

**AGAT** Laboratories 

# tech talks 2022

ENVIRONMENTAL SCIENCE AND TECHNOLOGY

**virtual event**

march 7 to 18

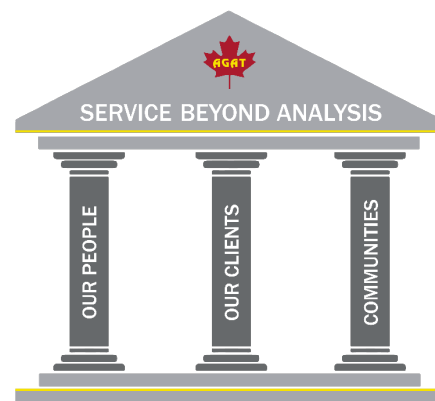
# Welcome to the 2022 AGAT Science and Technology Talks!

As Chief Executive Officer of AGAT Laboratories, it is once again my distinct pleasure to welcome you all to the 2022 edition of our Science and Technology Talks. This year we are focused on celebrating innovation, advancements in science and environmental successes coast to coast to coast.

These sessions are hosted each year as they align with our company purpose “Service Beyond Analysis”. For us our purpose means that we are more than just analytical data, beyond the analysis we provide our ultimate goal is to serve. In that respect, our purpose is upheld by the three pillars critical to our business: Our People, Our Clients and the communities that surround us. Being able to host these technical sessions for you all allows us to showcase our commitment to serving you, our valued clients, while also providing us a chance to highlight the incredible work going on in our communities.

Throughout the year we will continue to stand behind our purpose and prove to you all what an important part of our company you play within our structure. The support that you continue to provide us gives us the stability to remain strengthened and resilient across all operations.

We look forward to this year’s sessions as they are filled with insight from industry leaders looking to share their knowledge and passion. I am delighted that you have chosen to partake in these sessions and to support one another in furthering our professional development.



To our distinguished speakers, please accept a very sincere thank you on behalf of all of us at AGAT as well as our attendees. Without your involvement and support these events would not be possible, and for that we are truly appreciative.

Sincerely,

**Marissa Reckmann**  
Chief Executive Officer

## Supporting Initiatives that Save Lives

Dear Tech Talks Participant,

Following the amazing success of last year's launch of our virtual AGAT Tech Talks, we have put together another round of solid presentations for the 2022 edition. Thank you to all of the returning attendees and welcome to all who are new to this webinar series!

Once again, we have a fantastic lineup of amazing speakers and some new innovative topics and broad-spectrum subjects that will appeal to all. We are excited to have upgraded our broadcast venue to AGAT's Michael DeSanti Centre for Excellence and we look forward to meeting special guests, having a few laughs, and most importantly, enabling all attendees to walk away well-versed in the vast array of great topics featured in our program.

The AGAT Foundation, in collaboration with AGAT Laboratories, will be using this year's funds to directly support our local communities and donate to an organization that supports communities across our country: Food Banks Canada. With the rising cost of food and materials over the last number of months, we felt this would be an organization that could really use some help this year and we look forward to making a large contribution thanks to all the attendees participating in this edition.

For those of you who are new to our virtual AGAT Tech Talks, the AGAT Foundation was formed as a natural progression of AGAT Laboratories' historical and ongoing participation in charitable endeavours for over 42 years. The Foundation's purpose is to unite people who share a common vision of building, creating and healing through knowledge and scientific advancements. The AGAT Foundation is committed to bridging the gap between industry, communities and different disciplines of science.

Recent endeavours of the AGAT Foundation include sizeable funding initiatives in Alberta aimed at improving patient care in our province, namely: \$700,000 raised for the Prostate Cancer Centre's November "Keep It in Alberta" campaign, a \$600,000 donation to the Rockyview and Peter Lougheed Hospitals for the procurement of breast-conserving surgical equipment, a \$350,000 donation to procure the first PSMA-PET CT device for the Tom Baker Cancer Centre, and funding for the procurement of a new Cyclotron in Alberta.

The AGAT Foundation represents an ever-growing number of private and public partners that help us to achieve goals that were previously not possible. We encourage you to view more information about the Foundation and its projects on the website [www.agatfoundation.com](http://www.agatfoundation.com).

On behalf of all our collaborators, the AGAT Foundation and AGAT Laboratories, thank you for your support in this endeavour and we look forward to showcasing some great presentations!

# Program

## week one

### March 7

**8:25 AM** **Introduction and Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*

**8:30 AM** **Understanding Polycyclic Aromatic Compounds (PAHs): Get More Out of Your Data, Don't Just Tabulate – Let's Interpret**  
Court D. Sandau, PhD, Principal  
*Chemistry Matters*

**TBD** **Qualified Persons Considerations for the Excess Soil Management**  
D. Grant Walsom, B.A.Sc., P.Eng., QP  
*XCG Consulting Limited*

### March 8

**8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*

**8:30 AM** **Total versus Phytoaccessible Concentrations of Bromacil and Tebuthiuron**  
Jackie Maxwell, P.Ag., M.Sc. (Expected Graduation April 2022)  
*University of Alberta / InnoTech Alberta, Soil Sterilants Program*

**TBD** **Surfactant Enhanced Extraction of Semi-Volatile and Volatile Contaminants Within Soil and Groundwater Regimes**  
George (Bud) Ivey, B.Sc., CES, CESA, P.Chem., EP, President & Senior Remediation Specialist  
*Ivey International Inc.*

### Panel Discussion

**TBD** **Human Resources in 2022 – Trends, Retention and Turnover – What Does a Modern Workplace Look Like?**  
Sara Leslie, Vice President, Human Resources - *AGAT Laboratories*, Shama Joynt, Culture and Engagement Specialist - *Trestle Management*, Meenakshi Lamba, Newcomer Employment Lead - *Immigrant Services Calgary* and Lee Reckmann, President - *Launch Recruiting*

### March 9

**8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*

**8:30 AM** **Site-Specific Risk Assessment as a Cost-Effective Step in achieving Regulatory Closure at a Former Gas Plant in Southern Alberta**  
Amy Gainer, PhD, PAg, Environmental Toxicologist/Risk Assessor  
*Advisian*

**TBD** **How to successfully use Low Temperature Thermal Desorption for Remediation of Hydrocarbon Contaminated Soil**  
Darryl Nelson, President  
*Nelson Environmental Group Inc.*

# Program

## week one

### March 10

**8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*

**8:30AM** **The Headaverse: Your Mental Health in the Era of Digital Immersion**  
Ryan Todd M.D. FRCPC, CEO  
*Headversity*

**TBD** **Extraction System Optimization: The Importance of Proper Characterization of a Groundwater Plume**  
Janine Wildschut, Ph.D., P.Biol., RPBio., Manager, Reclamation and Remediation  
*Flint Environmental Services*

### Panel Discussion

**TBD** **Indigenous Relations – How Can We Support, Build and Foster a Better Future?**  
Lawrence Gervais, President - *Métis Nation of Alberta - Region 3*, Edmond Collins, Manager Indigenous Relations - *Englobe*, and Steve Saddleback, Director - *National Energy Business Centre of Excellence at Indian Resource Council of Canada*

### March 11

**8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*

**8:30 AM** **How Engagement and Collaboration Make or Break a Project**  
Chris T. Tenszen, B.Sc., P.Ag. and Sahra Deagle, Environmental Scientist  
*Trace Associates*

**TBD** **Canadian Economic Outlook: What now, what next?**  
Aaron Goertzen, CFA, Senior Economist & Director, Economic Research  
*BMO*

\*All presented times are in MST.

