

# Workshop and Symposium on Persistent and Emerging Organic Pollution in Cold and Coastal Environments (PEOPLE 2017)

symposium jointly held with the

2017 Atlantic Symposium of the Canadian Association on Water Quality (CAWQ)  
2017 Annual Conference of International Society for Environmental  
Information Sciences (ISEIS)

Sheraton Hotel Newfoundland  
St. John's, Canada      October 16-17, 2017

[www.nrpop.org/people2017](http://www.nrpop.org/people2017)



## The PEOPLE 2017 Program

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### ORGANIZERS



# Welcome Message

Many persistent and emerging pollutants, such as petroleum hydrocarbons, pesticides, disinfection by products, pharmaceutical and cosmetic products, chemical surfactants, organic nanoparticles, microplastics, are toxic, bio-accumulative, non-regulated and currently not included in regulatory guidelines. Understanding their fate, behavior, environmental and health impacts in cold and coastal environments and developing pollution prevention, control and remediation technologies are essential for evidence-based policy/decision making and sustainable development. This symposium will be the first event of the PEOPLE Network in order to help address the knowledge and technical gaps, and bring direct benefits to academia, government and industry, as well as communities and especially indigenous people in terms of R&D, policy making, technology transfer, education and training, and public engagement.

Through this symposium, industry will gain from and contribute to the transfer of innovative ideas and technologies through research collaborations with industry and academic institutions across Canada. This will provide new opportunities for local companies to showcase and advance their technological expertise. In addition, Through the PEOPLE network, Newfoundland and Labrador will build capacity in technological knowledge, and in well-educated and trained HQPs to prevent, control and manage PEOP pollution in cold marine and coastal environments.

## WORKSHOP AND SYMPOSIUM CHAIR



**DR. BING CHEN**

Professor, Director of NRPOP Lab  
Department of Civil Engineering  
Faculty of Engineering and  
Applied Science, Memorial  
University of Newfoundland  
St. John's, NL, Canada

## WORKSHOP CO-CHAIR



**DR. KENNETH LEE**

National Senior Scientific Advisor,  
Fisheries and Oceans Canada (DFO),  
Canada

## SYMPOSIUM CO-CHAIRS



**DR. FAISAL KHAN**

Canada Research Chair, Professor,  
Department of Process Engineering  
Associate Dean (Acting) Graduate Studies  
Faculty of Engineering and  
Applied Science, Memorial  
University of Newfoundland  
St. John's, NL, Canada

Funding and Sponsorship



**DR. HELEN ZHANG**

Canada Research Chair,  
Associate Professor, NRPOP Lab  
Department of Civil Engineering  
Faculty of Engineering and  
Applied Science, Memorial  
University of Newfoundland  
St. John's, NL, Canada

Program and Logistics

# Honorary Chairs



**DR. HOWARD ALPER**

Chair of Canvassing Committee to Enhance  
Global Recognition for Canadian Research Excellence  
Distinguished University Professor  
Department of Chemistry  
University of Ottawa  
Fellow and former President of Royal Society of Canada



**DR. GORDON HUANG**

ISEIS 2017 Annual  
Conference

Canada Research Chair  
Professor of Environmental Systems Engineering  
Executive Director of Institute for Energy,  
Environment and Sustainability Communities  
University of Regina  
President of ISEIS  
Editor-in-Chief of J. of Environmental Informatics (IF= 5.562)  
Fellow of Canadian Academy of Engineering

# Keynote and Opening Speakers

## Keynote Speakers



Professor of School of Life Sciences, University of Warwick, UK  
Editor of *Advances in Marine Biology* (IF = 3.483 in 2014) and former Editor in Chief of *Marine Pollution Bulletin* (IF = 3.146))

**DR. CHARLES SHEPPARD**



Chairman of the NORMAN (Network of Reference Laboratories, Research Centres and Related Organisations for Monitoring of Emerging Environmental Substances) France, Director of the Environmental Institute Kos, Slovak Republic

**DR. JAROSLAV SLOBODNIK**

## Opening Speakers



Vice-President (Research) Pro Tempore  
Professor in Departments of Biology and Ocean Sciences  
Memorial University of Newfoundland  
St. John's, NL, Canada

**DR. MARK ABRAHAMS**



Acting Dean,  
Professor of  
Faculty of Engineering & Applied Science  
Memorial University of Newfoundland  
St. John's, NL, Canada

**DR. DENNIS PETERS**



Regional Director of the Natural Sciences and Engineering Research Council of Canada (NSERC) Atlantic Regional Office, Canada

**DEVEAU GORDON**



Deputy Mayor  
City of St. John's  
Member of City's Environmental Advisory Committee

**SHEILAGH O'LEARY**

# Topics and Support Journals

**Parallel sessions covering, but not limited to the following topics:**

Pollutant fate and behaviors  
Toxicological and ecological effects  
Monitoring, tracing and forensic analysis  
Health and community impacts  
Prevention, control and remediation  
Socio-economic impacts  
Assessment, modeling and decision making  
Policy development, public engagement and training



Selected abstracts will be invited to publish their work in the following peer-reviewed venues with high impact in the fields:

