

## 47TH CENTRAL CANADIAN SYMPOSIUM ON WATER QUALITY RESEARCH

# Program Schedule

## Advances and Emerging Issues in Water Quality Management

Canada Centre for Inland Waters  
Burlington, Ontario

**FEBRUARY 21 & 22, 2012**

### MESSAGE FROM THE PROGRAM CHAIR

On behalf of the organizing committee, it is my pleasure to welcome you to the 47<sup>th</sup> Central Canadian Symposium on Water Quality Research. This year's theme is "*Advances and Emerging Issues in Water Quality Management*". We have assembled a strong technical program, with session themes covering a variety of current issues in water quality management. The goal is to convene a symposium that benefits delegates interested in a wide range of water quality and treatment topics. The full book of abstracts is available online at [www.cawq.ca/en/47c/](http://www.cawq.ca/en/47c/). Fitting with this year's theme, we are pleased to welcome Dr. Chris Metcalfe as our plenary speaker, who will open the symposium with a presentation on the challenges in addressing emerging contaminants. We welcome you to Burlington and wish you a successful and informative symposium.

Kirsten Exall  
Environment Canada  
Program Chair

---

### PLENARY PRESENTATION

## Emerging Contaminants: Why are we always playing catch up?

CHRIS METCALFE

*Environmental and Resource Studies, Trent University, Peterborough, ON*

**ABSTRACT:** In Canada, we are rarely at the forefront of research on contaminants of emerging concern in the environment. As a result, our regulatory agencies are usually developing regulations and mitigation strategies that respond to contaminants that have already been released into the environment. Moreover, we usually must rely on research conducted in EU countries, the USA, or increasingly, China to inform our decision makers of the hazards of these emerging contaminants. The obstacles that impede our progress and mean that we are constantly playing "catch up" in expanding our knowledge about contaminants of emerging concern include: 1) analytical barriers, 2) regulatory barriers, and 3) institutional and organizational barriers. The importance of these barriers will be illustrated using case histories for chemicals that were of emerging concern in the past and chemicals that are of concern right now.

# 47<sup>th</sup> Central Canadian Symposium on Water Quality Research

## Monday, February 20, 2012

### CCIW Boardroom (L205)

13:00 - 19:00 CAWQ Executive Board Meeting

## Tuesday, February 21, 2012

### Main Mall

7:45 Registration and Poster Installation

### Auditorium

8:30 Opening Remarks: Clayton Tiedemann (President, CAWQ)

8:35 Welcome to the Canada Centre for Inland Waters and Introduction of Plenary Speaker: Dr. John Lawrence (Director, Aquatic Ecosystem Management Research Division, Environment Canada)

8:40 CAWQ Plenary Lecture:  
**Emerging Contaminants: Why are we always playing catch up?**  
 Dr. Chris Metcalfe  
 Environmental and Resource Studies, Trent University, Peterborough, ON

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	Contaminants of Emerging Concern - Wastewater Treatment (Joint session) Shirley Anne Smyth & Paula Guerra	Climate Change Mike Lywood	Surface and Groundwater Quality Veronique Hiriart-Baer & John Spoelstra	Risk Management in Drinking Water Quality and Pollution Control Roland Bradshaw
9:30	Comparison of "in silico" and Environmental Measurements for Identifying New, Emerging, and Re-emerging Chemicals of Concern <u>D.C.G. MUIR</u> , A. DESILVA, B-H. LEE, P HOWARD	Causes and Solutions of the Urban Heat Island <u>M. HULLEY</u> , G. ZUKOV'S		
9:50	Wastewater Treatment Plant Inputs of Emerging Pollutants to the Atmosphere <u>L. AHRENS</u> , M. SHOEIB, L. JANTUNEN, T. HARNER, C. CHENG, E. REINER	Climate Change and Water Utilities: The Role of Economics in Encouraging a More Sustainable Use of Water <u>D. DUPONT</u>	Environmental Selection of Phenotypic Diversity in <i>E. coli</i> <u>S.M. CHIANG</u> , T.A. EDGE, and H.E. SCHELLHORN	Making the Source Water Events-based Approach Operational: A Screening Method <u>T. ARNOLD</u>
10:10	BREAK & POSTER / EXHIBITOR SESSION - Main Mall			