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# Program

## week two

### March 14

- 8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*
- 8:30 AM** **Automated Clay Analyzers for Near Real-Time Measurements of Clay Activity in Oil Sands and Mining Tailings**  
Jason Ng, MSc., Research Associate  
*Northern Alberta Institute of Technology*
- TBD** **Remediation and Plant Upgrade Project Example**  
Thomas Jacklin, M. Eng, P. Eng., Principle Environmental Consultant/Senior Project Manager  
*Transmountain/Advisian*

### March 15

- 8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*
- 8:30 AM** **Grieving and Healing Together**  
Shirley Thiessen, Executive Director  
*CornerBend Ministries*
- TBD** **Energy in a Post-Pandemic World**  
Chris Slubicki, Former President, CEO and Director  
*Modern Resources Inc*

### Panel Discussion

- TBD** **Unity in Canada's Environmental Landscape**  
Stacy Thygesen, President ESAA and Principal - *JSK Consulting*, Kelly Zadko, President CLRA and Vice President Business Development - *North Shore Environmental*, Marissa Reckmann, CEO - *AGAT Laboratories* and Chris Slubicki, former President, CEO and Director - *Modern Resources Inc*

### March 16

- 8:25 AM** **Good Morning /Welcome**  
Kelly Howard, B.Sc, Director of Marketing  
*AGAT Laboratories*
- 8:30 AM** **Evaluation of Chronic Toxicity to *Hyalella azteca* Exposed to 6:2 Fluorotelomer Sulfonate in Water**  
Mathew Coady, MREM, R.P.Bio. and Lindsay Paterson, M.Sc., P. Ag.  
*SLR*
- TBD** **Stress - Mind, Body, Health**  
Dr Elsa Wagdy, I-MD, DNM, PhD, MA, MBA, MNM, HHP  
*Elsa Wagdy*

# Program

## week two

### March 17

<b>8:25 AM</b>	<b>Good Morning /Welcome</b> Kelly Howard, B.Sc, Director of Marketing <i>AGAT Laboratories</i>
<b>8:30 AM</b>	<b>AFFF and Fluorine-free Alternatives; Update on Regulatory Considerations, Best Management Practices and Transition Considerations</b> Shalene Thomas (Derouard), VP, Global Emerging Contaminants Program Manager <i>Wood</i>
<b>TBD</b>	<b>Risk Assessment of Groundwater Impacts using the GroundWater Spatiotemporal Data Analysis Tool (GWSDAT)</b> Luc Rock, PhD, P.Geo., Shell Global Solutions International B.V., NL, and Wayne Jones, PhD, Shell Global Solutions (UK) Ltd. <i>Shell</i>

### March 18

<b>8:25 AM</b>	<b>Good Morning /Welcome</b> Kelly Howard, B.Sc, Director of Marketing <i>AGAT Laboratories</i>
<b>8:30 AM</b>	<b>Excess Soils Reg. 406/19 – A Contractor’s Perspective</b> Mike Gawel, Project Manager, Director of Field Operations <i>Vertex Environmental Inc.</i>
<b>TBD</b>	<b>Cybersecurity: Know the Risks</b> Dave Kawula <i>TriConElite</i>

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# Understanding Polycyclic Aromatic Compounds (PAHs): Get More Out of Your Data, Don't Just Tabulate – Let's Interpret

**Court D. Sandau, PhD, Principal**  
Chemistry Matters

## Abstract

Polycyclic aromatic hydrocarbons (PAHs) should be treated differently than routine environmental contaminants when measured as part of your environmental investigation. They present with distinctive fingerprints from their sources and move together in the environment as a family of compounds. Therefore, all environmental investigations measuring PAHs should take the time to interpret PAH results and not simply tabulate the data and compare them to regulatory standards. This presentation will describe some fundamentals of PAHs and PAH fingerprints as well as demonstrate how they can be used to help your environmental investigations. The presentation will also discuss more advanced PAH forensics techniques, big data analysis, and their uses in environmental whodunit and liability cases.



**Court D. Sandau**

Court Sandau is a PhD chemist that has been researching, measuring, interpreting, fingerprinting and source apportioning polycyclic aromatic hydrocarbons (PAHs) for over 20 years. He works as an expert witness and subject matter expert on PAHs for litigation matters and is a sought-after expert for US superfund site litigation. He is principal and owner of Chemistry Matters Inc and Statvis Analytics Inc.



# Qualified Persons Considerations for the Excess Soil Management

**D. Grant Walsom, B.A.Sc., P.Eng., QP**

XCG Consulting Limited

## Abstract

With the final Phase of Ontario Regulation 406/19 (On-site and Excess Soil Management) now fully in force, the reliance upon Qualified Persons has never been greater. This presentation will outline the Roles and Responsibilities of Qualified Persons within O.Reg. 406/19 with details and some reference to Best Practices related to delivery of QP services.



**D. Grant Walsom**

A senior remediation engineer with over 27 years of experience and a Partner at XCG Consulting Limited. Mr. Walsom is a Professional Engineer registered in Ontario, Nova Scotia, and Alberta, and a registered Consulting Engineer in Ontario. In addition, Mr. Walsom is a Qualified Person as defined by the Ontario Regulations (O. Reg.) 153/04 and 406/19.

Mr. Walsom currently is the Past-Chair of the Board of Directors for the Ontario Environment Industry Association (ONEIA) and is the co-Chair for the Excess Soils Working Group. Mr. Walsom also currently serves the Canadian Brownfield Network (CBN) as an advisor after 10 years on the Board of Directors (3 years as President). He was proudly named the 2015 “Brownfielder of the Year” by the Canadian Urban Institute and received the ONEIA “Skip Willis Award” for 2019.

Mr. Walsom enjoys participating in speaking engagements and presentations regarding site

remediation case-studies, Brownfield redevelopment and excess soil management.

He is currently representing ONEIA in the Ministry of the Environment, Conservation and Parks Excess Soils Engagement Group for the implementation of new excess soil management rules and regulations in Ontario. He led the steering committees and creation of the Excess Soils Best Practices documents and training materials by ONEIA for the MECP as well as the Aggregate Pits and Quarries Best Practices development by the Ontario Society for Professional Engineers (OSPE). Mr. Walsom has participated in the organizing committee and presented at the Soils Symposia held in Ontario in 2016 through 2020, as well as presenting at the 2021 on-line Soils Symposium.

Mr. Walsom championed the creation of the Qualified Persons Community of Ontario (QPCO) that was formed in early 2021.