- Advances in Marine Biology (Elsevier)*
- Water Quality Research Journal (IWA)*
- Journal of Environmental Informatics (ISEIS)*

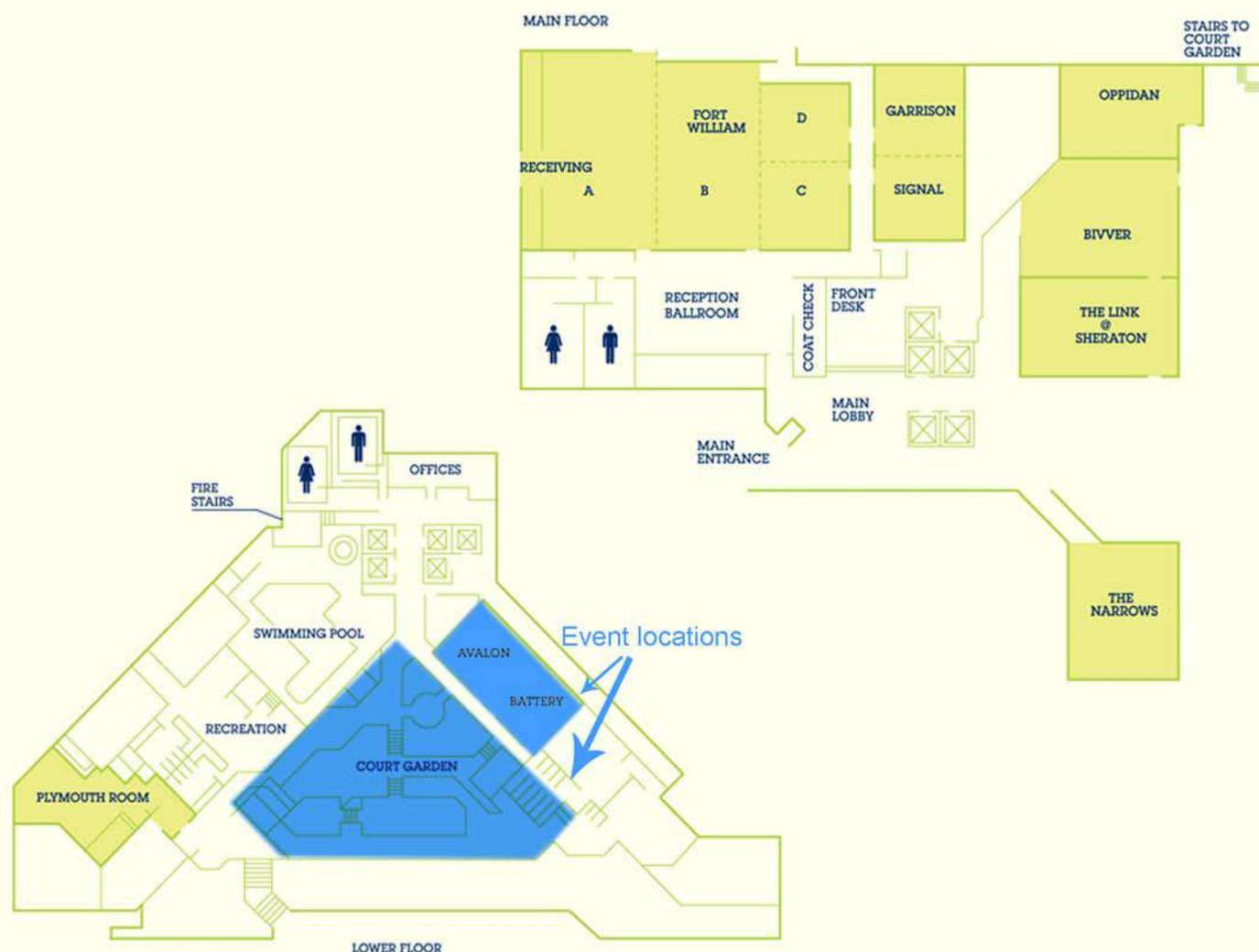
# Sheraton Floorplan

Overlooking St. John's historic harbour, Sheraton Hotel Newfoundland is at the centre of a thriving community, and offers travellers a wealth of amenities all within easy reach of the historic city's myriad attractions.

A preferred location for business travel, special occasions, meetings, conferences and holiday accommodations in St. John's, the hotel features 301 spacious guest rooms and well-appointed suites. Each space is beautifully appointed, equipped with High Speed Internet Access, and features breathtaking views of either the city or harbour.

Delight in our onsite restaurant and lounge, revive with a workout in our Health Club, or hold an event in our exemplary meeting facilities. With 17,000 square feet of flexible meeting space and a highly skilled staff of event specialists, we'll ensure your next event is a success.

Although Newfoundland is known as "the rock" for its rugged terrain, it is home to Canada's friendliest souls. You'll find a host of them at the Sheraton Hotel Newfoundland. Here in this perfect blend of rustic scenery and eastern Canadian hospitality, you'll discover a relaxed elegance that reflects the spirit of these shores.