## Tuesday, February 21, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p>Contaminants of Emerging Concern - Wastewater Treatment (Joint session)</p> <p>Shirley Anne Smyth &amp; Scott Dunlop</p>	<p>Climate Change</p> <p>Mike Lywood</p>	<p>Surface and Groundwater Quality</p> <p>Veronique Hiriart-Baer &amp; John Spoelstra</p>	<p>Risk Management in Drinking Water Quality and Pollution Control</p> <p>Roland Bradshaw</p>
10:40	<p>Wastewater Treatment Plants as Sources of Perfluoroalkyl Substances to the Aquatic Environment</p> <p><u>P. GUERRA</u>, M. KIM, L. KINSMAN, T. NG, M. ALAEE, S.A. SMYTH</p>	<p>Managing the Impact of Climate Change on Municipal Source Water Supply</p> <p><u>L. GYUREK</u>, S. CRAIK, &amp; S. NEUFELD</p>	<p>Spatial Variation of Groundwater Contaminants Discharging to an Urban Stream, Barrie, Ontario</p> <p><u>A. FITZGERALD</u>, J. ROY</p>	<p>Computational Modelling in Site-specific Risk-assessment for Trace Metals: Forging the Path Forward</p> <p><u>P.M.C. ANTUNES</u>, M.L. SCORNAIENCHI</p>
11:00	<p>Drugs of Abuse in Canadian Municipal Wastewater and Estimates of Community Drug Use</p> <p><u>V. YARGEAU</u>, K. TINDALE, H. LI, A. RODAYAN, C. METCALFE</p>	<p>Greenhouse Gases from and Impact of Climate Change on Wastewater Treatment Plants</p> <p><u>L. GUO</u>, Y. AMERLINCK, I. NOPENS, J. PORRO, P. VANROLLEGHEM</p>	<p>Risk to Benthic Organisms (Juvenile Mussels) from Road Salt in Groundwater Discharging to an Urban Stream</p> <p><u>J.W. ROY</u>, P.L. GILLIS, R. McINNIS, G. BICKERTON</p>	<p>Introducing Layer of Protection Analysis for Water Safety Risk Assessments</p> <p><u>R. BRADSHAW</u></p>
11:20	<p>Impact of Tetracycline on Bacterial Wastewater Treatment Communities</p> <p><u>G. ISLAM</u>, K. GILBRIDE</p>	<p>Climate Change Vulnerability Assessment for Municipal Stormwater and Wastewater Infrastructure for the City of Welland, Ontario, Canada</p> <p><u>R. SCHECKENBERGER</u>, L. WIDDIFIELD, P. NIMMRICHTER</p>	<p>Assessment of Contaminated Groundwater Effects on Benthic Invertebrates in Streams</p> <p><u>L. GRAPENTINE</u>, J. ROY, G. BICKERTON</p>	<p>Effectiveness of <i>E. coli</i> Biofilm for Prevention of Concrete Deterioration in Wastewater Treatment and Collection Structures</p> <p><u>S. SOLEIMANI</u>, B.ORMECI, B. ISGOR</p>
11:40	<p>Comparison of Four Extraction Methods for Determination of Bisphenol-A in Sewage Sludge</p> <p><u>B. BANIHASHEMI</u>, R. DROSTE</p>	<p>Implementing a Project Sustainability Management Framework</p> <p><u>P. BEUKEMA</u></p>	<p>Fluorescence Analysis of Natural Organic Matter (NOM) in Shallow and Deep Groundwaters on a Canadian Shield Sampling Site: Influence of pH and Salinity.</p> <p><u>F. CARON</u>, V. BORRARO, R. RIOPEL, S. SIEMANN</p>	<p>Cyanobacteria Transport: Cyanobacteria Movement and Hydrodynamic Effects on the Vulnerability of a Drinking Water Intake</p> <p><u>M. NDONG</u></p>
12:00	LUNCH - Main Mall			
12:30	ANNUAL GENERAL MEETING - Auditorium			