# Total versus Phytoaccessible Concentrations of Bromacil and Tebuthiuron

**Jackie Maxwell, P.Ag., M.Sc. (Expected Graduation April 2022)**

University of Alberta / InnoTech Alberta, Soil Sterilants Program

## Abstract

Soil sterilants were applied at industrial sites across Alberta from the 1960s to the late 1990s for non-selective vegetation control to reduce fire hazards and discourage animal presence from industrial sites. Despite halting use in the 1990s due to concerns over persistence and leachability, residual soil sterilants are often found at industrial sites decades later. Many of the sites are at or nearing the end of their productive lives, thus requiring assessment, remediation, and reclamation.

Bromacil and tebuthiuron, the two most common soil sterilants in Alberta, have proven to be unique and challenging contaminants to manage in both soil and water. They are often distributed widely through a site and sometimes beyond its boundaries. Historical management practices involved the use of activated carbon as an adsorbent to control migration. Bromacil and tebuthiuron are also known to adsorb to soil organic matter and clay particles. To accurately develop conceptual site models, assess risk and develop site specific soil and groundwater remediation guidelines, a need was identified for an analytical method that would help practitioners differentiate the 'total' soil sterilant concentration from that which would be readily available to plants (i.e., phytoaccessible).

Soil concentrations of bromacil and tebuthiuron are currently assessed by commercial laboratories for total concentration using vigorous methanol extraction followed by chromatography. Total concentration in

soil does not account for bromacil and tebuthiuron 1) adsorption to organic matter; 2) to soil particles (i.e., sand, silt, or clay); or 3) to remedial amendments (e.g., powdered activated carbon). Total concentration of bromacil and tebuthiuron in soil may not assess the current risk aged bromacil and tebuthiuron pose to receptors of concern.

Total sterilant concentration allows identification of bromacil or tebuthiuron as meeting or exceeding provincial guidelines. In the case of an exceedance, risk assessment of identified total concentrations may be pursued. Under a risk management plan (RAP), phytoaccessible concentrations of bromacil or tebuthiuron could be assessed by extraction with 0.01 M calcium chloride, a common solution used in adsorption and desorption studies of not only organic contaminants, but also of metals and nutrients.

My lab results show that 1) 0.01 M calcium chloride does extract a lower concentration of bromacil or tebuthiuron than methanol extraction, or the available spiked concentration, and 2) organic matter contributes to adsorption of bromacil and tebuthiuron; clay does not significantly affect their adsorption; and there is not a significant interaction between clay and organic matter on adsorption. These results may be applied in an RAP for monitoring of phytoaccessible bromacil and tebuthiuron concentrations in soil and promote use of organic matter amendments to mitigate leaching.



**Jackie Maxwell**

I have been a Project Environmental Scientist with Thurber Engineering since 2013 and am based in Edmonton. Project work has involved Phase I, II and III Environmental Site Assessments, Risk Management Plans, remediation, groundwater monitoring and soil characterization and assessment. My graduate degree is a joint project between the U of A and InnoTech Alberta. InnoTech's Soil Sterilants Program is suite of applied research projects aimed to improve efficiency in addressing bromacil and tebuthiuron concentrations in soil and groundwater in Alberta. For further information on the Soil Sterilants Program, please contact Simone Levy, Research Scientist, Environmental Impacts at InnoTech Alberta ([simone.levy@InnoTechAlberta.ca](mailto:simone.levy@InnoTechAlberta.ca)).

# Surfactant Enhanced Extraction of Semi-Volatile and Volatile Contaminants Within Soil and Groundwater Regimes

**George (Bud) Ivey, B.Sc., CES, CESA, P.Chem., EP, President & Senior Remediation Specialist**  
Ivey International Inc.

## Abstract

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**George (Bud) Ivey**

George (Bud) Ivey is the President and Senior Remediation Specialist with Ivey International Inc. with global headquarters in Vancouver, Canada. He has over twenty-five years of environmental site assessment and remediation experience. He has worked on more than 2500 major environmental projects, taking him to over 50 countries globally. His multi-disciplinary education includes: Synthetic Organic Chemistry, Geological Engineering, and a Master's Certification in Project Management.

Among his more notable accomplishments include:

- Several International Environmental Remediation Product and Process Patents;
- Recipient of many International Environmental Awards;
- Completed a 'first' remediation project in a developing EU country;
- Developed a PFAS free, biodegradable fire suppression product; and
- Completed an IRONMAN

# Human Resources in 2022 Trends, Retention and Turnover – What Does a Modern Workplace Look Like?

**Sara Leslie, Vice President, Human Resources** - AGAT Laboratories, **Shama Joynt, Culture and Engagement Specialist** - Trestle Management, **Meenakshi Lamba, Newcomer Employment Lead** - Immigrant Services Calgary and **Lee Reckmann, President** - Launch Recruiting



| Sara Leslie

Sara Leslie is an accomplished leader in Human Resources. With over 23 years of experience in HR, she has a passion for transformational leadership and talent development that enhances a culture of productivity and enriches the people experience.

Sara completed her 9 year career at Maxxam Analytics (BV Labs) in 2020 as the Director of Human Resources in Canada. Prior to working in the laboratory sector, Sara held positions of increasing responsibility in big-box retail and heavy equipment distribution. Throughout her career, Sara has been successful in building and streamlining HR processes for consistency, efficiency and growth.

Sara holds an B.Sc. in Biology/Anthropology from Trent University, a Certificate in Human Resources Management from Georgian College, and she is a Certified Human Resources Professional.



| Shama Joynt

Shama Yunus-Joynt is an experienced Human Resources professional with over 15 years of experience practicing HR in a variety of settings and industries. As a culture and engagement specialist, Shama engages with her clients in a deep and personal manner which uncovers desired objectives and the barriers to achieving those objectives, be they personal, organizational, situational or all three. Shama also brings a background in coaching and mental health which informs her approach to create meaningful change that engenders buy in from the organizations she works with.

Shama is a PROSCI certified change manager, utilizing her knowledge of this methodology to lead organizations through change; she has the ability to connect with and support leaders and employees alike, bringing a vast array of skills to bear on the people side of change. Her agility in communication techniques and her ability to provide meaningful support to all members of an organization makes her an expert in this field.



| Meenakshi Lamba

High-performing results producing career of 26 years with in-depth knowledge and understanding of applying troubleshooting tools to assist end-users; Demonstrated proficiency in process execution and leading training sessions; Strong and decisive individual with excellent analytical, organizational, team building and execution skills. Maintain uncompromising focus on high standards of safety and results; Effective technical, communication, and facilitation skills. Demonstrated strengths include flexibility across industries and organizational verticals, intuitively seeing genuine opportunities to provide additional value, building strong working relationships, leveraging keen analytical skills, and thought leadership.



| Lee Reckmann

Lee Reckmann is the President and CEO of Launch recruiting, an executive search firm with headquarters in Calgary, AB and operations across Canada. Lee commenced his career in recruitment in 2005 after graduating with a business degree from Lakehead University. He stumbled upon the recruitment industry rather by chance, after moving to Calgary from Ontario and starting a role with a search firm in the city. He quickly realized that he had a passion for people and helping them find careers they were passionate about. After 8yrs learning the business the old school way (no LinkedIn or indeed back then!), Lee ventured on his own to start his own firm, Launch Recruiting in 2011. Since then he has continued to build his talent hunting repertoire among the oil and gas, construction and manufacturing industries, growing clientele across Canada and into the US. With 17 years now in the industry he is focusing more of his efforts on helping to mentor the next generation of recruitment professionals, while working closely with his clients to develop best practices in talent acquisition across their operations. Outside of the office, Lee is highly involved in the community volunteering his efforts to coaching basketball with club programs here in Calgary.