# Workshop Agenda

October 16, 2017

Organizers:  
Dr. Bing Chen, Memorial University  
Dr. Kenneth Lee, Fisheries and Oceans Canada

Time	Activity	Location
07:30	Registration (open till 19:00)	Main level
08:00	Breakfast	Court Garden
08:30	Welcome and opening remarks <ul style="list-style-type: none"> <li>Bing Chen, Professor and Director, NRPOP Laboratory, Memorial University</li> </ul> Opening speeches by <ul style="list-style-type: none"> <li>Mark Abrahams, Vice President (Research) Pro Tempore, Memorial University</li> <li>Dennis Peters, Dean (Acting), Faculty of Engineering, Memorial University</li> <li>Sheilagh O'Leary, Deputy Mayor, City of St. John's</li> </ul>	Avalon/Battery Room
08:45	Introduction and purpose of the workshop (K. Lee)	
09:05	Introduction and short (max 3 min) presentations by researchers/groups/partners (B. Chen)	
10:00	Invited speeches by governmental and industrial representatives <ul style="list-style-type: none"> <li>Kenneth Lee, National Senior Scientific Advisor, Fisheries and Oceans Canada (DFO)</li> <li>Carl Brown (Chun Yang), Manager, Emergencies Science and Technology Section, Environment and Climate Change Canada (ECCC)</li> <li>Haseen Khan (Renee Patterson), Director of Water Resources Management Division, Department of Municipal Affairs and Environment, NL Government</li> <li>Representatives from industry - Kieran Hanley, Executive Director, Newfoundland and Labrador Environmental Industry Association (NEIA); etc.</li> </ul>	
10:45	Coffee break	Court Garden
11:00	Invited speeches by municipality, community and international representatives <ul style="list-style-type: none"> <li>Andrew Niblock, Director, Environmental Services, Department of Public Works, City of St. John's</li> <li>Patricia Nash, Fish and Wildlife Coordinator, Nunatukavut Council</li> <li>Jaroslav Slobodnik, Chairman of NORMAN (Network of Reference Laboratories, Research Centres and Related Organisations for Monitoring of Emerging Environmental Substances); and Director of Environmental Institute (EI), Slovak Republic</li> </ul>	Avalon/Battery Room

# Workshop Agenda

October 16, 2017

Organizers:  
Dr. Bing Chen, Memorial University  
Dr. Kenneth Lee, Fisheries and Oceans Canada

11:30	PEOPLE Network discussion (K. Lee/B. Chen) <ul style="list-style-type: none"><li><i>Vision, goals and roadmap</i></li><li><i>Challenges and opportunities</i></li><li><i>Themes and target pollutants</i></li><li><i>Research team and management</i></li><li><i>Partnership and engagement</i></li></ul>	Avalon/Battery Room
12:00	Field trip (Lunch on the Road) Guided tour of the Faculty of Engineering and the Marine Institute, Memorial University ( <b>NOTE:</b> Gather at the hotel entrance for bus transport; departure at 12:05 SHARP; bag lunch provided to Workshop attendees)	Memorial University
14:00	Funding opportunities and plan (B. Chen)	Avalon/Battery Room
14:15	Invited speeches by funding agency representatives <ul style="list-style-type: none"><li><i>Gordon Deveau, Regional Director of NSERC Atlantic</i></li><li><i>Timothy Power, Enterprise Development, Atlantic Canada Opportunities Agency (ACOA)</i></li><li><i>Kristin Tweel, Business Development Officer, Genome Atlantic</i></li></ul>	
15:00	Coffee break	Court Garden
15:30	Discussion for funding (NSERC CREATE) application (B. Chen/Theme Leaders) <ul style="list-style-type: none"><li><i>Baseline, inventories and screening</i></li><li><i>Monitoring, sampling and forensic analysis</i></li><li><i>Fate and transport</i></li><li><i>Assessment, simulation and decision making</i></li><li><i>Source reduction and pollution treatment</i></li><li><i>Contamination remediation</i></li><li><i>Toxicological and ecological effects</i></li><li><i>Health, community and socio-economic impacts</i></li><li><i>Stakeholder engagement and training (HQP, professionals and community)</i></li></ul>	Avalon/Battery Room
17:30	Wrap-up and next step	Avalon/Battery Room
18:00	Network Reception	Avalon/Battery Room
18:30	Network Dinner	Avalon/Battery Room

# Speakers Bios

## Opening Speakers



**Dr. Mark Abrahams**

One Sept. 1, 2017, Dr. Mark Abrahams assumed the role of Vice-President (Research) Pro Tempore of the Memorial University of Newfoundland, Canada. Prior to this role, Dr. Abrahams served as Associate Vice-President (Research) Pro Tempore from Jan. 1, 2017 to Aug. 31, 2017. Dr. Abrahams is a professor in the Departments of Biology and Ocean Sciences and has been the Dean of Science since 2008. He holds a B.Sc. (honors) in zoology from the University of Western Ontario, a M.Sc. in biology from Queen's University and a PhD in biology from Simon Fraser University. Dr. Abrahams' research, which is funded in large part by the Natural Sciences and Engineering Research Council (NSERC), focuses on non-lethal predator-prey interactions in aquatic ecosystems. Recent research has investigated how these dynamics are mediated by changes in the physical environment, and the insight this provides into understanding the maintenance or loss of biodiversity.



