

PROGRAMME

PROGRAM

**43e Colloque technique de l'AMOP –
Contamination de
l'environnement et intervention**

**Virtuellement
8 – 10 juin 2021**

**43rd AMOP Technical Seminar
on Environmental
Contamination
and Response**



**Virtually
June 8 – 10, 2021**



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

Canada

*We cannot guarantee that all papers will be presented at the Seminar.
Nous ne pouvons pas garantir que tous les documents seront présentés lors du colloque.*

Tuesday, June 8 – Mardi 8 juin

Room 1 – Salle 1

Response Technologies and Countermeasures for Oil Spills

Technologies d'intervention et mesures de prévention pour les déversements d'hydrocarbures

Session Chair – Président de séance

Benjamin G. Fieldhouse

- 10:00** **Burn Test Pans: Size Matters**
Merv F. Fingas
Spill Science, Edmonton, Alberta, Canada
- 10:20** **Calculating the Concentrations of Oil and Dispersants under Dispersed Oil Slicks**
Merv F. Fingas
Spill Science, Edmonton, Alberta, Canada
- 10:40** **Mesoscale In-Situ Burn (ISB) Experiments for Oil Spill Response in Freshwater with Vegetation**
Kemal Sarp Arsava, Nathan J. Lamie, and Brandon K. Booker
US Army Engineer Research & Development Center, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire, USA
Elizabeth Murphy and Alexander Balsley
US Coast Guard R&D Center, New London, Connecticut, USA
- 11:00** **Burning Behaviour of an Oil Slick with Waves**
Nathaniel G. Sauer, Mahesh Kottalgi, Kemal Sarp Arsava, and Ali S. Rangwala
Worcester Polytechnic Institute, Worcester, Massachusetts, USA
- 11:20** **The BOREAL Project - In-situ Recovery Techniques, their Limitations, and Lessons Learned during the Cleanup of Sunken Diluted Bitumen in a Freshwater System**
Keval Shah, Bruce P. Hollebone, Zeyu Yang, Patrick G. Lambert, and Claire Courtemanche
Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada
Jules Blais, Sawyer Stoyanovich, Jonathan Séguin and Jose Rodriguez
University of Ottawa, Ottawa, Ontario, Canada
Stephane Johnson
Eastern Canada Response Corporation, Sarnia, Ontario, Canada
- 11:40** **Oily Waste Generation and Minimization in Marine Oil Spill Response: A Review**
Yuan Yao, Konstantin Volchek, Carl E. Brown, Benjamin G. Fieldhouse, Vladimir Blinov, and Patrick G. Lambert
Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada
Michael W. Doucet and John Henderson
Stantec Consulting Ltd., Dartmouth, Nova Scotia, Canada
Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
- 12:00** **Assessment and Optimization of Air Assisted Oil Spill Recovery Enhancement Using Numerical Simulation**
Vandad Talimi, Lei Liu, Premkumar Thodi, and Jonathon Bruce
C-Core, St. John's, Newfoundland, Canada
Majid Abedinzadega Abdi
MA Procense, St. John's, Newfoundland, Canada

Tuesday, June 8 – Mardi 8 juin

Room 1 – Salle 1

Response Technologies and Countermeasures for Oil Spills (continued)

**Technologies d'intervention et mesures de prévention pour les déversements d'hydrocarbures
(suite)**

12:20 Intermission – Pause

13:00 Application of the Field Scale Test Protocol for Type I Sorbents Recovering Oil on Water
Grant Coolbaugh
Applied Research Associates, Inc. (ARA), Ohmsett Test Facility, Leonardo, New Jersey, USA
Kristi McKinney
Bureau of Safety and Environmental Enforcement (BSEE), Sterling, Virginia, USA

Speaker's Corner – Tribune libre

13:20 SMART Protocol Using Polarized Infrared Cameras
Tim Nedwed and Doug Mitchell
ExxonMobil Upstream Research Company, Spring, Texas, USA
Tom Coolbaugh
Exxon Mobil Corporation, Spring, Texas
Wolfgang Konkel
ExxonMobil Biomedical Sciences, Inc., Annandale, New Jersey, USA

**Forum on Multi-partner Research Initiatives (MPRI)
Forum concernant l'initiative de recherche multipartenaire**

Session Chair – Président de séance

Kenneth Lee and Lisa Isaacman

Speaker's Corner – Tribune libre

**13:40 Coupled Texas A&M Oil Spill Calculator/Viscous Breakup Model in Jets (TAMOC/VDROP-J)
Simulations of Subsea Blowouts and Pipeline Leaks**
Scott A. Socolofsky
Texas A&M University, Zachry Department of Civil and Environmental Engineering, College
Station, Texas, USA
Michel Boufadel
New Jersey Institute of Technology, Department of Civil and Environmental Engineering, Newark,
New Jersey, USA
Youyu Lu
Dalhousie University, Department of Oceanography, Halifax, Nova Scotia, Canada
J. Samuel Arey
ExxonMobil Biomedical Sciences, Inc., Annandale, New Jersey, USA

Speaker's Corner – Tribune libre

**14:00 Delayed Mixing of Oil Droplets Crossing an Oil-Water Interface due to Engulfment by
Lingering Thin Water Films**
Omri Ram and Joseph Katz
Johns Hopkins University, Department of Mechanical Engineering, Baltimore, Maryland, USA

14:20 End of Day – Fin de la journée

Tuesday, June 8 – Mardi 8 juin
Room 2 – Salle 2

Detection, Tracking, and Remote Sensing of Oil Spills
Détection, suivi, et télédétection des déversements d'hydrocarbures

Session Chair – Président de séance

Carl E. Brown

10:00 Development and Evaluation of Mid-range Benchtop FTIR as an Integrated Tool for Emergency Oil Spill Response

Kevin Watson, Patrick G. Lambert, Michael Goldthorp, and Grayson Hatfield
Environment & Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada
Melanie Cyr and Amrah Nasim
University of Ottawa, Ottawa, Ontario, Canada
Youssef Bella-Metadamas
Carleton University, Ottawa, Ontario, Canada