# Site-Specific Risk Assessment as a Cost-Effective Step in achieving Regulatory Closure at a Former Gas Plant in Southern Alberta

**Amy Gainer, PhD, PAg, Environmental Toxicologist/Risk Assessor**  
Advisian

## Abstract

To obtain regulatory closure at a former gas liquids straddle plant within the saline zone of southern Alberta, various risk-based approaches were implemented in a Site-specific risk assessment (SSRA). Contaminants of potential concern in soil and groundwater at the Site included sterilants, petroleum hydrocarbons and metals. Using a combination of methods including fate and transport modelling, consideration of natural salinity in the area and statistical approaches, the SSRA concluded minimal remedial actions were required and no long term monitoring was necessary. The SSRA was accepted by regulators, allowing the Site to progress from the assessment to reclamation stage following a minor excavation.



**Amy Gainer**

Dr. Amy Gainer is an environmental toxicologist and risk assessor in Advisian's Edmonton office. She is a soil ecotoxicology expert and has ten years experience in risk assessment, toxicology and contaminated sites.

# How to successfully use Low Temperature Thermal Desorption for Remediation of Hydrocarbon Contaminated Soil

**Darryl Nelson, President**

Nelson Environmental Group Inc.

## Abstract

Nelson Environmental Remediation (NER) has been offering Low Temperature Thermal Desorption soil remediation services for 30yrs. The most commonly used method to treat hydrocarbon impacted soil is disposal at a landfill site. This method, however does not remediate the soil, it merely re-locates the problem while the property owner maintains the liability and is not sustainable in the long term. Low Temperature Thermal Desorption (LTTD) is an innovative process of remediating hydrocarbon contaminated soils, sediments and sludge in a sustainable manner which preserves the remediated soil for re-use that eliminates liability.

LTTD is an Ex-Situ means of physically separating volatile and semi volatile organic contaminants from the soils through application of heat, incorporating sound environmental practices. Hydrocarbon impacted soils are placed in a chamber, and heated to volatilize the hydrocarbons. The contaminated gaseous vapours are then run through a bag house to remove particulates and the contaminants destroyed using a thermal oxidizer., converting them into carbon dioxide and water.

The clean soil can be used to fill in the excavation at the site Nelson will discuss the performance factors that the consultant must be considered in order to successfully use Low Temperature Thermal Desorption.. These factors include proper up logistical planning, site requirement issues equipment operating factors,

logistical planning, soil's physical properties of the soil, contaminant characteristics and concentration, volume of contaminated soil, by-products of the treatment process, and fuel sources, all factors that can affect the effectiveness of the treatment process. Operational issues; like frost and frozen ground conditions, plant operations, treated stockpile confirmation sampling and reinstatement/backfilling will be discussed to help understand the real issues that occur after the selection of the technology.



**Darryl Nelson**

Darryl was born 1962 and raised near Vermilion, Alberta, Canada with a family business in agriculture and heavy equipment earth-moving construction and reclamation founded in the 1960's by his late father John.

Darryl and his brother Warren founded NELSON Environmental Remediation Ltd. in 1992 specializing in thermal remediation of soil contaminated with organic compounds such as petroleum hydrocarbons and other chemicals. The company mobilizes to contaminated sites nearly anywhere in the world and specializes in large-scale soil remediation projects urban or remote, often operating in extreme climates such as the Arctic or the tropics. NELSON has worked throughout North America and internationally serving clients with guaranteed elimination of contaminated soil liability via thermal desorption, a robust sustainable solution delivering certainty with the slogan "Clean Dirt, No Doubt!".

The NELSON head office is located near Spruce Grove, a suburb of Edmonton, Alberta. NELSON Environmental is honoured to have won the 2015 Alberta Clean Tech Export award and 2016 Business in Edmonton Leaders award.

Darryl studied Business Administration at the Northern Alberta Institute of Technology (NAIT) graduating with honour in 1984.

# The Headaverse: Your Mental Health in the Era of Digital Immersion

**Ryan Todd M.D. FRCPC, CEO**

Headversity

## Abstract

The era of digital immersion is upon us, with the new 'metaverse' that is all the rage and pushing us into a virtual world. But this digital transformation, both in our personal and professional lives, is coming at a cost. We are now more distracted than ever before, with mental health concerns skyrocketing in the last 20 years. This session with Dr. Ryan Todd, CEO and co-founder of headversity, talks about some of the digital trends that we're seeing at large and how they're affecting us mentally. It also offers some practical ways we can build digital sanctuaries in our lives to protect our mental wellbeing, and a unique perspective on how leaders should be re-thinking engagement in this digital era.



**Ryan Todd**

Dr. Ryan Todd is a psychiatrist and technologist, founding the workplace mental health and resilience platform, Headversity. His work at Headversity brought together a team of psychiatrists, psychologists, and educators to build an industry-redefining platform that is setting the new standard for workplace mental health, working with some of North America's leading employers such as Shell Global, First Group America, and United Way. Dr. Todd is also an award-winning documentarian, a Top 40 under 40 recipient with Avenue Magazine, a published researcher, and the host of the popular HR podcast, "Beyond the Checkbox". Through Headversity, Dr. Todd envisions getting the core training skills out of the backlogged mental health system and into employees' hands.

# Extraction System Optimization: The Importance of Proper Characterization of a Groundwater Plume

**Janine Wildschut, Ph.D., P.Biol., RPBio., Manager, Reclamation and Remediation**  
Flint Environmental Services

## Abstract

Despite the up-front costs and time it takes to properly characterize a groundwater plume prior to the implementation of a remediation system, it is definitely worth the investment. This case study demonstrates what can and did go wrong when an ad-hoc environmental strategy was used to characterize and remediate a brine plume that was created near a lined brine pond back in the 80s. When Flint Environmental took over this site, a top-of-the-line groundwater extraction system had just been installed the year prior, which unfortunately was not successful in groundwater or salt concentration removal. A few key components were missing: a conceptual site model, an extraction system design diagram, an advanced understanding of the site hydrogeology and contaminant fate and transport, and a risk assessment. Flint Environmental will outline what was completed to step back from the site, make a holistic and thorough review of the site history and come up with a new plan that was going to be cost effective and appease the regulator and client. The specific objectives for this project were to:

- Update the geological and hydrogeological framework and conceptual site model;
- Evaluate the historical brine source areas, spills and discharging leading to brine solution [i.e. chloride (Cl)] mass inputs into the subsurface;
- Develop 3D visualization models based on all current and historical soil and groundwater chloride

chemical results to evaluate the source area distributions and chloride impact distributions, mass and plume architecture;

- Review and evaluate the groundwater geochemistry, fate and transport and chloride plume stability;
- Review and evaluate the groundwater extraction system, capture zones and volume recovery;
- Optimize the groundwater extraction system with an updated containment strategy; and
- Propose new supplemental extraction well locations to optimize groundwater plume recovery and groundwater monitoring wells for delineation.