## Tuesday, February 21, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p>Contaminants of Emerging Concern - Wastewater Treatment (Joint session)</p> <p>Mehran Alaei and David Kim</p>	<p>Research and Advances in Drinking Water Treatment</p> <p>Ron Hofmann &amp; Souleymane Ndiongue</p>	<p>Surface and Groundwater Quality</p> <p>Veronique Hiriart-Baer &amp; John Spoelstra</p>	<p>Harmful Algal Blooms and Source Water Impacts</p> <p>Sue Watson, Jennifer Winter and Lewis Molot</p>
13:00	<p>Comparison of Membrane Assisted Solvent Extraction to Static Headspace GC/MS Analysis for the Determination of Volatile Methyl Siloxanes in Wastewater</p> <p><u>T. BISBICOS</u>, M.ALAEE, D.WANG</p>	<p>Comparison of 4 Media Types for Traditional and Biofiltration Treatment Goals: Assessment of Rough Engineered Media and Implications for Filter Media Choice</p> <p><u>M. SPANJERS</u>, M.B. EMEKO</p>	<p>The Impact of Eutrophication on Mercury Cycling in Lake 227 at the Experimental Lakes Area in Northwestern Ontario</p> <p><u>A. GLEASON</u>, J. KIRK, I. LEHNHERR, D. MUIR, V. ST. LOUIS</p>	<p>Evidence on Human Health Risk Resulting from Exposure to Harmful Algal Blooms; Specifically Cyanobacteria and Cyanotoxins</p> <p><u>A. SAMUEL</u></p>
13:20	<p>Kinetic Model Development for Enzymatic Oxidation of Aqueous Aromatic Trace Contaminants</p> <p><u>S. RANGELOV</u>, J. NICELL</p>	<p>Optimization of Dissolved Air Flotation for Drinking Water Treatment through CFD Modeling</p> <p><u>B. LAKGHOMI</u>, R. HOFMANN, Y. LAWRYSHYN</p>	<p>Tracking the Source of Contamination of Wheatley Harbour: An Exercise in Multivariate Statistical Analysis</p> <p><u>E. GILROY</u>, D. MUIR, C. DARLING, L. CAMPBELL, S. DE SOLLA, M. MCMASTER, S. BROWN, J. SHERRY</p>	<p>Occurrence, Levels and Distribution of Cyanobacterial Toxins in Ontario's Municipal Drinking Water and Drinking Water Sources, 2004-2010</p> <p><u>J. KINGSTON</u></p>
13:40	<p>Fate of Anthropogenic Cyclic Volatile Methylsiloxanes in a Wastewater Treatment Plant</p> <p><u>D. WANG</u>, M. AGGARWAL, T. TAIT, S. BRIMBLE, G. PACEPAVICIUS, L. KINSMAN, M. ALAEE, S.A. SMYTH</p>	<p>Assessment of Human and Veterinary Pharmaceuticals Contamination at River Basin Scale and Study of their Treatability by Activated Carbon Process</p> <p><u>S. PIEL</u>, O. THOMAS, S. BLONDEAU and E. BAURES</p>	<p>Phenology of Amphibian Breeding in Relation to Pesticide Exposure in Ontario</p> <p><u>K. PALONEN</u>, S. DE SOLLA, J.STRUGER</p>	<p>Cyanobacteria and Cyanotoxins Breakthrough and Accumulation in Three Drinking Water Treatment Plants in Quebec</p> <p>A. ZAMYADI, S. MACLEOD, N. MCQUAID, <u>S. DORNER</u>, S. SAUVÉ, M. PRÉVOST</p>
14:00	<p>Partitioning of a Suite of Chlorobenzenes (1,2,4,5-tetrachlorobenzene, pentachlorobenzene, and hexachlorobenzene) to Aldrich Humic Acids and Municipal Wastewater Treatment Plant Colloids</p> <p><u>K.N. MCPHEDRAN</u>, R. SETH, K.DROUILLARD</p>	<p>Pilot Scale Study for the Control of Disinfection By-Products Using Pre-coagulation Ozone in Warm Water Conditions</p> <p><u>L. ARISS</u>, S. NDIONGUE, D. BORIKAR, T. HEWLETT, L. MOORE</p>	<p>Can Diatom Biomonitoring be Used as a Supplement in Water Chemistry Programs?</p> <p><u>C. GONCALVES</u></p>	<p>Design and Development of Universal Molecular Probes for the Geosmin Synthase in Cyanobacteria and Actinomycetes</p> <p><u>O. KUTOVAYA</u>, S. WATSON</p>
14:20	<p><b>B R E A K &amp; P O S T E R / E X H I B I T O R S E S S I O N - M a i n M a i l l</b></p>			