10:20 Characterization of Spectral Signatures of Various Oils on Water

Igor Zakharov
C-CORE, Ottawa, Ontario, Canada
Jerry English and Sherry Warren
C-Core, St. John's, Newfoundland, Canada
Thomas Puestow
National Research Council of Canada (NRC), Ocean, Coastal and River Engineering, Ottawa, Ontario, Canada
Robert Brown
Offshore Safety and Survival Centre, Marine Institute, Conception Bay South, Newfoundland, Canada

10:40 Ultrasonic Techniques to Detect and Monitor Oil Spills

Anand Prakash, Kanu Raigan, and E.A. Alshaafi
University of Western Ontario, Department of Chemical and Biochemical Engineering, London, Ontario, Canada

Speaker's Corner – Tribune libre

11:00 Quick Assessment of Spill Paths Using High-resolution Elevation Data Near Spill Sources

Paul A. Arp and Jae Ogilvie
University of New Brunswick, Fredericton, New Brunswick, Canada
Chris Bater and Barry White
Government of Alberta, Edmonton, Alberta, Canada

Shoreline Response
Interventions en milieu côtier

Session Chair – Président de séance

Sonia Laforest

11:20 Shoreline Contamination from the SS Arrow Spill - Chedabucto Bay, Nova Scotia, Canada

Sonia Laforest and Patrick G. Lambert
Environment & Climate Change Canada Emergencies Science and Technology Section, Ottawa, Ontario, Canada
Shannon Wilde
TrioX Environmental Emergencies Inc., Montréal, Québec, Canada

Tuesday, June 8 – Mardi 8 juin
Room 2 – Salle 2

Shoreline Response (continued)
Interventions en milieu côtier (suite)

11:40 The Role of SCAT-OPS Liaison in a Shoreline Response Program (SRP)

Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
Richard Santer and A. Tucker
BP, Sunbury-on-Thames, United Kingdom

Speaker's Corner – Tribune libre

12:00 Data Management for Time-series Profiling Surveys and Sediment Volume Change Calculations

Mark A. Kulp, C.M. Miller, D.F. Maygarden, and L. Glushik
University of New Orleans, Pontchartrian Institute for Environmental Sciences, New Orleans, Louisiana, USA
Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
T. Scott
Polaris Applied Sciences, Inc., Bainbridge Island, Washington, USA
T.A. Owens

12:20 Intermission – Pause

13:00 Field Trials Using Canines to Detect Deep Subsurface Weathered and Heavy Oils

Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
Paul C. Bunker
Chiron-K9, San Antonio, Texas, USA
Helen C. Dubach
CTEH, Houston, Texas, USA
Elliott Taylor
Polaris Applied Sciences Inc., Bainbridge Island, Washington, USA

13:20 A Checklist Approach to the Mobilization and Activation of an Integrated Shoreline Response Program (SRP) and a Shoreline Cleanup Assessment Technique (SCAT) Program in the Incident Command System (ICS)

Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
J.S. Kitagawa and Scott A. Neuhauser
BP Americas, Houston, Texas, USA

Environmental Emergency Operations
Opérations d'urgence environnementale

Session Chair – Président de séance

Mathieu Dussault

Speaker's Corner – Tribune libre

13:40 Introducing the National Environmental Emergencies Centre

Mathieu Dussault
Environment & Climate Change Canada, National Environmental Emergencies Centre,
Montréal, Québec, Canada

Tuesday, June 8 – Mardi 8 juin
Room 2 – Salle 2

Environmental Emergency Operations (continued)
Opérations d'urgence environnementale (suite)

Speaker's Corner – Tribune libre

14:00 The NEEC Notification Desk

Jessie Carrière

Environment and Climate Change Canada, National Environmental Emergencies Centre, Montréal, Québec, Canada

Speaker's Corner – Tribune libre

14:20 The National Environmental Emergencies Operations Centre

Leandra Langlois

Environment and Climate Change Canada, National Environmental Emergencies Centre, Montréal, Québec, Canada

Speaker's Corner – Tribune libre

14:40 Geospatial Capabilities Enabling NEEC Operations and Interoperability

Anthony Pouw

Environment and Climate Change Canada, National Environmental Emergencies Centre, Montréal, Québec, Canada

15:00 End of Day – Fin de la journée

Tuesday, June 8 – Mardi 8 juin
Room 3 – Salle 3

Remediation, Restoration, and Rehabilitation of Chemical and Hazardous Material Spills
Dépollution, restauration, et remise en état en cas de déversements de produits chimiques et de matières dangereuses

Session Chair – Président de séance

Michael Goldthorp

10:00 Bacterial and Fungal Enzyme Cocktail for the Biodegradation of a p-Xylene Spill in Groundwater

Saba Miri and Satinder Kaur Brar

York University, Lassonde School of Engineering, Toronto, Ontario, Canada

Saba Miri, Satinder Kaur Brar, Richard Martel, and Tarek Rouissi

Université du Québec, Institut national de la recherche scientifique - Centre Eau Terre Environnement (INRS-ETE), Québec, Québec, Canada

Monitoring and Assessment of Chemical and Hazardous Material Spills
Surveillance et évaluation des déversements de produits chimiques et de matières dangereuses

Session Chair – Président de séance

Michael Goldthorp

10:20 Phospholipid Fatty Acid Analysis for Profiling Microbial Communities Associated with Microbiologically Induced Corrosion in the Submarine Environment

Xing Song, Baiyu Zhang, and Bing Chen

Memorial University, Northern Region Persistent Organic Pollution Control (NRPOP) Laboratory, St. John's, Newfoundland, Canada

Tuesday, June 8 – Mardi 8 juin
Room 3 – Salle 3

**Contingency Planning, Preparation, and Prevention of Spills of Chemicals
and Hazardous Materials**

**Déversements de produits chimiques et de matières dangereux - Planification des mesures
d'urgence, préparation, et prévention**

Session Chair – Président de séance

Michael Goldthorp

- 10:40** **Determining the Likelihood of Ship-source Hazardous and Noxious Substance Releases in Canada**
David J. Creber and Laura Eldridge
Dillon Consulting, Fredericton, New Brunswick, Canada
Lynn Gagnon
Dillon Consulting, Calgary, Alberta, Canada
Cornelis van der Tak and Max Duursma
Maritime Research Institute Netherlands, Wageningen, Netherlands