**Dr. Dennis Peters**

Dr. Dennis Peters is currently the Acting Dean of Faculty of Engineering and Applied Science at Memorial University of Newfoundland, Canada. Dr. Dennis Peters is an Associate Professor and Head of Electrical and Computer Engineering where he has been a member of Faculty Engineering & Applied Science, Memorial University of Newfoundland, Canada since 1998. His research involves techniques for design and verification of software and computer systems, with particular focus on high performance computing, real-time applications and parallel or distributed processing. Dr. Peters is an active volunteer in the professional engineering community in Canada. He is Chair of the Board of Directors of the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) and serves on the Canadian Engineering Qualifications Board (CEQB) and IEEE NL. His teaching activity is primarily in the area of software, ranging from introductory programming courses to advanced topics such as real-time operating systems and concurrent programming. member at the University of Manitoba.



**Mr. Gordon Deveau**

In February 2015, Gordon Deveau undertook the position of Regional Director of the Natural Sciences and Engineering Research Council of Canada (NSERC) Atlantic Regional Office. Before joining NSERC, Gordon was the Manager of Innovation for the Atlantic Canada Opportunities Agency (ACOA) and he was directly involved in the management of the Agency's Atlantic Innovation Fund (AIF). Prior to joining ACOA, he worked for the Network Centres of Excellence of Canada, Fisheries and Oceans Canada, the Government of Newfoundland and Labrador, Memorial University and Parks Canada. Over the years, he has provided leadership and program direction in a number of policy and management positions related to science and technology for a variety of federal and provincial government organizations.

# Speakers Bios



Ms. Sheilagh O' Leary

Sheilagh O'Leary is the Deputy Mayor of St. John's and a member of City's Environmental Advisory Committee. St. John's native, Sheilagh O'Leary is an award-winning photographer, filmmaker and art educator. As a small business owner, Sheilagh is experienced in the areas of visual media including film, video and stills production, radio broadcasting, education, and not-for profit organizations specializing in areas of diversity and inclusion. In her many years of advocacy, Sheilagh O'Leary has been a strong, passionate voice in supporting positive change in our communities. She has been an energetic volunteer for over 25 years, a nature enthusiast and a mother of three. As a member of the Qalipu M'ikmaq First Nations Band, issues of cultural diversity and respect are paramount in Sheilagh's work. She has been active on numerous boards, including North East Avalon Atlantic Coastal Action Program, The Irish Newfoundland Association of NL, The Canadian Mental Health Association of NL, Clean & Beautiful, The St. John's Native Friendship Centre, and Equal Voice NL, where she presently sits as Chapter Chair.

## Keynote Speakers



Dr. Charles Sheppard

Dr. Charles Sheppard is a Professor of School of Life Sciences, University of Warwick, UK. He is an Editor of *Advances in Marine Biology* (IF = 3.483 in 2014) and former Editor in Chief of *Marine Pollution Bulletin* (IF = 3.146). He works for a range of United Nation, Governmental and aid agencies in tropical marine and coastal development issues. He is a Fellow of Linnean Society and a Conservation Fellow of Zoological Society London. He is the reviewing member of the Intergovernmental Panel on Climate Change (IPCC). He advises several governments on marine and coastal management and science, including the UK Government on its tropical Overseas Territories. Dr. Sheppard has organized and led the scientific input to the 2010 creation of the world's largest fully protected marine reserve, in the Chagos archipelago, Indian Ocean, where a lot of his research has been focused. His other main geographical area of research is the Arabian region.



Dr. Jaroslav Slobodnik

Dr. Jaroslav Slobodnik is the Chairman of the Network of Reference Laboratories, Research Centres and Related Organisations for Monitoring of Emerging Environmental Substances (NORMAN). He is also the Director of Environmental Institute in Kos, Slovakia. He has an extensive experience in implementation of the EU water legislation within numerous international projects. Among his specialisations are integrated river basin management, development of monitoring strategies and environmental analytical chemistry. As a member of the advisory panel to the DG ENV of the European Commission he was involved in drafting institutional reform proposals of the Drinking Water Directive and Water Reuse policy instrument. Since 2010 he is a Topic leader on the Assessment of Chemical Status and Chemical Pollution issues in the River Basin Management Plans of EU Member States. Since 2008 he is a Chairman of the NORMAN Association – a network of more than 70 organisations in Europe and beyond dealing with emerging substances.