## Tuesday, February 21, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p>Contaminants of Emerging Concern - Wastewater Treatment (Joint session)</p> <p>Mehran Alaei and Scott Dunlop</p>	<p>Research and Advances in Drinking Water Treatment</p> <p>Ron Hofmann &amp; Souleymane Ndjongue</p>	<p>Surface and Groundwater Quality</p> <p>Veronique Hiriart-Baer &amp; John Spoelstra</p>	<p>Harmful Algal Blooms and Source Water Impacts</p> <p>Sue Watson, Jennifer Winter and Lewis Molot</p>
14:50	<p>Occurrence And Treatment Of Polybrominated Diphenyl Ethers In Canadian Wastewater Treatment Plants</p> <p><u>M. KIM</u>, P. GUERRA, M. THEOCHARIDES, K. BARCLAY, S.A. SMYTH, M. ALAEE</p>	<p>Optimization of Biofiltration for the Minimization of Disinfection By-Product Formation</p> <p><u>K. DUPUIS</u>, I. DOUGLAS, R. DELATOLLA</p>	<p>Water Quality of Streams in Agricultural Watersheds of Southwestern Ontario: Seasonal Patterns, Historical Comparisons, and the Influence of Land Use</p> <p><u>M. MOHAMED</u></p>	<p>Toxic Cyanobacteria Blooms along the Southern Embayments of Lake Ontario, NY: History and Current Status</p> <p><u>G. BOYER</u>, K. PERRI, J. SULLIVAN, A. HOTTO, X. YANG AND M. SATCHWELL</p>
15:10	<p>Characterizing Micellar Enhanced Ultrafiltration for the Removal of Sulfonamide Antibiotics from Wastewater</p> <p><u>R. BROWN</u>, P. CASHIN, H. CHUNG, E. BUNCEL, G. VANLOON, V. BALAKRISHNAN, K. EXALL</p>	<p>Factors Affecting Total Chlorine Decay and NDMA Formation in Modified Pipe Loops: Pipe Materials, Orthophosphate and Flow Conditions</p> <p><u>H. ZHANG</u>, S. ANDREWS</p>	<p>Examination of Variation in Water Quality During High Flow Events in Urban and Suburban Tributaries</p> <p><u>T. LABENCKI</u>, D. BOYD</p>	<p>Extreme Inter-annual Variability in Cyanobacterial Blooms in an Urban Drinking Water Supply, Quebec (Canada).</p> <p><u>D. ROLLAND</u>, W. VINCENT, I. LAURION, S. BOURGET, A. WARREN</p>
15:30	<p>A Study on Ozone Treatment of Municipal Wastewater Effluent and Oxidation of Chemicals of Emerging Concern</p> <p><u>S. SINGH</u>, R. SETH, S. TABE, P. YANG</p>	<p>NDMA Formation from Pharmaceuticals-Impact of Water Matrix and Prechlorination</p> <p><u>R. SHEN</u>, S. ANDREWS</p>	<p>The Dynamic of the Urban Stream Contamination</p> <p><u>R. VEDOM</u></p>	<p>Increases in Algal bloom reports in Ontario from 1994 to 2010: did the trend continue in 2011?</p> <p><u>J. WINTER</u>, A. DESELLAS, R. FLETCHER, L. HEINTSCH, A. MORLE, L. NAKAMOTO, M. PALMER, K. UTSUMI</p>
15:50		<p>Organic Matter and Disinfection By-products in the Grand River Watershed</p> <p><u>R. HUTCHINS</u>, S. SCHIFF</p>	<p>iSTREEM? - a web-based river chemical concentration estimation model capable of determining where and when to monitor for consumer product chemicals</p> <p><u>P. DELEO</u>, S. DYER, X. WANG</p>	<p>Predicting the risk of proliferation of the benthic cyanobacterium <i>Lyngbya wollei</i> in the St. Lawrence River</p> <p><u>D. LÉVESQUE</u>, A. CATTANEO, C. HUDON, P. GAGNON</p>
16:30 to 18:30	<p><b>POSTER SESSION AND RECEPTION</b>  at the Holiday Inn,  3063 South Service Rd, Burlington  <i>Directions at end of Program</i></p>			