Oil Spill Contingency Planning, Preparation, and Prevention
Planification des mesures d'urgence, préparation, et prévention des
déversements d'hydrocarbures

Session Chair – Président de séance

Elise DeCola

- 11:00** **Estimating the Flow of Bulk Oil and Hazardous Materials through Massachusetts: Findings and Recommendations for Improved Data Management**
Elise DeCola
Nuka Research and Planning Group, LLC, Plymouth, Massachusetts, USA
Nick Childs
Massachusetts Department of Environmental Protection, Boston, Massachusetts, USA
- 11:20** **Perspectives on Oil Spill Statistics 1970-2020**
Dagmar Schmidt Etkin
Environmental Research Consulting, Cortlandt Manor, New York, USA

Speaker's Corner – Tribune libre

- 11:40** **First Nations Capacity-building through Geographic Response Strategy Development - Highlights from 2019 Field Season in the BC Northern Shelf Bioregion**
Elise DeCola
Nuka Research and Planning Group, LLC, Plymouth, Massachusetts, USA
Steve Diggon
Coastal First Nations-Great Bear Initiative
- 12:00** **Remote Arctic Storage Facility Management Challenges**
Mikkel Foltmar
NORTECH Inc., Anchorage, Alaska, USA
Kirsten Ballard
ARCTOS Alaska, Anchorage, Alaska, USA
- 12:20** **End of Day – Fin de la journée**

Wednesday, June 9 – Mercredi 9 juin
Room 1 – Salle 1

Forum on Multi-partner Research Initiatives (MPRI) (continued)
Forum concernant l'initiative de recherche multipartenaire (suite)

Session Chair – Président de séance

Kenneth Lee and Lisa Isaacman

10:00 Enhancing the Dispersant Efficiency by Applying Artificial Energy after Dispersant Treatment
Liv-Guri Faksness, Frode Leirvik, Marius Johnsen, Thor-Arne Pettersen, and Per S. Daling
SINTEF Ocean AS, Trondheim, Norway
James McCourt
SL Ross Environmental Research Ltd., Ottawa, Ontario, Canada

Speaker's Corner – Tribune libre

10:20 Impact of Chemical Oil Herders on Wave Breaking
Lakshmana D. Chandrala, Franz O'Meally, and Joseph Katz
Johns Hopkins University, Department of Mechanical Engineering, Baltimore, Maryland, USA

Speaker's Corner – Tribune libre

10:40 Essential Aquatic Toxicology Data Collection Associated with Deployment of Alternate Response Measures Using Non-standard Species and Customized Methods and Biological Endpoints
Benjamin de Jourdan and Chris Bridger
Huntsman Marine Science Centre, St. Andrews, New Brunswick, Canada
Michal Galus and Boumy Sayavong
Fisheries and Oceans Canada, Ottawa, Ontario, Canada
Kenneth Lee
Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

Speaker's Corner – Tribune libre

11:00 Oil Jet in Water: Measurements of Flow Structure and Turbulence in the Nearfield
Xinzhi Xue and Joseph Katz
Johns Hopkins University, Department of Mechanical Engineering, Baltimore, Maryland, USA

Speaker's Corner – Tribune libre

11:20 A New Decanting Water Onsite Treatment System by UV-enhanced Ozonation for Marine Oil Spill Response
Guihua Dong, Bing Chen, Bo Liu, Baiyu Zhang, and Yiqi Cao
Memorial University, Northern Region Persistent Pollution Control (NRPOP) Laboratory,
St. John's, Newfoundland, Canada
Stanislav Stoyanov
Natural Resources Canada, CanmetENERGY, Devon, Alberta, Canada
Kenneth Lee
Fisheries and Oceans Canada, Dartmouth, Nova Scotia, Canada

11:40 Testing of Alternative Response Options for Spilled Conventional and Non-Conventional Oils Transported in Canada
David Cooper, Dario Velicogna, and James McCourt
SL Ross Environmental Research Ltd., Ottawa, Ontario, Canada

Wednesday, June 9 – Mercredi 9 juin
Room 1 – Salle 1

Forum on Multi-partner Research Initiatives (MPRI) (continued)
Forum concernant l'initiative de recherche multipartenaire (suite)

Speaker's Corner – Tribune libre

12:00 An Investigation into the Geographic Distribution and Variability of Inorganic Fine Particles in Canadian Marine Environments

Edward H. Owens
Owens Coastal Consultants Ltd., Bainbridge Island, Washington, USA
Elliott Taylor
Polaris Applied Sciences Inc., Bainbridge Island, Washington, USA
C. An and Z. Chen
Concordia University, Montréal, Québec, Canada
Kenneth Lee
Fisheries and Oceans Canada, Dartmouth, Nova Scotia, Canada

12:20 Intermission – Pause

Speaker's Corner – Tribune libre

13:00 Role of Nanomaterials in Oil-Water Separation

Suboohi Shervani, Jiabin Liu, Jingjing Ling, Javid Shadbahr, and Tahir Husain
Memorial University, Faculty of Engineering and Applied Science, St. John's, Newfoundland, Canada

Speaker's Corner – Tribune libre

13:20 Metal Organic Framework MOF-5 Based Mesh for the Separation of Oil-Water Mixture

Mohammad Alsakit, Suboohi Shervani, Jiabin Liu, and Tahir Husain
Memorial University, Faculty of Engineering and Applied Science, St. John's, Newfoundland, Canada

Speaker's Corner – Tribune libre

13:40 Simulation of Oil Droplet Formation from Vertical and Crossflow Jets - Experiments and Improvements within VDROPI

Michel C. Boufadel, Ruixie Liu, and Cosan Daskiran
New Jersey Institute of Technology, Center for Natural Resources, Civil and Environmental Engineering Department, Newark, New Jersey, USA
Thomas King, Brian Robinson, and Kenneth Lee
Fisheries and Oceans Canada, Dartmouth, Nova Scotia, Canada
Scott A. Socolofsky
Texas A&M University, Zachry Department of Civil Engineering, College Station, Texas, USA

Speaker's Corner – Tribune libre

14:00 Structural and Rheological Changes of Water in Crude Oil Emulsions Caused by Dispersants

Diego F. Muriel Delgado and Joseph Katz
Johns Hopkins University, Department of Mechanical Engineering, Baltimore, Maryland, USA