3D data visualization soil and groundwater modelling and geochemical (Piper, Durov and Stiff Diagrams and chloride/bromide ratios) interpretations were completed to provide insight into the remedial extraction target zones, and new extraction wells were planned. Due to the complex stratigraphy and low permeability of the brine rich target zone, sand proppant fracture emplacement was completed to increase extraction volumes.

In this presentation, Flint Environmental will outline what was known about the site when they took it over and then describe the challenges and successes of the past year to get support by the client and regulator. Some unique strategies that will be described include salt forensics and sand proppant fracturing.



**Janine Wildschut**

Janine Wildschut, Ph.D., P.Biol., is a Professional Biologist and Ph.D. graduate with over 13 years of environmental site assessment (ESA) experience for reclamation and remediation in the upstream and midstream oil and gas industry. She is the Southern District Manager of the Flint Environmental Services team and she is a well-rounded environmental scientist with experience in the management and mitigation of environmental risk at active midstream facilities with multi-million-dollar liabilities. Her current initiatives involve growing her team and building Flint Environmental's reputation in the environmental consulting industry of Western Canada.



# Indigenous Relations: How can we support, build and foster a better future?

**Lawrence Gervais, President** - Métis Nation of Alberta - Region 3, **Edmond Collins, Manager** - Indigenous Relations and **Steve Saddleback Director** - National Energy Business Centre of Excellence at Indian Resource Council of Canada



**Lawrence Gervais**

Lawrence Gervais is the Regional President for the Métis Nation of Alberta. Lawrence has worked for the Urban Indigenous community for 20 years both as a Program Developer and Executive Director, including many Aboriginal Friendship Centres across Western Canada, the Downtown Eastside in Vancouver and currently, the Métis Nation of Alberta.

Lawrence is currently the Co-Minister of Education, Training and Research at Rupertsland Institute, a Métis National Council delegate and is an Executive for the Métis Nation of Alberta. Lawrence believes that supporting Métis inclusion in Indigenization will only initiate the systemic change that is needed throughout Canada for the Métis Nation.

Lawrence spent 17 years as a Classical Ballet Dancer in his junior years and has transferred those acquired skills to his style of leadership.



**Edmond Collins**

A life-long member and resident of Fort William First Nation, Ed graduated from a local high school within the city of Thunder Bay further enrolling at Confederation College where he pursued Building Technology and then Law and Security.

With the position as Economic Development Manager it allowed him to represent Fort William First Nation in various industrial ventures such as the FWFN Solar Park and expansion to the Bowater Stud Mill plant located on property owned by FWFN.

Ed is the Manager of Indigenous relations for Englobe where he works to create proper, healthy meaningful partnerships and working relationships with industry and the First Nations. has created training programs within his industry promoting and educating about First Nations.

Ed and his wife Nancy have two children and are proud to call Fort William First Nation his home.



**Steve Saddleback**

Steve Saddleback is a member of the Samson Cree Nation located in Maskwacis, AB; A signatory to Treaty Number Six.

He is the Director of the National Energy Business Centre of Excellence (NEBCE) at the Indian Resource Council of Canada (IRC).

Steve volunteers his time on numerous boards including the Indigenous Opportunities Committee at the Calgary Chamber of Commerce, Steering Committee at the Clean Resource Innovation Network, IndigiSteam, Co-Chair of the Program Advisory Committee and Board member for the ReDeveLop Program – University of Calgary, and is a Fellow of the Energy Futures Lab.

Steve is adamant on working towards meaningful involvement of indigenous communities in all areas of the economy with a focus on the Energy sector.

# How Engagement and Collaboration Make or Break a Project

**Chris T. Tenzsen, B.Sc., P.Ag. and Sahra Deagle, Environmental Scientist**

Trace Associates

## Abstract

Reclamation practitioners are great at wearing multiple hats; on any given day we may play the role of soil scientist, vegetation ecologist, farmer, construction foreman, or land agent. Real success in our field depends on bringing all those skills together to engage and collaborate with stakeholders in a meaningful way. Reclamation requires interaction with different parties including landowners, contractors, other consultants, regulators, and clients, making it a complex endeavor at the best of times. For a site to be reclaimed and proceed to reclamation certificate, all parties need to understand the goal of equivalent land capability and (hopefully) be in consensus about how to achieve it. This is sometimes easier said than done as various stakeholders may have different interpretations of what equivalent land capability means and how to get there. Unfortunately, even with the best intentions, a lack of effective communication and engagement can compromise the success of a project.

In this presentation we will review four case studies of past projects from both private and public lands to highlight how communication and engagement (or lack thereof) led to either success or failure. Discussion will include the impact of a willing landowner, the varying expectations for sites within forested grazing leases, and regulatory engagement during reclamation of a mineral pad in peatland.



**Chris T. Tenzsen**

Chris Tenzsen is the Practice Area Lead, Reclamation with Trace Associates Inc. He is originally from Grande Prairie, Alberta but has lived and worked in all four western provinces. Chris has a diploma in Conservation and Restoration Ecology from Lakeland College and a degree in Land Reclamation from the University of Alberta. Chris has 14 years of environmental consulting experience serving primarily the oil and gas sector. His main area of expertise is reclamation, with a focus on restoration of natural areas such as forested land, peatlands, and native grassland. Chris is passionate about environmental stewardship and enjoying the outdoors. He loves to explore and try new things. Before environmental consulting Chris worked as a tour guide in the mountain parks and a fishing guide on Lake Athabasca. He is based out of Trace's St. Albert office and lives in Edmonton with his wife, kids, and the family pets.



**Sahra Deagle**

Ms. Sahra Deagle, B.App.Sc., R.T.(Ag.) is an Environmental Scientist with Trace Associates Inc. (Trace) in the Calgary office. Sahra's primary roles at Trace include conducting fieldwork, technical report writing, and project management associated with reclamation projects in the upstream and midstream oil and gas industry. She also has experience in supervising earthworks for remediation projects, sampling surface and groundwater, and environmental site assessments (ESAs) for oil and gas and commercial industry clients.

# Canadian Economic Outlook: What now, what next?

**Aaron Goertzen, CFA, Senior Economist & Director, Economic Research**

BMO

## Abstract

Aaron Goertzen, Senior Economist at BMO Capital Markets, takes stock of the Canadian macroeconomic landscape and presents the bank's current outlook, almost two years after the onset of the coronavirus recession.



**Aaron Goertzen**

Aaron analyzes performance and risk across a diverse selection of industries and countries. His research is regularly distributed to clients and the media and is also used as an input to internal risk management functions. Aaron also provides macroeconomic support to the team and plays a central role in the development of The Goods, the department's monthly commodity price publication.

Prior to joining BMO, Aaron was an economist in the Economic Analysis and Forecasting Division at the Department of Finance Canada.

Aaron joined BMO's economics department in 2012. He holds an MA in Economics from the University of Toronto.