## Wednesday, February 22, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p><b>Contaminants of Emerging Concern</b></p> <p>Adrienne Bartlett &amp; Ève Gilroy</p>	<p><b>Research and Advances in Wastewater Treatment</b></p> <p>Jane Challen Urbanic and Lori Lishman</p>	<p><b>Rural and Agricultural Water Stewardship</b></p> <p>Gabrielle Ferguson</p>	<p><b>Harmful Algal Blooms and Source Water Impacts</b></p> <p>Sue Watson, Jennifer Winter and Lewis Molot</p>
8:50	<p>Strategies for Assessing the Aquatic Risk from Emerging Contaminants</p> <p><u>D. MACKAY</u></p>	<p>Quantifying Nitrification Kinetics at Low Temperatures Using Moving Bed Biofilm Reactors (MBBR)</p> <p><u>V.HOANG</u>, R. DELATOLLA, A. GADBOIS</p>	<p>Validating and Demonstrating Best Management Practices to improve water quality on Ontario Farms</p> <p><u>G. FERGUSON</u></p>	<p>Development and Field Application of a Multiplex PCR Approach for Improved Monitoring of Harmful Algal Blooms</p> <p><b>F. NGWA</b>, C. MADRAMOOTOO, S. JABAJI</p>
9:10	<p>Hazard Screening of Substances of Emerging Concern</p> <p><u>R. HULL</u>, S. KLEYWEGT, T. FLETCHER, J. SCHROEDER</p>	<p>TOC and TN removal of Synthetic Slaughterhouse Wastewater using Biological Treatment in Anaerobic-Aerobic Systems</p> <p><u>C. LECOMPTE</u>, M. MEHRVAR, E. QUIÑONES-BOLAÑOS</p>	<p>Water Stewardship Actions under Environmental Farm Plans</p> <p><u>P.SMITH</u>, C. BIBIK, J.LAZARUS, D. ARMITAGE, C. BRADLEY-MACMILLAN, M.KINGSTON, N.CHERNY, A.GRAHAM</p>	<p>Defining the 'Sweet Spot': N:P and Iron Conditions Promoting Cyanobacterial Proportion in Ontario Lakes</p> <p><u>R.J. SORICHETTI</u>, I.F. CREED, C.G. TRICK</p>
9:30	<p>Perfluorochemicals (PFCs): How Monitoring Data for Emerging Contaminants can Support Drinking Water Guidance Values and Emergency Response</p> <p><u>S. KLEYWEGT</u></p>	<p>Characteristics of Effluent Organic Matter and its Influence on Hydroxyl Radical Scavenging Capacity</p> <p><u>J.GRANT</u>, R. HOFMANN</p>	<p>Spatial Analysis of Adoption of Nutrient Management Related Best Management Practices in Ontario, April 2005 - March 2010</p> <p><u>E. WOYZBUN</u></p>	<p>Modelling Cyanobacteria dominance: How useful are the complex mathematical models?</p> <p>Y. SHIMODA, R. YERUBANDI, <u>G.B ARHONDITSIS</u></p>
9:50	<p>Contamination of Perfluorooctane Sulfonate and Other Perfluorinated Compounds Downstream of an International Airport, Hamilton, Ontario</p> <p><u>S. DESOLLA</u>, A. DESILVA, R. LETCHER</p>	<p>Optimization of Aqueous Polyethylene Oxide Photodegradation using Response Surface Methodology</p> <p><u>S. GHAFORI</u>, M. MEHRVAR, P.K.CHAN</p>	<p>Evaluating Rural Best Management Practices at the Site and Watershed Scales in Huron County</p> <p><u>M. VELIZ</u>, W. YANG, J. LAPORTE</p>	<p>The Phosphorus-Ferrous Eutrophication Model: the Role of Anoxia and Internal Loading in Cyanobacteria Dominance in Four Small Soft Water Lakes and Hamilton Harbour, Ontario</p> <p>M. VERSCHOOR, S. MCCABE, <u>L.A. MOLOT</u>, GUIYOU LI, S.B. WATSON, A.M. PATERSON, D.L. FINDLAY, M. PATERSON AND P.J. DILLON</p>
10:10	<b>B R E A K &amp; P O S T E R / E X H I B I T O R S E S S I O N - M a i n M a i l</b>			