Speaker's Corner – Tribune libre

14:20 Development of an Oil Dispersant Using Biosurfactants for Oil Spill Treatment in the North Atlantic Ocean

Zhiwen Zhu, Baiyu Zhang, Bing Chen, and Jingjing Ling, Memorial University, Faculty of Engineering and Applied Science, St. John's, Newfoundland, Canada
Kenneth Lee, Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

14:40 End of day – Fin de la journée

Wednesday, June 9 – Mercredi 9 juin
Room 2 – Salle 2

Oil Spill Modelling
Modélisation des déversements d'hydrocarbures

Session Chair – Président de séance

Christopher Barker

- 10:00 Physical Model Studies of Innovative Oil Containment Boom Designs**
Scott Baker, Andrew Cornett, Hossein Babaei, and Vahid Palechi
National Research Council Canada, Ottawa, Ontario, Canada
Steve Potter
SL Ross Environmental Research Ltd., Ottawa, Ontario, Canada
Kristie McKinney
Bureau of Safety and Environmental Enforcement (BSEE), Sterling, Virginia, USA
- 10:20 Effectively Communicating Oil Spill Modeling Results: Electronic Forums for Environmental and Emergency Response Information**
Matthew Horn and Jenna Ducharme
RPS Ocean Science, South Kingstown, Rhode Island, USA
- 10:40 Floating Oil Emulsification - Review of Models, Input Requirements, and Research Needs**
Deborah P. French-McCay and Anusha L. Dissanayake
RPS Ocean Science, South Kingstown, Rhode Island, USA
William H. Lehr (Emeritus) and Robert Jones
National Oceanic and Atmospheric Administration (NOAA), Office of Response (OR&R), Seattle, Washington, USA
Karen Stone
Bureau of Safety and Environmental Enforcement (BSEE), Sterling, Virginia, USA
Benjamin G. Fieldhouse
Environment & Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada
Guillaume Marcotte
Environment and Climate Change Canada, Meteorological Service of Canada, Dorval, Québec, Canada
Anusha L. Dissanayake, Per S. Daling, and Jørgen Skancke
SINTEF Ocean AS, Trondheim, Norway
- 11:00 A Comparison of Drift Prediction Modelling Methodologies**
Nancy Soontiens, Jennifer Holden, and Fraser Davidson
Fisheries and Oceans Canada, St. John's, Newfoundland, Canada

Wednesday, June 9 – Mercredi 9 juin
Room 2 – Salle 2

Oil Spill Modelling (continued)
Modélisation des déversements d'hydrocarbures (suite)

11:20 **Optimizing Improvement in Spill Response Models to Meet the Needs of the On-scene Command**
Bill Lehr and Chris Barker
NOAA Emergency Response Division, Seattle, Washington, USA
C.J. Beegle-Krause
SINTEF Ocean AS, Trondheim, Norway
Michel Boufadel
New Jersey Institute of Technology, Center for Natural Resources, Department of Civil and Environmental Engineering, Newark, New Jersey, USA
Tom Coolbaugh
Applied Research Associates (ARA), Inc., Leonardo, New Jersey, USA
Claire Paris-Limouzy
University of Miami, Miami, Florida, USA
Scott A. Socolofsky
Texas A&M University, Zachry Department of Civil and Environmental Engineering, College Station, Texas, USA
Lin Zhao
ExxonMobil, Irving, Texas, USA

Speaker's Corner – Tribune libre

11:40 **Non-linear Source Term and Scenario for Operational Oil Spill Model**
Kuo-Hsien Chang, Eric Legault-Ouellet, Guillaume Marcotte, and Paul Pestieau
Environment & Climate Change Canada, Canadian Meteorological Centre, Dorval, Québec, Canada

Speaker's Corner – Tribune libre

12:00 **Oil Droplets at the Water Surface: Breakup and Diffusion**
Michel C. Boufadel, Fangda Cui, and Xiaolong Geng
New Jersey Institute of Technology, Center for Natural Resources, Department of Civil and Environmental Engineering, Newark, New Jersey, USA
Brian Robinson, Thomas King, and Kenneth Lee
Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

12:20 **Intermission – Pause**

Wednesday, June 9 – Mercredi 9 juin
Room 2 – Salle 2

Fate and Effects of Oil
Devenir et effets des hydrocarbures

Session Chair – Président de séance

Bruce P. Hollebone

13:00 **Tools and Methods Used to Assess the Fate and Transport of a Heavy Oil Release in the North Saskatchewan River**
Shaun Toner and Scott Purves
Matrix Solutions, Guelph, Ontario, Canada
Tara Murfitt
Matrix Solutions, Calgary, Alberta, Canada
Jocelyn Richards
Matrix Solutions, Cold Lake, Alberta, Canada

Wednesday, June 9 – Mercredi 9 juin
Room 2 – Salle 2

Fate and Effects of Oil
Devenir et effets des hydrocarbures

Speaker's Corner – Tribune libre

- 13:20** **A Characterisation of the Geochemical Evolution and Subsequent Aquatic Toxicity of Diluted Bitumen within Shallow Groundwater Systems over Time**
Scott Hepditch, Tuan Anh To, Ève Larocque, Juan-Manuel Gutierrez-Villagomez, Richard Martel, and Valerie S. Langlois
Institut national de la recherche scientifique - Centre Eau Terre Environnement (INRS-ETE), Québec City, Québec, Canada
Jason M.E. Ahad
Natural Resources Canada, Geological Survey of Canada, Québec City, Québec, Canada

Speaker's Corner – Tribune libre

- 13:40** **Variability in Acute Toxic Response of American Lobster Larvae (*Homarus americanus*) to Oil Constituents Using Water Accommodated Fraction (WAF) and Chemically Enhanced Water Accommodated Fraction (CEWAF) Methods**
Tahereh Boloori and Benjamin de Jourdan
Huntsman, Marine Science Centre, St. Andrews, New Brunswick, Canada

- 14:00** **End of day – Fin de la journée**

Thursday, June 10 – Jeudi 10 juin
Room 1 – Salle 1

Physical and Chemical Properties and Behaviour of Oil Spills (continued)
Comportement et caractéristiques physiques et chimiques des déversements d'hydrocarbures