# Automated Clay Analyzers for Near Real-Time Measurements of Clay Activity in Oil Sands and Mining Tailings

**Jason Ng, MSc., Research Associate**

Northern Alberta Institute of Technology

## Abstract

Instrumentation and automation can enable more efficient tailings management in mining operations to reduce cost and meet environment, social and governance standards. Currently, many tailings treatment technologies involve the use of chemical amendments to accelerate dewatering of tailings, and their efficacies highly depend on accurate chemical dosing especially with real time variation in the feed characteristics. As clays and clay minerals dominate the behavior of fluid fine tailings (FFT), methylene blue index (MBI), an indicator for clay activity, has been shown to correlate with chemical dosage. Automation of the MBI procedure would allow reliable and timely information of the FFT feed for process optimization in the field. Saskatchewan Research Council (SRC), Northern Alberta Institute of Technology (NAIT) and Suncor Energy have developed automated clay analyzers designed for active clay/MBI measurements of oil sands tailings and mining tailings slurries. The automated analyzers enable repeatable MBI data in a much shorter turnaround time than the current lab method, allowing for process monitoring and control in key tailings processes such as sedimentation and flocculation.

This can lead to significant savings in operating costs and reduction of the tailings deposit footprints and ultimately faster reclamation. In this presentation, the key parameters of the MBI procedure, as identified through a series of methodology tests, will be discussed. The working principles of the automated clay analyzers will be explained, and the validation results will be presented.



**Jason Ng**

Jason Ng is a research associate at Northern Alberta Institute of Technology's (NAIT) Centre for Oil Sands Sustainability. He holds a MSc and BSc in Chemical Engineering from the University of Alberta. His current research includes validation of innovative oil sands technologies and technology development for rapid characterization of key operating parameters to improve the efficiency in oil sands operations. Prior to joining NAIT, he conducted applied research projects at Natural Resources Canada and Total E&P Canada, with a focus on oil sands extraction and tailings treatment. He is passionate about improving the economic and environmental performance in the oil sands industry through innovation and technology.

# Remediation and Plant Upgrade Project Example

**Thomas Jacklin, M. Eng, P. Eng., Principle Environmental Consultant/Senior Project Manager**

Transmountain/Advisian

## Abstract

In June 2020 a failure of a 1-inch compression fitting that had separated from tubing on a section of above-ground piping resulted in release of 190 m3 of crude oil to the ground surface at a pump station in British Columbia. From the point of release, the oil had followed a path into the pump station's surface drainage system, through an oil-water separator, and into a culvert that discharges surface water into the south section of the property.

This presentation highlights the engineering and construction solutions that supported remediation while the pump station remained operational and implementation of environment upgrades at the pump station to improve overall containment and drainage features.



**Thomas Jacklin**

Tom Jacklin is a Principal Consultant with Advisian, part of the Worley Group. He has a B.Sc. (Civil Engineering) and M.Eng. (Environmental Engineering) from the University of Alberta. Across 30+ years as a registered Professional Engineer, Mr. Jacklin has compiled a proven technical expertise in the siting, planning, permitting, design, construction, closure, post-closure monitoring, and beneficial end use of waste management facilities and impoundments.

His waste stream experience includes municipal waste, hazardous waste, special handled waste, coal combustion residuals, cement kiln dust, process water, stormwater, gas refinery and exploration waste, construction and demolition debris, contaminated soil, and mine tailings.

Mr. Jacklin has delivered solutions to over 100 waste facilities across Canada, Kuwait, Philippines, and Indonesia, and has developed a reputation for delivering technical solutions that are defensible, constructible, and aligned with client objectives.

# Grieving and Healing Together

**Shirley Thiessen, Executive Director**  
CornerBend Ministries

## Abstract

It's not if but when. Death, grief and loss are the experiences of every human. And yet we live in a death-defying, grief-avoidant society. It takes courage to vulnerably grieve and heal together in community—particularly in the workplace.

Why does this matter?

The untapped advantage of organizational and relational health is empathy. It's a super power. But most people don't know what is helpful to say or do to support a griever. And if we've never grieved our own losses, it's difficult to embrace the value of expressing empathy to others.

Empathy is rarely part of our education but, once learned and practiced with the bereaved, resiliency replaces despair. With four proven and powerful steps, our capacity to express empathy to those suffering a loss effectively expands.

Empathy accelerates trust. And when trust is present, human flourishing in every community is not only possible but probable.



**Shirley Thiessen**

Most people don't know what is helpful to say or do in support of someone who is grieving. It's awkward. Shirley Thiessen was one of those people who felt uncertain how to express empathy to the bereaved. Then abruptly, grief ambushed Shirley's family. Twelve days after her son's wedding, Shirley was thrown into the unimaginable task of planning his funeral. Grief threatened to destroy her.

Hope and resiliency gradually emerged thanks to the caring support of courageous friends.

Inspired by the kindness of others, Shirley wrote, "The Little Black Funeral Dress – Five Things I Wish I Had Known About Grief", to pay it forward. And, together with her husband, Carey, Shirley became co-founder of a non-profit grief ministry, CornerBend. CornerBend provides simple concepts to fuel connection, build trust and lend hope by expressing empathy to those who grieve.

# Energy in a Post-Pandemic World

**Chris Slubicki, Former President, CEO and Director**

Modern Resources Inc

## Abstract

The focus on climate change is stronger than ever. The need for an energy transition has never been greater. The magnitude of the challenge is greater than anything mankind has ever faced. There are no simple and easy answers. Chris discusses some of the challenges we face, and solutions, in moving to a low carbon world.



**Chris Slubicki**

Chris Slubicki stepped down on June 1 of 2020 from his position as President, CEO & Director of Modern Resources Inc., a Calgary-based private oil and gas company. Chris is the former Vice-Chairman of Scotia Waterous and was one of the four original founders of Waterous and Co., a private global oil and gas mergers and acquisitions firm, starting the firm in Calgary in 1989. Prior to selling the firm to Bank of Nova Scotia in 2005, the firm expanded to offices in five countries with a staff of 88 and completed hundreds of oil and gas transactions over its 17-year tenure.

Chris graduated with a B.Sc. in Mechanical Engineering from Queen's University and an MBA from the University of Calgary. He is a Professional Engineer in Alberta, and a member of APEGA.

Chris is a founding board member of the Emily Brydon Youth Foundation in Fernie, B.C. Chris has served on the board of Bonavista Energy Corporation and the board of Alpine Canada Alpin for seven years, the last two as Chair. Chris coached young ski racers with the Fernie Alpine Ski Team for 14 years and served as President of the club for three years.

# Unity in Canada's Environmental Landscape

**Stacy Thygesen, President ESAA and Principal - JSK Consulting, Kelly Zadko, President CLRA and Vice President Business Development - North Shore Environmental, Marissa Reckmann, CEO - AGAT Laboratories and Chris Slubicki, former President, CEO and Director - Modern Resources Inc**



**| Stacy Thygesen**

Stacy Thygesen has over 20 years of experience in the decommissioning and abandonment of end-of-life oil and gas facilities and pipelines. As a Principal of JSK Consulting Ltd, Stacy's experience is focused on regulatory compliance, participation involvement notifications and pipeline and facility licensing requirements in both conventional and SAGD asset areas across Western Canada; this extensive portfolio of work has provided Stacy with invaluable experience working with regulators, industry and the public. She is a strong advocate for safety leadership and is responsible for managing her company's Safety Program. Stacy was first elected to ESAA's Board of Directors in 2017, served as Vice-President in 2018 and has held her current position of President since 2019.