## Wednesday, February 22, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p>Contaminants of Emerging Concern Adrienne Bartlett &amp; Ève Gilroy</p>	<p>Research and Advances in Wastewater Treatment Jane Challen Urbanic and Lori Lishman</p>	<p>Research and Advances in Stormwater Management Hazel Breton</p>	<p>Harmful Algal Blooms and Source Water Impacts Sue Watson, Jennifer Winter and Lewis Molot</p>
10:40	<p>Nanosilver in the Aquatic Environment: Should We Be Concerned? <u>C. METCALFE</u></p>	<p>Advanced Oxidation Process Intensification in Multilamp Sonophotoreactor <u>M.MOHAJERANI</u>, M. MEHRVAR, F. EIN-MOZAFFARI</p>	<p>Evolution of Stormwater Management <u>H. BRETON</u></p>	<p>Comparison of Phytoplankton Variable Fluorescence from Three Pulse Amplitude Modulated (PAM) Fluorometers <u>J. MAJARREIS</u>, S. WATSON, AND R. SMITH</p>
11:00	<p>Effects of Anthracenedione and Azo Dyes on Survival and Growth of <i>Hyalella azteca</i> <u>A. BARTLETT</u>, L. BROWN, V. PALABRICA, V. BALAKRISHNAN</p>	<p>Treatment of Fish Farm Sludge Supernatant by Aerated Gravel Beds and Steel Slag Filters – A Pilot-scale Study S.BRIENT, M. KÖIV, <u>Y. COMEAU</u></p>	<p>Cyanide in Urban Snowmelt and Winter Runoff <u>K. EXALL</u>, Q. ROCHFORT, R. MCFADYEN AND J. MARSALEK</p>	<p>Nitrogen Fixation Strategies in Cyanobacteria under Different Light Regimes <u>H. ANDREWS</u>, T.BROWN, R.BOURBONNIERE, S. WATSON</p>
11:20	<p>Assessment of the Aquatic Toxicity of Four Sulfonamide Antibiotics Using the Freshwater Amphipod <i>Hyalella azteca</i> <u>A. BARTLETT</u>, L. BROWN, J. TOITO, V. BALAKRISHNAN</p>	<p>Enhancement of the Mesophilic Anaerobic Digestion of TWAS, PS, and Scum <u>B.YOUNG</u>, R. DELATOLLA, R. SHERIF, K. KENNEDY</p>	<p>A Review of the Strategies for the Control and Treatment of Combined Sewer Overflows (CSOs) <u>M. MOSLEMI</u>, R. FARNOOD</p>	<p>Relative Strengths of Taxonomic Versus Functional Groups in Explaining Variation in Phytoplankton Communities Along a Trophic Gradient <u>J. BERGERON</u></p>
11:40		<p>Effect of High Temperature Due to Joule Heating on Biosolids Electro-dewatering Kinetics and Microbial Inactivation <u>T.N. DANESHMAND</u>, P.BIYELA, R.J.HILL, R.GEHR, D.FRIGON</p>	<p>Low Impact Development Stormwater Management: Design, Construction and Monitoring <u>B. BISHOP</u>, R. MOORE</p>	<p>Algal Dynamics as Indicators of Water Quality in the Florida Everglades: Lessons Learned and Applicability to Great Lakes Wetlands <u>A.J. BRAMBURGER</u>, E.E. GAISER</p>
12:00	<p>LUNCH - Main Mall POSTER &amp; EXHIBITOR SESSION: "Meet and Greet"</p>			