Session Chair – Président de séance

Merv F. Fingas

Speaker's Corner – Tribune libre

- 10:00** **The Agia Zoni II Oil Spill - Imprint and Environmental Consequences on the Marine Ecosystem of Saronikos Gulf (Greece)**
Constantine Parinos, I. Hatzianestis, A.P. Karageorgis, N. Simboura, M. Salomidi, P. Panagiotidis, C. Tsangaris, E. Strogyloudi, T.D. Kanellopoulos, A. Gogou, G. Arvanitakis, L. Bordbar, S. Chourdaki, V. Gerakaris, Y. Issaris, N. Katsiaras, N. Kouerinis, A. Papageorgiou, E. Plakidi, I. Stavrakaki, and E. Voutsina
Hellenic Centre for Marine Research (HCMR), Institute of Oceanography, Anavyssos, Attika, Greece
- 10:20** **Comparing Oil Fingerprints or Diagnostic Ratios**
Merv F. Fingas
Spill Science, Edmonton, Alberta, Canada
- 10:40** **Simultaneous Quantitation of Dispersant and Fingerprinting Analysis of Oil in Aqueous Samples Using Commercial Solid Phase Extraction (SPE) Cartridge and Liquid/Gas Chromatography-Mass Spectrometry (LC/GC-MS)**
Chun Yang, Alexander Waldie, Justin Lai, Benjamin G. Fieldhouse, Zeyu Yang, Bruce P. Hollebone, and Patrick G. Lambert
Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada

Thursday, June 10 – Jeudi 10 juin
Room 1 – Salle 1

Physical and Chemical Properties and Behaviour of Oil Spills (continued)
Comportement et caractéristiques physiques et chimiques des déversements d'hydrocarbures
(suite)

- 11:00 Introduction to Oil Visual Guides: New Information Products for Oil Spill Response**
Fatemeh Mirnaghi, Zeyu Yang, Callum Blaney, Victor Maldonado, Keval Shah, Diane Dey, and Bruce P. Hollebone
Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada
- 11:20 Generation and Characterization of Representative Oil-in-Water Emulsion for a Laboratory Study of Decanting as a Potential Alternative Oil Spill Response Measure**
Vladimir Blinov, Benjamin G. Fieldhouse, Konstantin Volchek, Chun Yang, Patrick G. Lambert, Steven Ong, and Jill Yuen
Environment and Climate Change Canada, Emergencies Science and Technology Section Ottawa, Ontario, Canada
- Speaker's Corner – Tribune libre**
- 11:40 Toluene Impact on Aquatic Environments - Anthropogenic or Naturally Occurring?**
Virgil Guran, Michael Sheppard, and Taras Obal
Bureau Veritas Laboratories, Mississauga, Ontario, Canada
- 12:00 Conservative Release of Benzene and Toluene to Water following an Oil Spill**
Mahyar Sakari and Ron Brockbank
AGAT Laboratories, Centre of Excellence and Innovation, Forensics Science, Calgary, Alberta, Canada
Mahyar Sakari
Royal Roads, University, Environment and Sustainability, Victoria, British Columbia, Canada
Jackson Bergmann
Southern Alberta Institute of Technology, Calgary, Alberta, Canada
Ryan Staub
AGAT Laboratories, Petroleum Testing Services, Calgary, Alberta, Canada
Nathan Scott
AGAT Laboratories, Operations Division, Calgary, Alberta, Canada
Lisa Neville and James MacDonald
AGAT Laboratories, Technical Sciences, Calgary, Alberta, Canada
- 12:20 Intermission – Pause**
- 13:00 Characterization of Natural Conditions in the Lower Fraser River and the Salish Sea in Support of an Assessment for Oil-Mineral Aggregate Formation Potential**
Aurelien Hospital
Tetra Tech Canada, Vancouver, British Columbia, Canada
- Speaker's Corner – Tribune libre**
- 13:20 Environment and Climate Change Canada's Open Data Oil Properties Database**
Fatemeh Mirnaghi and Bruce P. Hollebone
Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, Ontario, Canada

Thursday, June 10 – Jeudi 10 juin
Room 1 – Salle 1

Physical and Chemical Properties and Behaviour of Oil Spills (continued)
Comportement et caractéristiques physiques et chimiques des déversements d'hydrocarbures
(suite)

Speaker's Corner – Tribune libre

13:40 A Novel Approach for Oil Spill Forensics Using GC/QToF and Principal Components Analysis
Dayue Shang, Pamela Brunswick, Honoria Kwok, and Graham van Aggelen
Environment & Climate Change Canada, Pacific Environmental Science Centre, Pacific and Yukon
Laboratory for Environmental Testing, North Vancouver, British Columbia, Canada
Candice Chua and Marcus Kim
Agilent Technologies Canada Inc., Mississauga, Ontario, Canada

Thursday, June 10 – Jeudi 10 juin
Room 1 – Salle 1

Case Histories and Recent Oil Spill Experiences
Cas concrets et expériences récentes de déversements d'hydrocarbures

Session Chair – Président de séance

Patrick G. Lambert

Speaker's Corner – Tribune libre

14:00 Recent Oil Spill Experiences
Angela Pinzón
International Tanker Owners Pollution Federation (ITOPF) Ltd., London, United Kingdom

14:20 End of Technical Seminar - Fin du Colloque technique

Thursday, June 10 – Jeudi 10 juin
Room 2 – Salle 2

Remediation, Restoration, and Rehabilitation of Oil Spills
Dépollution, restauration, et remise en état en cas de déversements d'hydrocarbures

Session Chair – Président de séance

Thomas King

Speaker's Corner – Tribune libre

10:00 Biotransformation of Dispersed Weathered Oil Released from Melted Sea Ice
Synnøve Lofthus and Ingrid Bakke
Norwegian University of Science and Technology (NTNU), Institute of Biotechnology and Food Science,
Trondheim, Norway
Charles W. Greer
National Research Council Canada, Energy, Mining and Environment Centre, Montréal, Québec,
Canada
Odd Gunnar Brakstad
SINTEF Ocean AS, Trondheim, Norway

Thursday, June 10 – Jeudi 10 juin
Room 2 – Salle 2

Remediation, Restoration, and Rehabilitation of Oil Spills (continued)
Dépollution, restauration, et remise en état en cas de déversements d'hydrocarbures (suite)