# Technical Tours

## Faculty of Engineering & Applied Science

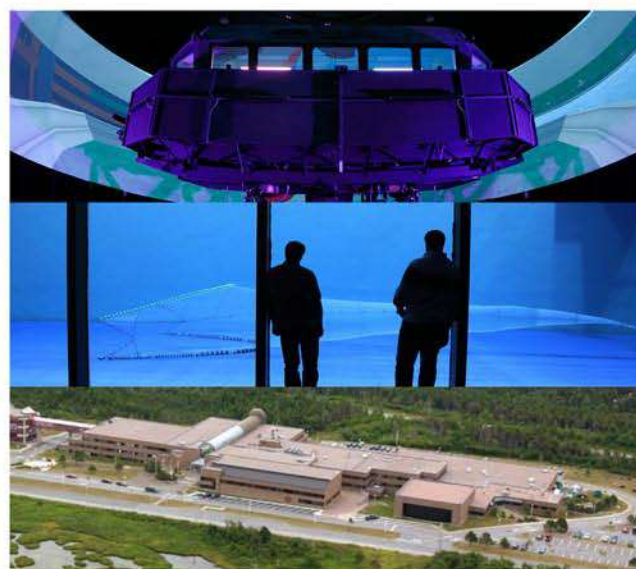
Take North America's top Ocean and Naval Architectural Engineering program and the only co-operative program in this discipline in the world. Add the only university in Canada to offer Process Engineering. Combine that with premier undergraduate programs in Civil, Computer, Electrical and Mechanical engineering, and a diverse range of top-rate master's and doctoral programs. Situate the school in one of the most beautiful, pristine locations in the world on the edge of the North Atlantic. That's engineering at Memorial University! It's the natural place where people and ideas become.



## Marine Institute

The Fisheries and Marine Institute of Memorial University of Newfoundland, popularly referred to as the Marine Institute (MI) or simply Marine, is a post-secondary ocean and marine polytechnic located in St. John's, Newfoundland and Labrador, Canada. It is affiliated with Memorial University of Newfoundland.

The Marine Institute is considered the most comprehensive institution of its kind in North America, with unique facilities such as two full ships bridge simulators and the world's largest flume tank. It offers degrees, diplomas, certifications and industry training for the maritime sector.



**PEOPLE**  
**Network**

Persistent and Emerging Organic Pollution in Environments

# Sponsors



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Persistent and Emerging Organic Pollution in Environments

# Symposium Agenda

## Organizers:

- Northern Region Persistent Organic Pollution Control (NRPOP) Laboratory, Memorial University
- Canadian Association on Water Quality (CAWQ)
- International Society for Environmental Information Sciences (ISEIS)
- Canadian Society for Civil Engineering (CSCE) Newfoundland and Labrador Section

## October 16, 2017

Time	Activity	Location
09:00	Registration (desk open till 20:00)	Main level
10:00	Poster and booth setup	Court Garden
12:00	Field trip - Guided tour of the Faculty of Engineering and the Marine Institute, Memorial University <i>(NOTE: Gather at the hotel entrance for bus transport; departure at 12:05 SHARP; box lunch for consumption by Symposium attendees can purchased at \$20/person; "First come first serve" policy due to limited number of seats and lunch orders)</i>	Memorial University
14:00	Back to hotel	
18:00 -18:30	Symposium Reception	Court Garden

## October 17, 2017

Time	Activity	Location
07:30	Registration (desk open till 18:30)	Main level
08:00	Breakfast	Court Garden
09:00	Welcome and greetings <ul style="list-style-type: none"><li>• Welcome by Dr. Bing Chen, Symposium Chair; Professor and Director, NRPOP Laboratory, Memorial University</li></ul> Opening speeches by <ul style="list-style-type: none"><li>• Dr. Dennis Peters, Dean (Acting), Faculty of Engineering, Memorial University</li><li>• Dr. Kenneth Lee, National Senior Scientific Advisor, Fisheries and Oceans Canada</li><li>• Mr. Gordon Deveau, Regional Director of NSERC Atlantic</li></ul>	Avalon/Battery Room

