in forensics engineering. He co-founded ventures to commercialize an innovative building panel, to provide parametric CAD services to lumberyards, and to provide structural engineering services to modular building manufacturers. He has served as the Vice Chair of the American Society of Civil Engineers (ASCE) Construction Institute Prevention through Design Committee and the Site Safety Committee and as the Co-Chair of the NIOSH NORA Construction Sector Council Construction Hazards Prevention through Design workgroup.

Dr. Toole's honors include being elected a Fellow within ASCE, receiving Best Paper awards from an ASCE journal and an ASCE conference, receiving the Class of 1956 Lectureship Teaching Award and Maxwell Award for cross-functional excellence at Bucknell University, and being nominated by Bucknell for the U.S. Professor of the Year award. He is a member of the Sigma Xi, Tau Beta Pi, Chi Epsilon, Omicron Delta Kappa and Mortar Board honor societies.

BC Hydro

Presentation Title: "Safety by Design at BC Hydro: Our Process and Our Journey"

The idea of a Safety by Design program at BC Hydro emerged in early 2007. In 6 years, the program has grown to encompass most design activities and business processes. The presentation will summarize what Safety by Design means to BC Hydro, and how the process is governed and tailored to fit the needs of the different lines of business (i.e. Generation, Transmission, Distribution). The journey presented many challenges and the presentation will discuss how these were overcome, along with a few examples of success stories.



Speaker profile – Wendy Ho, P. Eng.

As a Specialist Engineer in Safety Engineering at BC Hydro, Wendy specializes in human factors/human engineering and provides specialized engineering services to promote the integration of human factors, hazard analysis, and safety risk assessment into operations, engineering and design processes. She also specializes in performing risk analysis to support well-informed decision making on issues that may have a broad or significant impact on operations. Prior to BC Hydro, Wendy worked in various industries for 10 years with experience, ranging from wood machining research at the National Research Council, to high vacuum targetry design in the nuclear industry at TRIUMF and EbcO, to sensors/circuit board design for fuel cell systems at Ballard Power Systems and General Hydrogen, to the high volume/lowcost electric power steering system design at Teleflex. She holds a B.A.Sc. and M. Eng. in Mechanical Engineering from UBC.



Speaker profile – Daniel Ouellet, P. Eng.

Daniel Ouellet is the Team Lead of the Safety Engineering group at BC Hydro, which provides risk assessment services to all BC Hydro lines of business and supports the Safety by Design program. He first joined BC Hydro in 2008 as an Energy Management Engineer with Power Smart Engineering. From 2005 to 2008, he worked for two small medical device companies as a product engineer and project manager.

His responsibilities there included ensuring the safety of any engineering changes to a line of endoscopic imaging products. Prior to that, he worked as a research engineer with the Pulp and Paper Research Institute of Canada for 15 years. He was also an adjunct professor in the Mechanical Engineering Department at UBC from 1995 to 2001 where he led a research group specializing in Mechanical Pulping technology. He holds a B.Eng. and a Ph.D. in mechanical engineering from the Université de Sherbrooke (QC).

William Elm

Presentation title: “Dynamic Decision Making and Safety in the Real World – Putting decisions into design”

Safety is often discussed in terms of equipment reliability, policies, and procedures, leaving Safety Managers with questions like “Why did that accident/event/unsafe condition occur despite the procedures that were in place?” Often this question is asked “Why did my operator do that?”, and

in hindsight “The cause was operator error.” This situation occurs across a wide variety of work domains: process control, industrial operations, commercial enterprises, medical, aviation, air traffic control, intelligence analysis, etc. The common thread across all these seemingly different situations is the way humans are asked to be the ‘adaptive agent’, the glue, that connects mission success, capabilities, procedures, and the actual dynamic situation on the ground. By understanding lessons learned in how to effectively integrate human decision making with equipment, procedures, taskings, etc. it is possible to manage the often overlooked Decision Making dimension to safety. By improving decision making performance under stress (by adapting equipment, decision support displays, procedures, training) it is possible to improve safety in the real world of daily operations.