- 10:20 Integrated Spill Response Strategies - Unseen Consequences of Inland Spills**
Nick Dyer
Oil Spill Response Limited, Southampton, United Kingdom
Jack Shore
REGENESIS, Bath, United Kingdom
- 10:40 Phytoremediation as a Strategy for Remote Contaminated Sites**
Elizabeth Murray, Ben Poltorak, Kent Cryer, Adam Dunn, Michael Quesnel, and Perry Gerwing
Earthmaster Environmental Strategies Inc., Calgary, Alberta, Canada
Bruce Greenberg
University of Waterloo, Department of Biology, Waterloo, Ontario, Canada
- 11:00 Improving Contaminated Soil Remediation – Using Plants to Promote Beneficial Bacteria**
Michael Quesnel, Kent Cryer, Ben Poltorak, Adam Dunn, Leonid Rogochevski, Perry Gerwing and Elizabeth Murray
Earthmaster Environmental Strategies Inc., Calgary, Alberta, Canada
Bruce Greenberg
University of Waterloo, Department of Biology, Waterloo, Ontario, Canada
- 11:20 Treatment of Co-mingled Plumes of Petroleum Hydrocarbons (PHC) and Per- and Polyfluorinated Alkyl Substances (PFAS): Options and Tools**
Krista Barfoot
Stantec Consulting Ltd., Waterloo, Ontario, Canada
Ruth Bonneville
Stantec Consulting Ltd., Edmonton, Alberta, Canada
Ken Martins
Stantec Consulting Ltd., Irvine, California, USA
- Speaker's Corner – Tribune libre**
- 11:40 Physical and Biological Removal of Unconventional Oils in Fixed Bed Bioreactor**
Seyyed Mohammadreza Davoodi, Saba Miri, Satinder Kaur Brar, and Richard Martel
Université du Québec, Institut de la Recherche Scientifique – Centre Eau Terre Environnement (INRS-ÉITÉ), Québec, Québec, Canada
Seyyed Mohammadreza Davoodi, Saba Miri, Satinder Kaur Brar
York University, Lassonde School of Engineering, Department of Civil Engineering, Toronto, Ontario, Canada
Rosa Galvez-Cloutier
Université Laval, Département de Génie Civil, Québec, Québec, Canada
- 12:00 End of Day – Fin du jour**
-

Posters – Affiches

Nutrient-enriched Biochar as Adsorption and Bioremediation Agent for Coastal Oil Spills: A New Valorization Pathway for the Fisheries and Forestry By-products

Marie-Ève Lamarre and Karine Lemarchand

Université du Québec à Rimouski - Institut des sciences de la mer (UQAR-ISMER), Rimouski, Québec, Canada

Richard Saint-Louis

L'Université du Québec à Rimouski (UQAR), Rimouski, Québec, Canada

Papa Niokhor Diouf

SEREX, Amqui Québec, Canada

Influence of Natural and Forced Air Entrainment on PM Emissions and Burning Behavior of Diesel Fire Whirls

Hamed Farmahini Farahani, Chris D. Nelson, and Ali S. Rangwala

Worcester Polytechnic Institute, Worcester, Massachusetts, USA

Sriram Bharath Hariharan and Michael J. Gollner

University of California, Berkeley, California, USA

Elaine S. Oran

Texas A&M University, College Station, Texas, USA

* with paper/avec article

Ultrasonic Techniques to Detect and Monitor Oil Spills

Anand Prakash, Kanu Raigan, and E.A. Alshaafi

University of Western Ontario, Department of Chemical and Biochemical Engineering, London, Ontario, Canada

* with paper/avec article

Environment and Climate Change Canada Oil Spill Research: A Program to Bring Five Decades of Publications into the Public Domain

Patrick G. Lambert, Natalie C. Jones, Callum Blaney, Carl E. Brown, Benjamin G. Fieldhouse, Michael Goldthorp, Bruce P. Hollebone, and Sonia Laforest

Environment and Climate Change Canada, Emergencies Science and Technology Section, Ottawa, ON, Canada

Merv Fingas

Spill Science, Edmonton, Alberta, Canada

Gary Sergy

S3 Environmental, Inc., Edmonton, Alberta, Canada

* with paper/avec article

Investigation into the Geometry and Distribution of Oil Inclusions in Sea Ice Using Non-destructive X-ray Microtomography and its Implications for Remote Sensing and Mitigation Potential

Durell S. Desmond, Marcos Lemes, Madison L. Harasyn, Amirbahador Mansoori, Diana Saltymakova,

M. Christopher Fuller, Søren Rysgaard, David G. Barber, Dustin Isleifson, and Gary A. Stern

University of Manitoba, Winnipeg, Manitoba, Canada

Odile Crabeck

University of East Anglia, Norwich, United Kingdom

M. Christopher Fuller

University of Calgary, Calgary, Alberta, Canada

Søren Rysgaard

Aarhus University, Aarhus, Denmark

Assessing the Impact of Temperature and Salinity on the Acute Toxicity of Individual Polycyclic Aromatic Compounds to *Artemia franciscana* Nauplii Using a Passive Dosing System

Danielle Philibert and Benjamin de Jourdan

Huntsman Marine Science Center, St. Andrews, New Brunswick, Canada

Posters – Affiches

Comparative Assessment of Conventional Marine Spill Response Capable Oil/Water Separation Technologies

Ethan J. Matchinski, Bo Liu, and Bing Chen

Memorial University, Northern Region Persistent Pollution Control (NRPOP) Laboratory, St. John's, Newfoundland, Canada

Chemical Characterization of Oil Spills in the Marine Environment: Progress from the Petroleum Environmental Research Laboratory

Nasima Chorfa, Ashish Sarker, Kasia Polcwiartek, Nolan Snyder, Gary Stern, and Feiyue Wang

University of Manitoba, Department of Environment and Geography, and Centre for Earth Observation Science (CEOS), Winnipeg, Manitoba, Canada

The Dynamics of Oil in the Region of the Camamu-Almada Basin (Brazil)