# Symposium Agenda

October 17, 2017

09:30	<b>Keynote speech by Dr. Charles Sheppard,</b> <i>Professor of University of Warwick, UK; Editor in Chief of Advances in Marine Biology</i> <b>Title: Persistent Organic Pollutants in the ocean: How much is there? What to do? Will we do it?</b>	Avalon/Battery Room
10:00	<b>Parallel Sessions 1 Pollutant fate and behaviors</b> <b>Screening Canadian Marine Environments for the Natural Attenuation Potential for Petroleum Hydrocarbons</b> Greer <sup>1</sup> , C.W., Tremblay <sup>1</sup> , J., Fortin <sup>1</sup> , N., Elias <sup>1</sup> , M., Sanschagrin <sup>1</sup> , S., Wasserscheid <sup>1</sup> , J., King <sup>2</sup> , T.L., and Lee <sup>2</sup> , K. <i><sup>1</sup>National Research Council Canada, Energy, Mining and Environment; <sup>2</sup>Fisheries and Oceans Canada.</i>	Avalon Room
10:20	<b>Understanding the Fate and Behaviour of Surface Spills of Diluted Bitumen in Canadian Coastal Waters</b> Alice C. Ortmann, Thomas L. King <i>Centre for Offshore Oil, Gas and Energy Research, Bedford Institute of Oceanography, Fisheries and Oceans Canada</i>	
10:00	<b>Parallel Sessions 2 Toxicological and ecological effects</b> <b>Investigation into the Impact of Hydrocarbon Contamination on the Scallop Population in Port au Port Bay, Newfoundland</b> Melissa Cook, Christopher C. Parrish, Penny L. Morrill <i>Memorial University</i>	Battery Room
10:20	<b>Removal of Natural Organic Matter from Water Resources of Selected Communities in Newfoundland by Coagulation and Adsorption</b> Hoda Tafvizi, He Zhang, Tahir Husain <i>Memorial University</i>	
10:40	Coffee break	Court Garden
11:00	<b>Parallel Sessions 3 Monitoring, tracing and analysis</b> <b>Magnetic Molecularly Imprinted Polymers for Trace Analysis of Polycyclic Aromatic Hydrocarbons in Water Samples</b> Aliasghar Golbabanezhadazizi, Christina S. Bottaro <i>Memorial University</i>	Avalon Room
11:20	<b>Screening Analysis of Non-Target Organic Substances using High Resolution Mass Spectrometers (HRMS)</b> Chun Yang, Gong Zhang, Patrick Lambert, Carl E. Brown <i>Emergencies Science and Technology Section, Science and Technology Branch, Environment and Climate Change Canada</i>	
11:40	<b>Utility of Eight Types of Biomarkers in Differentiating Weathered Dispersed Oil from Weathered Crude Oil</b> Xing Song <sup>1</sup> , Baiyu Zhang <sup>1</sup> , Bing Chen <sup>1</sup> , Leonard M. Lye <sup>1</sup> , Kenneth Lee <sup>2</sup> <i><sup>1</sup>Memorial University, <sup>2</sup>Fisheries and Oceans Canada (DFO), Canada</i>	

# Symposium Agenda

October 17, 2017

<b>Parallel Sessions 4 Health and community impacts</b>		
11:00	<b>Distribution of Persistent Organic Pollutants (POPs) in Newfoundland Diet: Possible Connection to Hypothyroidism</b> Nicole Babichuk <sup>1</sup> , Joseph Bautista <sup>1</sup> , Cora Young <sup>2</sup> , Atanu Sarkar <sup>1</sup> , Shree Mulay <sup>1</sup> , John Knight <sup>1</sup> <i><sup>1</sup>Memorial University, <sup>2</sup>York University</i>	Battery Room
11:20	<b>Occurrence, Impact and Removal of Antidiabetic Drug Metformin in Northern Aqueous Environments</b> Yunwen Tao, Bing Chen, Baiyu Zhang <i>Memorial University</i>	
11:40	<b>Molecule Modification for Chlorobenzenes in the Long-Range Transport Potential through 3D-QSAR Associated with Full Factor Experimental Design</b> Meijin Du, Xixi Li, Wenwen Gu, Yu Li <i>North China Electric Power University, China</i>	
12:00	Lunch	Court Garden
12:30	<b>Keynote speech by Dr. Jaroslav Slobodnik, Chairman of NORMAN (Network of Reference Laboratories, Research Centres and Related Organisations for Monitoring of Emerging Environmental Substances); and Director of Environmental Institute (EI), Slovak Republic</b> <b>Title: NORMAN Association: A network approach to scientific collaboration on emerging contaminants and their transformation products in Europe</b>	Court Garden
<b>Parallel Sessions 5 Prevention, control and remediation</b>		
13:30	<b>Development of Biosurfactants as an Environmental Friendly Alternative to Chemically Synthesized Surfactants</b> Qinhong Cai <sup>1</sup> , Bing Chen <sup>1</sup> , Baiyu Zhang <sup>1</sup> and Tim Nedwed <sup>2</sup> <i><sup>1</sup>Memorial University, <sup>2</sup>ExxonMobil Upstream Research Company, USA</i>	Avalon Room
13:50	<b>Distribution of Diluted Bitumen Products in Water with Sediment, and Spill Containment by Solidification</b> Stanislav R. Stoyanov, <sup>1,2</sup> Lindsay Hounjet, <sup>1</sup> Antonio De Crisci, <sup>1</sup> Yi Zhang, <sup>1</sup> Jonathan Mane, <sup>1</sup> John Tong, <sup>1</sup> Benjamin Jaeger, <sup>1</sup> Edwina Ngo, <sup>1</sup> Fernanda Motta <sup>1,2</sup> <i><sup>1</sup>Natural Resources Canada, Canmet ENERGY in Devon, <sup>2</sup>University of Alberta, Canada</i>	
14:10	<b>Biodegradable thin-film Molecularly Imprinted Polymers for monitoring PAHs in water</b> Fereshteh Shahhoseini, Stefana N. Egli, Christina S. Bottaro <i>Memorial University</i>	
 <p>Persistent and Emerging Organic Pollution in Environments</p>		