**| Kelly Zadko**

Kelly Zadko is a principal of North Shore Environmental Consultants Inc. (North Shore) and has 20 years of experience in the oil and gas industry. Currently she manages high level projects for oil and gas clients including: acquisitions and divestitures, liability assessments, asset retirement calculations, Siteview® implementation and training.

Mrs. Zadko is currently the President of the Alberta Chapter of the Canadian Land Reclamation Association. She has participated on multi-stakeholder groups and has volunteered for organizations such as the Emerald Awards for Environmental Excellence and the Alberta Institute of Agrologists. She was the recipient of the Outstanding Young Agrologist award for the Alberta Institute of Agrology (AIA) in March of 2006 which recognized her for her contributions to the environmental industry.



**| Marissa Reckmann**

Marissa graduated from Lakehead University with a Bachelor of Science (Honors) degree in Chemistry. She gained experience working in an Inorganics Laboratory at Lakehead University as a Research Assistant prior to entering the private sector. She has over 16 years of experience in the Analytical Laboratory, Oil and Gas and Environmental Consulting industries across Canada. In her current role as CEO of AGAT Laboratories, Marissa is focused on developing and leading the strategy and execution of continued growth plans across North America. In addition to her career responsibilities, Marissa has served as President and subsequent Past President of the Canadian Land Reclamation Association – Alberta Chapter, as well as a Board of Director of the National Canadian Land Reclamation Association, and President of the Environmental Interactive Committee in Alberta. She currently serves as an active volunteer and board member for the AGAT Foundation which current key focuses on supporting advancements in medical research and initiatives throughout Canada.



**| Chris Slubicki**

Chris Slubicki stepped down on June 1 of 2020 from his position as President, CEO & Director of Modern Resources Inc., a Calgary-based private oil and gas company. Chris is the former Vice-Chairman of Scotia Waterous and was one of the four original founders of Waterous and Co., a private global oil and gas mergers and acquisitions firm, starting the firm in Calgary in 1989. Prior to selling the firm to Bank of Nova Scotia in 2005, the firm expanded to offices in five countries with a staff of 88 and completed hundreds of oil and gas transactions over its 17-year tenure.

Chris graduated with a B.Sc. in Mechanical Engineering from Queen's University and an MBA from the University of Calgary. He is a Professional Engineer in Alberta, and a member of APEGA. Chris is a founding board member of the Emily Brydon Youth Foundation in Fernie, B.C. Chris has served on the board of Bonavista Energy Corporation and the board of Alpine Canada Alpin for seven years, the last two as Chair. Chris coached young ski racers with the Fernie Alpine Ski Team for 14 years and served as President of the club for three years.



# Evaluation of Chronic Toxicity to *Hyalella azteca* Exposed to 6:2 Fluorotelomer Sulfonate in Water

**Mathew Coady, MREM, R.P.Bio.**

SLR

## Abstract

One of the most significant point sources of PFAS to the Canadian environment is the use of aqueous film forming foams (AFFF) to control flammable liquid fires. Long-chain per- and polyfluoroalkyl substances (PFAS) like perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have been phased out of modern AFFF in favour of compounds (or precursors) that transform to shorter chain PFAS. Based on SLR's experience at legacy firefighting training sites, these short-chain precursors are expected to also have been constituents in older formulations of AFFF. The short-chain precursors have been observed to transform in the environment upon release, with 6:2 fluorotelomer sulfonate (6:2 FTS) commonly encountered as the dominant intermediate transformation product.

Although 6:2 FTS can degrade to terminal perfluoroalkyl acids like perfluoropentanoic acid (PFPeA) and perfluorohexanoic acid, (PFHxA), it appears to persist at source sites as a "quasi-stable" intermediate. There is an absence of surface water (aquatic) regulatory criteria for 6:2 FTS in North America and Europe and the noted absence of chronic toxicity studies for 6:2 FTS is presently contributing to a high level of uncertainty when characterizing potential risks to freshwater aquatic life.

Toxicity information for aquatic ecological receptors is more readily available for PFOS and, in June 2018, Environment and Climate Change Canada (ECCC) issued a federal environmental quality guideline (FEQG) of 6.8 µg/L protective of freshwater aquatic life from direct exposure.

Information in toxicological studies have identified that invertebrates may be more sensitive to direct effects (as well as bioconcentration) from exposure to 6:2 FTS compared to other biota. The objective of this study is to evaluate whether a threshold of 6.8 µg/L for 6:2 FTS (i.e., use of the PFOS FEQG as a surrogate) is protective of adverse effects to the freshwater amphipod *Hyalella azteca*. The study will consist of two water exposure studies, including a preliminary 14-day trial. Results from the initial 14-day trial will be used to refine the approach for the second trial, a 42-day study, to assess survival, growth, and reproductive effects to *H. azteca* from exposure to 6:2 FTS in water. If possible, an evaluation of uptake of 6:2 FTS by *H. azteca* will also be conducted. This presentation will report on the findings of studies (currently in progress).



**Mathew Coady**

Mathew Coady is a risk assessor and professional biologist at SLR, with over 10 years of contaminated sites experience including 5 years of experience at PFAS contaminated sites. Mr. Coady has supported multiple PFAS-focused projects including the assessment of the chemicals in terrestrial and aquatic media and completion of community exposure pathway evaluations and ecological risk assessments.

# Stress - Mind, Body, Health

**Dr Elsa Wagdy, I-MD, DNM, PhD, MA, MBA, MNM, HHP**

Elsa Wagdy

## Abstract

This presentation explains chronic stress's physiological and psychological aspects: What are emotions? What is stress? How does the mindset and emotion play into stress? What triggers stress? What physical changes take place from perceived stress? How does imagination play a role in stress? How do we change the stress response and manage it more appropriately?

Additionally, it discusses the various diseases and illnesses created as a direct result of chronic stress. Furthermore, the presentation gives a high-level overview of new medically scientific facts regarding genes (hereditary genetic dispositions), heart, brain, gut and overall well-being. Lastly, it supplements proven effective remedies to address and manage stress and overall health in both mind and body in natural ways.



**Dr Elsa Wagdy**

Dr. Elsa Wagdy has over 20 years in various therapies, psychologies, sociologies, psychotherapies, quantum physics, neuroscience, epigenetics, neuropsychology, neuroendocrinology, psychoneuroimmunology, personal training, nutrition and business/change/program/project management. Her approach to therapy is unique and utilizes several treatments and counselling methods, grounded in scientifically validated tools.

# AFFF and Fluorine-free Alternatives; Update on Regulatory Considerations, Best Management Practices and Transition Considerations

**Shalene Thomas (Derouard), VP, Global Emerging Contaminants Program Manager**

Wood

## Abstract

Aqueous film-forming foams (AFFF) contain per- and polyfluoroalkyl substances (PFAS) and therefore have been at the epicenter of the emerging contaminants issue. As more regulatory authorities at the state, federal and international levels propose guidance to minimize, mitigate, or outright ban AFFF use, the firefighting user community is faced with the challenges of determining how best to manage the disposal of current AFFF stock as well as establish transition plans to effective fluorine-free alternatives.