Luciana F. Tessarolo, Fernando Túlio Camilo Barreto, and Valdir Innocentini,

National Institute for Space Research, São José dos Campos, São Paulo, Brazil

Iury Angelo Gonçalves

Federal University of Espírito Santo, São Mateus, Espírito Santo, Brazil

Exposure to the Water-soluble Fraction of Oil: Biomarker Response and Body Burden in Arctic Gammarid Amphipods - A Study Compilation

Frederike Keitel-Gröner, Renée K. Bechmann, and Thierry Baussant

NORCE Norwegian Research Centre

Environmental Department, Marine Ecology Group

Randaberg, Rogaland, Norway

* with paper/avec article

Methods for Predicting Partitioning and Fate of Petroleum Hydrocarbons and Heterocyclic Compounds in a Sea Ice Environment

Durell S. Desmond, Georg Schreckenbach, James D. Xidos, Diana Saltymakova, Dustin Isleifson,

David G. Barber, and Gary A. Stern

University of Manitoba, Winnipeg, Manitoba, Canada

Effects of Climate on Changes in the Density and Viscosity of Diluted Bitumen Weathered on Sea Water

Thomas King, Patrick Toole, Brian Robinson, Scott Ryan, and Kenneth Lee

Fisheries and Ocean Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada

Michel Boufadel

New Jersey Institute of Technology, Center for Natural Resources Development and Protection, Department of Civil and Environmental Engineering, Newark, New Jersey, USA

Haoshuai Li

Ocean University of China, Key Laboratory of Marine Chemistry Theory and Technology, Qingdao, China

Jason Clyburne

Saint Mary's University, Departments of Chemistry and Environmental Science, Halifax, Nova Scotia, Canada

Evaluating Sediment Toxicity Associated with Diluted-Bitumen (Dilbit) and Conventional Crude Spills through the Use of Pilot-scale Spill Tanks

W. Tyler Mehler and Greg Goss

University of Alberta, Biological Sciences, Edmonton, Alberta, Canada

Qin Xin and Heather D. Dettman

Natural Resources Canada, CanmetENERGY, Devon, Alberta, Canada

Evaluating Bioaccumulation and Toxicity of Hydraulic Fracturing Flowback and Produced Water (FPW) in the Aquatic Invertebrate, *Lumbriculus variegatus*

W. Tyler Mehler and Greg Goss

University of Alberta, Biological Sciences, Edmonton, Alberta, Canada

Posters – Affiches

New Methods to More Accurately Quantify Hydrocarbon Contamination from Natural Background

Lisa A. Neville and T. Warner

AGAT Laboratories, Calgary, Alberta, Canada

Lisa A. Neville

Brock University, St. Catharines, Ontario, Canada

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SS Arrow (Photographie : Gouvernement du Canada)

See you next year!

We hope you will join us from June 7 to 9, 2022 at the Chateau Lacombe Hotel in Edmonton, Alberta for the 44th AMOP Technical Seminar on Environmental Contamination and Response.

À l'année prochaine !

Nous espérons vous revoir du 7 au 9 juin 2022 à l'Hôtel Château Lacombe à Edmonton (Alberta) à l'occasion du 44e Colloque technique de l'AMOP – Contamination de l'environnement et intervention.

About the AMOP Technical Seminar

Environment and Climate Change Canada began the **Arctic and Marine Oilspill Program (AMOP)** in March 1978 to improve the knowledge base and technology for cleaning up Arctic and marine oil spills. The AMOP Technical Seminar soon evolved into an international technical forum about oil spills in any environment as well as other spill-related topics. In 1983, the first Technical Seminar on Chemical Spills (TSOCS) was held in conjunction with the AMOP Seminar and this eventually grew to include counterterrorism issues as a reflection of current priorities. In 1999, the Technical Seminar for Phytoremediation/Biotechnology Solutions for Spills (PHYTO) was added. This seminar changed to Biotechnology Solutions for Spills (BIOSS) and then to Biological Solutions for Site Remediation, Restoration, and Rehabilitation (BIOSOLR3). To remain at the forefront of the dynamic field of spill response, in 2008 all three Seminars were amalgamated under the name **AMOP Technical Seminar on Environmental Contamination and Response**.

The Proceedings of the AMOP Technical Seminar on Environmental Contamination and Response have evolved into a unique collection of papers on environmental topics related to oil and chemical spills. A downloadable bibliography is available Bibliography 1978-2018 and provided to participants at the technical seminar. Access to individual papers from AMOP Technical Seminar proceedings can be obtained directly from the author(s), by written request to Emergencies Science and Technology Section (ESTS) or by contacting ECCC Library Services [ec.bibliotheque-library.ec@canada.ca] for more information or searching the [Federal Science Library](#) catalogue.

All papers that appear in the Proceedings are included annually in Elsevier's abstract and reference databases SCOPUS and Compendex. SCOPUS is the world's largest abstract and citation database of peer-reviewed literature, while Compendex is one of the most comprehensive engineering literature databases available to engineers.

About the Emergencies Science and Technology Section

The AMOP Technical Seminar on Environmental Contamination and Response is organized annually by the **Emergencies Science and Technology Section (ESTS)** of **Environment and Climate Change Canada**. Staff at ESTS's Centre of Excellence located in Ottawa, Ontario carry out research and development on a variety of topics related to environmental emergencies caused by spilled hazardous materials. For more than 35 years, the Section has run an ongoing national program of research and development (R&D) on:

- properties, behaviour, detection, measurement, and effects of spilled hazardous materials with a focus on conventional and non-conventional petroleum products;
- modelling and remote sensing of spilled hazardous materials;
- spill countermeasures: evaluation, effectiveness, effects, and environmental benefits of mechanical and chemical treating agents; and
- shoreline impact and restoration: utilization of the Shoreline Cleanup Assessment Technique (SCAT).

A unique feature of the R&D is that results are applied to actual spill incidents, providing assistance to spill responders and conversely, feedback to the researchers on the direction of their work. R&D priorities are set and assessed by committees of representatives from all levels of government as well as international government agencies. Technology transfer is an important component of the program and the group provides operational guides, manuals, and training as well as some aspects of contingency planning.

Most of the section's projects are conducted in partnership with other government departments, agencies, and industry and cover a wide spectrum of issues related to spills. They include laboratory and field investigation in terrestrial, freshwater, and marine environments.