Speaker profile – William Elm



William C. Elm is Founder, President, and Cognitive Systems Engineering (CSE) Fellow of Resilient Cognitive Solutions (RCS). RCS is the leading innovator of Decision Centered Solutions, focusing on delivering revolutionary Advanced Decision Support Systems for the most challenging data overload, mission critical decision making situations. He specializes in the pragmatic application of CSE as an integral part of a system development practice from innovating the decision support concept, through intuitive representational design of the user experience to software development of the delivered system. Bill started in Cognitive Systems Engineering designing Advanced Control Rooms for commercial nuclear power plants, including an alarm management system that still defines the state of the art. He is one of the longest practicing cognitive systems engineers, combining over 30 years of applied CSE experience in domains ranging from process control to national intelligence with a parallel 20 year career of active and reserve military experience as an intelligence officer from tactical to joint command level. He has BS and MS degrees in Electrical Engineering and PhD coursework in Artificial Intelligence as a Westinghouse B. G. Lamme scholar from Carnegie Mellon University. He has several patents and numerous professional publications.

Brian Boswell

Presentation title: “Current Developments in FPIInnovations Steep Slope Harvesting Research Program”

FPIInnovations, Canada’s applied research institute for forest operations, is supported by industrial member companies, and Federal and Provincial governments. Its steep slopes harvesting research program helps its members improve safety and reduce costs when operating on the steeper terrain common to many areas in BC. Current research topics include development and validation of a static stability testing protocol, evaluation of a tilt-cab loader-forwarder, linkage of LiDAR-based ground mapping to as-experienced machine inclination, and the application of six-wheel skidding systems to steep slopes. Future projects will extend the learnings from the recent feller-bunchers tilt-table testing into real-world application. Brian Boswell is a researcher in the Harvesting Operations group, and will present an overview of the steep slope harvesting research program.



Speaker profile: Brian Boswell

Brian Boswell is a Senior Researcher in FPIInnovations’ Harvesting Operations Program. He has studied a broad range of forest harvesting topics since 1993 and specializes in steep slope harvesting issues. Prior to his research career he worked as a forest engineer for 10 years on the BC Coast and in the BC Interior. Brian has a Bachelor of Science in Forest Engineering from Oregon State University and is a Registered Professional Forester in British Columbia.

Kyle Hultgren

Presentation title: “Rational Design of Safe Healthcare Practices”

This session will emphasize the importance of purposeful and directed process design in healthcare systems. We will identify the importance of establishing larger macrosystem strategic goals and how these goals must be correlated to individual employees at the microsystem or process level. We will step through a methodology to not only create objective and meaningful measures for each of these systems perspectives, but how to use these measurements to rationally design new processes for the safe delivery of healthcare.



Speaker profile - Kyle Hultgren

Kyle Hultgren is Director of the Purdue University College of Pharmacy's Center for Medication Safety Advancement and holds a courtesy appointment as Clinical Assistant Professor of Pharmacy Practice. In his role at CMSA he pursues the development of innovative safe medication use practices as well as engaging methods to educate healthcare practitioners and student pharmacists. Dr. Hultgren is a co-author of a certification program in partnership with Purdue University and the United States Veterans Health Administration on Lean Healthcare and Systems Redesign that has been provided to over 8,000 professionals in health systems nationwide. His current work includes predictive analytics for adverse drug events and utilizing simulation methodologies for training medical professionals on safe medication use practices. He also serves as Chairman of the Rx-SafeNet Practice Based Research Network Advisory Board for community pharmacy based medication safety research in Indiana. In 2013, he received the Indiana Society of Health-System Pharmacists "Glen Sperandio Hospital Pharmacist of the Year" Award. Dr. Hultgren received his Doctor of Pharmacy from Purdue University College of Pharmacy in West Lafayette, Indiana.