This presentation will discuss the status and current global regulatory trends around AFFF, challenges with performance standards and specification requirements, and research that Wood has been conducting to evaluate both AFFF and fluorine-free alternatives. Specifically, the following will be expanded on:

1. AFFF Best Management Practices: what are the options for management, storage, use, and disposal? How can environmental liabilities be minimized? Eliminated?
2. AFFF vs Fluorine-free alternatives:
  - Evaluating persistence, bioaccumulation, toxicity and mobility of each foam type- what are the environmental trade-offs? Are there regrettable substitutions?

- Evaluating performance specifications- what are the foam performance specifications for different industries? What are the challenges with performance between AFFF and fluorine-free alternatives for each industry?
- Evaluating transition plans- how do you evaluate foam alternatives for use? Are there impacts to engineering and design? Operational response and training? What criteria should be employed to determine how clean is clean when replacing current stock?



**Shalene Thomas  
(Derouard)**

Shalene Thomas, is the Vice President and Global Emerging Contaminant Program Manager for Wood. She has more than 20 years of experience in environmental consulting that includes 14 years of experience supporting per- and polyfluoroalkyl substance (PFAS) evaluations. She has extensive program and project management, human health risk assessment, data management, GIS and 3D visualization and animation experience and has supported State, Federal and industrial clients with PFAS evaluations. She serves as Wood's PFAS Work Group Lead and has supported PFAS projects in 32 different states in 9 of the 10 USEPA regions as well as in Europe, Australia and Canada. She also currently serves as a AFFF leader for the ITRC PFAS Team.

# Risk Assessment of Groundwater Impacts using the GroundWater Spatiotemporal Data Analysis Tool (GWSDAT)

**Luc Rock, PhD, P.Geo., Shell Global Solutions International B.V., NL, and Wayne Jones, PhD, Shell Global Solutions (UK) Ltd.**

Shell

## Abstract

The use of groundwater may be compromised due to a number of factors, such as water quality degradation due to the presence of constituents of potential concern (CoPCs). The later could be related to retail activities (e.g., containment loss and entry into groundwater of BTEX), or agricultural activities (e.g. nitrate leaching into groundwater). In the event a CoPC has entered groundwater, it is imperative to undertake a risk assessment study and assess the CoPC's fate in the environment. The GroundWater Spatiotemporal Data Analysis Tool (GWSDAT) provides a means to support such an assessment. GWSDAT was developed through a collaboration between Shell Global solutions and the University of Glasgow. The tool is used worldwide for about 10 years. Its latest version, v3.1, was released in Q3 2021. The tool was developed "to provide a simple to use, but statistically powerful decision support tool to environmental engineers and practitioners who routinely report on the status of numerous groundwater monitoring sites." (Jones et al, 2014). A unique feature of this tool is that it combines a spatio-temporal model for data interpolation, which has a number of benefits over commonly used time discreet spatial interpolation (McLean et al., 2019). The aim of this presentation is to give an overview of GWSDAT including a case study and brief demonstration of the tool.



**Luc Rock**

Soil and Groundwater Scientist with Shell Global Solutions International B.V. supporting different business units. Prior to joining Shell, he worked in academia and a Canadian government research laboratory with a focus on understanding the origin and fate of compounds within the environment. He can be reached at the Shell Rijswijk office, Lange Kleiweg 40, 2288 GK, The Netherlands, Luc.Rock@shell.com.



**Wayne Jones**

Principal Data Scientist with Shell Research Limited in the United Kingdom. He is a chartered statistician with over 20 years of experience applying analytical solutions to industrial problems. He can be reached at Shell Centre, York Road, London, SE1 7NA, wayne.w.jones@shell.com.

# Excess Soils Reg. 406/19: A Contractor's Perspective

**Mike Gawel, Project Manager, Director of Field Operations**

Vertex Environmental Inc.

## Abstract

The MECP released Ontario Regulation 406/19 and Soil Rules (O. Reg. 406/19) in December 2019, with the first Phase effective as of January 1, 2021, the second Phase coming into force on January 1, 2022, and finally the landfill ban expected to come into effect on January 1, 2025.

The intent of this new Regulation like any other is multifaceted, however, a key takeaway is the overriding philosophy that soil should be considered a re-useable resource, not necessarily a waste. And as it goes with the introduction of any new Regulation, there has been both praise and criticism, skeptics and champions. One of the main obstacles in rolling out any new Regulation is getting the word out, not only to the industry it directly impacts, but also to the general public. Various interest groups within the industry have slowly began to pop up (e.g. QPCO), while other existing groups are doing what they can to increase communication on the subject (e.g. RCCAO – Residential and Civil Construction Alliance of Ontario).

There are many groups within the industry that are and will be directly impacted by the new Regulation. This talk will focus on a Contractor's Perspective of O. Reg. 406/19, and more specifically on;

- Their understanding and Interpretation,
- How they will adapt and adopt,
- Where they fit in,
- How it may impact their day-to-day operations in terms of scope, schedule and budget perspective,
- How to understand, communicate and mitigate liability,
- How to work within the limits, and
- Generate opportunities.
- This talk will key-in on the Contractors' perspective of O. Reg. 406/19, how it is being phased in, and how we can ensure we remain in compliance, and in business



**Mike Gawel**

Mr. Gawel is a Principal at Vertex Environmental Inc., Director of Field Operations and Project Manager. Mr. Gawel has more than 18 years' experience in the Environmental Field as a contractor, working across Canada, the Middle East and South America, specializing in Site Assessment and Remediation.

Mike has been involved with the design and implementation of more than 200 remediation programs since the early 2000's involving ex-situ remediation, PRBs, carbon adsorption, in-situ chemical oxidation and reduction, aerobic and anaerobic biodegradation, etc. in soil, groundwater and bedrock for a variety of contaminants, including petroleum hydrocarbons, chlorinated solvents, metals and other compounds. He has a Bachelor's degree in Biology/Chemistry and is currently an EP and C. Tech within Ontario.

# Cybersecurity: Know the Risks

**Dave Kawula**

TriConElite

## Abstract

Cyber criminals aim squarely for the C-suite. Executives are prime targets for attackers. Successful attacks providing straight line access to an organizations systems, data, and stakeholders. Protecting the C-suite from modern cyber risk require IT Pros to move like a champion prize fighter. “Float like a butterfly, sting like a bee.” This session immerses attendees in the answers to two critical questions; “why” executives are such valuable targets for cyber criminals and “how” to protect them and the organization from exploitation.

You will learn:

- Why the C-Suite is like candy for cyber criminals
- How executives are held accountable for cyber risk
- What to do when the top is targeted



**Dave Kawula**

Dave Kawula is an Enterprise Consultant, Technology Evangelist, Best Selling Author, and all around geek. He loves Microsoft Technology and is considered one of the best in his field. He holds over 50 + Microsoft Certifications and is also a Microsoft MVP. Dave is also a Veeam Vanguard, Alumni Cisco Champion, and Nutanix NTC. Dave is the Conference Co-Chair for TechMentor and in 2017 was a top 5 speaker in his track at Microsoft Ignite. In 2018 Dave tied for #1 top session at Microsoft Ignite. He can be followed on Twitter @davekawula.

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