For additional information, please contact:

Emergencies Science and Technology Section

Environment and Climate Change Canada

335 River Road

Ottawa, Ontario, Canada K1A 0H3

Telephone: 613-998-9622

Fax: 613-991-9485

Email: ec.colloquetechniqueamop-amoptechnicalseminar.ec@canada.ca

À propos du Colloque technique de l'AMOP

Environnement et Changement climatique Canada a démarré le **Programme de lutte contre les déversements d'hydrocarbures en mer et dans l'Arctique (AMOP)** en mars 1978 afin d'améliorer les connaissances et les techniques en lien avec la lutte contre les déversements de pétrole dans des milieux marins et arctiques. Le Colloque technique de l'AMOP s'est rapidement transformé en un forum technique international sur les déversements d'hydrocarbures dans tout type d'environnement mais aussi sur d'autres types de déversements. En 1983, le premier Colloque technique sur les déversements de produits chimiques (TSOCS) s'est tenu en parallèle du Colloque de l'AMOP pour ensuite englober les questions de lutte anti-terroriste qui font partie des priorités actuelles. En 1999, le Colloque technique de phytoremédiation (PHYTO)/Solutions en biotechnologie lors de déversements fut ajouté. Ce colloque a évolué pour s'intituler Solutions biotechnologiques lors de déversements (BIOSS) puis Solutions biologiques de dépollution, de restauration et de réhabilitation des sites (BIOSOLR3). En 2008, afin de demeurer à l'avant-garde de la lutte contre les déversements, les trois colloques ont été regroupés sous un seul nom : **Colloque technique de l'AMOP – Contamination de l'environnement et intervention**.

Les comptes rendus des quatre dernières décennies du Colloque technique de l'AMOP - Contamination de l'environnement et intervention offrent maintenant une collection unique d'articles sur des sujets environnementaux relatifs aux déversements de produits pétroliers et de produits chimiques. Un exemplaire téléchargeable de la bibliographie des différents colloques techniques est disponible Bibliographie 1978-2018, et une version sera remise aux participants du colloque de cette année. Il est possible d'avoir accès aux articles cités dans les comptes rendus en communiquant avec l'auteur, en envoyant une demande par écrit à la Section des urgences - Science et technologie (SUST), en communiquant avec les Services de bibliothèque d'ECCC [ec.bibliotheque-library.ec@canada.ca] pour obtenir davantage de renseignements ou encore en faisant une recherche dans le catalogue de la [Bibliothèque scientifique fédérale](#).

Tous les articles contenus dans les Procédures sont ajoutés annuellement à la base de documents des abstraits et références SCOPUS et Compendex d'Elsevier. SCOPUS est la plus grande base de document au monde pour ce qui est des résumés et des citations littéraires révisés par des pairs, tandis que Compendex est la base de document littéraire sur l'ingénierie la plus complète disponible pour les ingénieurs.

À propos de la Section des urgences - Science et technologie

Colloque technique de l'AMOP – Contamination de l'environnement et intervention est organisé chaque année par la **Section des urgences - Science et technologie (SUST) d'Environnement et Changement climatique Canada**. Le personnel du Centre d'excellence de la SUST, situé à Ottawa (Ontario), poursuit des travaux en recherche et développement dans le domaine des urgences environnementales causées par des déversements de produits dangereux. Depuis plus de 35 ans, la SUST continue de diriger un programme national de recherche et développement sur :

- les propriétés, le comportement, la détection, la mesure et les effets nottament des produits pétroliers conventionnels et non conventionnels;
- la modélisation et la télédétection des déversements de produits dangereux;
- l'intervention en cas de déversement : évaluation, efficacité, effets et avantages environnementaux de techniques de restauration mécaniques et chimiques et
- Les incidents sur le littoral et la restauration : utilisation de la Technique d'évaluation pour la restauration des rives (TERR).

La particularité des résultats de ce programme de recherche et développement est qu'ils sont appliqués à des déversements réels et permettent de faciliter le travail des équipes d'intervention. En échange, les informations venant des intervenants permettent aux chercheurs de mieux orienter leurs travaux. Les priorités de recherche sont définies et évaluées par des comités de représentants de tous les niveaux de gouvernement et d'organismes gouvernementaux internationaux. Le transfert de technologie est un élément important du programme. La SUST produit des guides opérationnels et des manuels. Elle offre aussi de la formation et contribue dans une certaine mesure à la planification des mesures d'urgence.

La plupart des projets de la section se déroulent en partenariat avec d'autres ministères et organismes du gouvernement, ainsi qu'avec l'industrie, et englobent une vaste gamme de sujets relatifs aux déversements. Ils comprennent des études en laboratoire et sur le terrain, dans des milieux terrestres, en eau douce et en mer.

Pour de plus amples renseignements, veuillez contacter :

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Coup d’œil

	10:00	10:20	10:40	11:00	11:20	11:40	12:00	12:20 – 13:30 Pause	13:00	13:20	13:40	14:00	14:20	14:40
Mardi Salle 1												Forum concernant l'initiative de recherché multipartenaire		
Mardi Salle 2												Opérations d'urgence environnementale		
Mardi Salle 3														
Mercredi Salle 1														
Mercredi Salle 2														
Jeudi Salle1												Cas concrets		
Jeudi Salle 2														

Sessions at a Glance

	10:00	10:20	10:40	11:00	11:20	11:40	12:00	12:20 – 13:300 Inter - mission	13:00	13:20	13:40	14:00	14:20	14:40
Tuesday Room 1							Response Technologies and Countermeasures				Forum on Multi - partner Research Initiatives (MPRI)			
Tuesday Room 2							Dection, Tracking and Remote Sensing				Environmental Emergency Operations			
Tuesday Room 3							Chemical Remediation, Restoration, and Rehabilitation Chemical Monitoring and Assessment Contingency Planning, Preparation, and Prevention of Chemical Spills							
Wednesday Room 1							Forum on Multi -partner Research Initiatives (MPRI) (continued)							
Wednesday Room 2							Oil Spill Modelling		Fate and Effects of Oil					
Thursday Room 1							Physical and Chemical Properties and Behaviour of Oil Spills					Case Histories		
Thursday Room 2							Remediation, Restoration and Rehabilitation							