# Symposium Agenda

October 17, 2017

14:30	<p><b>Enhanced biosurfactant production by marine originated bacteria <i>Bacillus Subtilis</i> and its application for oil removal with the existence of heavy metal</b></p> <p>Zhiwen Zhu<sup>1</sup>, Baiyu Zhang<sup>1</sup>, Bing Chen<sup>1</sup>, Jingjing Ling<sup>1</sup>, Kenneth Lee<sup>2</sup></p> <p><sup>1</sup>Memorial University, <sup>2</sup>Fisheries and Oceans Canada (DFO), Canada</p>	
13:30	<p><b>Parallel Sessions 6 Mitigation strategies and practice</b></p> <p><b>Investigation of seasonal pattern of microbial community structure and Identification of sulfate-reducing bacteria in seawater samples</b></p> <p>Fuqiang Fan, Baiyu Zhang, Penny L. Morrill</p> <p>Memorial University</p>	Battery Room
13:50	<p><b>Targeted Degradation of Polycyclic Aromatic Hydrocarbons: A Potential Strategy in Coal Tar Remediation</b></p> <p>Ahmad Al-Shra'ah<sup>1</sup>, Paris Georgiou<sup>1</sup>, Robert Heller<sup>1</sup>, Stephanie MacQuarie<sup>1,2</sup>, Martin Mkandawire<sup>2</sup>, Yuming Zhao<sup>1</sup>, Fuqiang Fan<sup>1</sup>, Baiyu Zhang<sup>1</sup></p> <p><sup>1</sup>Memorial University, <sup>2</sup>Cape Breton University</p>	
14:10	<p><b>Photocatalytic Ozonation of Offshore Produced Water by TiO<sub>2</sub> Nanotube Arrays Coupled with LED-UV Irradiation</b></p> <p>Bo Liu<sup>1</sup>, Bing Chen<sup>1</sup>, Baiyu Zhang<sup>1</sup>, Kenneth Lee<sup>2</sup></p> <p><sup>1</sup>Memorial University, <sup>2</sup>Fisheries and Oceans Canada</p>	
14:30	<p><b>Indicators and Detection of Petrogenic Inputs into Ocean Using Molecularly-Imprinted Polymers (MIP)</b></p> <p>Kelly A. Hawboldt, Stefana N. Egli, Kasun Withana, Christina S. Bottaro</p> <p>Memorial University</p>	
14:50	Coffee break	Court Garden
15:10	<p><b>Parallel Sessions 7 Assessment, modeling &amp; decision-making</b></p> <p><b>Numerical Experimental Study of the MV Marathassa Oil Spill in Vancouver Harbour</b></p> <p>Xiaomei Zhong<sup>1</sup>, Haibo Niu<sup>1</sup>, Shihan Li<sup>1</sup>, Thomoas King<sup>2</sup></p> <p><sup>1</sup>Dalhousie University, <sup>2</sup>Fisheries and Oceans, Canada</p>	Avalon Room
15:30	<p><b>Enhanced Physicochemical Processes for the Treatment of Petroleum-Contaminated Systems</b></p> <p>Shan Zhao<sup>1,2</sup>, Shuguang Wang<sup>1</sup>, Gordon Huang<sup>2</sup></p> <p><sup>1</sup>Shandong University, China <sup>2</sup>University of Regina</p>	
15:50	<p><b>A Novel Statistical Method for Efficient Parameter Calibration and Uncertainty Analysis for Hydrological Modeling</b></p> <p>Hongjing Wu, Bing Chen, Leonard Lye</p> <p>Memorial University</p>	

# Symposium Agenda

## October 17, 2017

	<b>Parallel Sessions 8 Policy, socioeconomic impact &amp; engagement</b>	Battery Room
15:10	<b>NL Government Water Resources Management Division's Role in Chemical Management Plan</b> Renee Paterson <i>Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador</i>	
15:30	<b>Scientific and Technical Expertise in The Public Spotlight: Public Engagement Constraints on PEOPs Research and Policy Development</b> Ian G. Stewart <i>University of King's College, Dalhousie University</i>	
15:50	<b>A New Risk-Human Factor Analysis Method for Marine Oil Spill Decision Making</b> Xudong Ye <sup>1</sup> , Bing Chen <sup>1</sup> , Rune Storesund <sup>2</sup> <i><sup>1</sup>Memorial University, <sup>2</sup>University of California Berkeley</i>	
18:00	Banquet Reception	Court Garden
18:30	Closing Banquet Award Presentation	Court Garden

# Keynote speech Abstracts

## **Persistent Organic Pollutants in the ocean: How much is there? What to do? Will we do it?**

Prof Charles Sheppard

Editor: Marine Pollution Bulletin, Advances in Marine Biology

### **Abstract:**

If we look at the global ocean, rather than our own particular corner of it, I suggest we have very little idea of how much Persistent Organic Pollution actually enters it. I give some examples of how the best calculations we can do are messed up by what is accidentally overlooked or deliberately concealed. I present examples of how Government structures, which grow incessantly and sometimes absurdly, still miss some of the important issues. What POPs will do or are already doing, however, in an important global sense, is virtually impossible to determine or predict except in cases where effects have already been noted, which sometimes is too late for millions. This is because, regardless of what agencies might exist or do, inbuilt ecological principles sometimes defy even our best efforts. Firstly, effects can remain undetected until an unforeseeable threshold has passed. Secondly two principles, the 'Butterfly effect' and the 'Black Swan effect' cause probably insurmountable problems that ecologically confound us so that we may never get to grips with these problems. So, building in inevitable and unknowable uncertainties and similar factors is key to management. Why have we not done so? Because with the oceans, unlike land, most is not under ownership or jurisdiction of anyone in particular. I relate the history of why this is, a European move initially thought to be a major civilising success but perhaps now better considered to mark the reasons for many problems. Given this, I suggest four key points that can reverse the problem. We can do those, but will we?!

# Keynote speech Abstracts

## **NORMAN Association: A network approach to scientific collaboration on emerging contaminants and their**

Jaroslav Slobodnik

Chairman of the NORMAN Association

### **Abstract:**

The NORMAN Association ([www.norman-network.net](http://www.norman-network.net)) is an independent and highly recognised network of more than 80 research institutions, reference laboratories, industry, universities and regulatory bodies to support decision-makers in all decisions for the identification, monitoring, assessment and prioritisation of relevant emerging pollutants and their transformation products in the environment. The network runs six Working Groups (WGs), dealing with various issues related to (i) prioritisation of emerging substances, (ii) bioassays and biomarkers, (iii) effect-directed analysis for hazardous pollutants identification, (iv) nano- and micro-scale particulate contaminants, (v) wastewater reuse and (vi) indoor environment. Two Cross-Working Group Activities on non-target screening (NTS) and passive sampling interact with several of the above WGs.

The development of databases and improvement of data exchange is among NORMAN's core activities. NORMAN EMPODAT (<http://www.norman-network.net/empodat/>) is today the largest database on emerging substances worldwide. New modules for accommodation of ecotoxicity studies, passive sampling, indoor environment, bioassays monitoring and antibiotic resistance (ARBs/ARGs) data are now at various stages of development.

It is increasingly recognised that the number of compounds measured today via target chemical analysis is not sufficient to provide an exhaustive overview of the status of the environment and that the application of NTS techniques is needed in order to detect the presence of harmful substances potentially overlooked. NORMAN has a strong interest in promoting harmonisation of high resolution-mass spectrometry (HR-MS) based NTS protocols and their integration with biological monitoring tools to improve the identification of pollutants specific for individual European seas and rivers.

The NORMAN Joint Programme of Activities includes actions on the integration of data from NTS into the NORMAN prioritisation framework for emerging substances, as well as the launch of an Suspect Exchange List for target and suspect substances (<http://www.norman-network.com/datatable/>) in order to speed up the process of Europe-wide screening of newly identified contaminants of emerging concern. A new Digital Sample Freezing Platform (DSFP) has been developed providing a repository for raw full-scan mass chromatograms, data processing and profiling functions, as a tool to support retrospective screening of the samples. Using the DSFP marine water, biota and sediments samples were extensively studied for presence of more than 2000 target and 14,000 non-target substances in 2017. The NORMAN network Early Warning System (NormaNEWS) has been successfully tested, introducing a concept when one lab identifies a new relevant contaminant, MS and other identification criteria are sent to other members of the group to search for the substance in their samples. All of the newly produced mass spectral data and structure elucidation tools are being used to upgrade the NORMAN MassBank. (<http://massbank.ufz.de/MassBank/>) for identification of unknowns.

# ORGANIZING COMMITTEE (ALPHABETICAL)

**Dr. Cunsolo, Ashlee**

Director of Labrador Institute, Memorial University of Newfoundland

**Dr. Darario, Joseph**

Assistant Professor of Department of Civil Engineering,  
Faculty of Engineering & Applied Science, Memorial University of Newfoundland  
Canada (CSCE NL Section Treasurer)

**Dr. Lee, Kenneth**

National Senior Scientific Advisor, Fisheries and Oceans Canada, Canada

**Dr. Liu, Yong**

Associate Professor and Assistant Dean, College of Environmental Science and  
Engineering, Peking University, China

**Dr. Guo, Huaicheng**

Professor and Director, Institute of Water Technology, College of Environmental  
Science and Engineering, Peking University, China

**Dr. Husain, Tahir**

Professor of NRPOP Lab and Department of Civil Engineering, Faculty of  
Engineering & Applied Science,  
Memorial University of Newfoundland, Canada

**Dr. Hussein, Amgad**

Head and Associate Professor of Department of Civil Engineering, Faculty of  
Engineering & Applied Science,  
Memorial University of Newfoundland, Canada

**Dr. Singh, Kripa S**

Professor of Department of Civil Engineering, University of New Brunswick  
Canada (CAWQ Regional Director Atlantic)

**Dr. Storesund, Rune**

Director of Center for Catastrophic Risk Management  
University of California Berkeley, USA

**Dr. Wang, Shuguang**

Professor and Associate Dean  
College of Environmental Science and Engineering  
Shandong University, China

PEOPLE  
Network

Persistent and Emerging Organic Pollution in Environments

NRPOP LAB  
Northern Region Persistent Organic Pollution Control Laboratory

Email: [nrpop@mun.ca](mailto:nrpop@mun.ca) Web: [www.nrpop.org/people2017](http://www.nrpop.org/people2017)