## Wednesday, February 22, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p><b>Nanotechnology in Water Treatment and Sampling Applications</b></p> <p>Anming Hu and Frank Gu</p>	<p><b>Research and Advances in Wastewater Treatment</b></p> <p>John Gibson and Yaldah Azimi</p>	<p><b>Great Lakes Nearshore Water Quality Issues</b></p> <p>Veronique Hiriart-Baer &amp; Jacqui Milne</p>	<p><b>Harmful Algal Blooms and Source Water Impacts</b></p> <p>Sue Watson, Jennifer Winter and Lewis Molot</p>
13:00	<p>Fast Synthesis of Large Scale High Performance TiO<sub>2</sub> Nanowire Membranes for Water Treatment</p> <p><u>A. HU</u>, X. ZHANG, P. H. PHAM, D. LUONG, S. KURDE, R. LIANG, H. HUANG, K. OAKES, N. C. BOLLS, M. SERVOS, Y. ZHOU</p>	<p>Investigation of Biological Solids Produced by MBBR Systems</p> <p><u>M.SOLEIMANI</u>, R.DELATOLLA, R.NARBAITZ</p>	<p>Setting Great Lakes Water Quality Targets to Manage Nearshore Algal Issues</p> <p><u>M. THORBURN</u></p>	<p>Bay of Quinte Harmful Algal Bloom Initiative: Developing a Monitoring and Long Term Management Programme and Addressing Beneficial Use Impairments</p> <p>S. WATSON, <u>S.OGUNLAJA</u>, J. MUNRO, B. KEENE</p>
13:20	<p>Antimicrobial Efficacy of Photocatalytic TiO<sub>2</sub> Nanowire Membranes on Escherichia coli</p> <p>D. LUONG, X. ZHANG, A. HU, P. PENG, R. LIANG, S. KURDI, K. OAKES, <u>M. SERVOS</u>, Y. ZHOU</p>	<p>Phosphorus Control During Primary Treatment at the Lou Romano Water Reclamation Plant</p> <p>K. FREUND, R. <u>SETH</u>, and P. HENSHAW</p>	<p>Fine-scale Nutrient Enrichment in an Oligotrophic Environment Undergoing Oligotrophication: the Rural Shores of Lake Huron</p> <p><u>T. HOWELL</u></p>	<p>Central Algoma Freshwater Coalition: Facilitating Science &amp; Informed Stewardship Practices in Rural Lakeside Communities</p> <p><u>L. PALUMBO</u>, P. ANTUNES, G. NURNBERG, S. WATSON</p>
13:40	<p>Magnetically Recyclable Superparamagnetic Fe<sub>3</sub>O<sub>4</sub>/SiO<sub>2</sub>/TiO<sub>2</sub> Hierarchical Nanospheres for Photocatalytic Water Treatment</p> <p><u>T. LESHUK</u>, S. LINLEY, F. GU</p>	<p>Phosphate Uptake in Co-precipitation Systems Targeting Low Phosphate Concentrations</p> <p><u>D.CONIDI</u>, W. PARKER, D. HOUWELING, S. SMITH, P. SETO AND S.MURTHY</p>	<p>Modeling of Circulation and Tracer Distribution in Western Lake Ontario and Hamilton Harbour</p> <p><u>J. ZHAO</u>, Y. R. RAO</p>	PANEL DISCUSSION
14:00	<p>Evaluating Nanomaterial/Fish Virus Interactions to Understand the Potential of Nanomaterials to Modulate Pathogen Removal in Wastewater Treatment</p> <p><u>P.H. PHAM</u>, A. HU, K. OAKES, S.X. TANG, N.C. BOLLS</p>	<p>The Effect of Floc Properties on UV Disinfection of Wastewater Effluents</p> <p><u>Y.AZIMI</u>, G.ALLEN, R. FARNOOD</p>	<p>Effect of Beaver Dams on Coastal Marsh Water Chemistry in Eastern Georgian Bay</p> <p><u>A. FRACZ</u>, P. CHOW-FRASER</p>	
14:20	BREAK & POSTER / EXHIBITOR SESSION - Main Mall			

## Wednesday, February 22, 2012

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	<p><b>Nanotechnology in Water Treatment and Sampling Applications</b></p> <p>Anming Hu and Frank Gu</p>	<p><b>Research and Advances in Wastewater Treatment</b></p> <p>John Gibson and Yaldah Azimi</p>	<p><b>Great Lakes Nearshore Water Quality Issues</b></p> <p>Veronique Hiriart-Baer &amp; Jacqui Milne</p>	<p><b>Harmful Algal Blooms and Source Water Impacts</b></p> <p>Sue Watson, Jennifer Winter and Lewis Molot</p>
14:50	<p>Investigation of the Roles of Active Oxygen Species in Photodegradation of the Heterocyclic Aromatic Chemical Compound Methylene Blue in TiO<sub>2</sub> Photocatalysis Utilizing a 365nm UV Lamp</p> <p><u>S. KURDI</u>, A. HU, H. HUANG, R. LIANG, P. PENG, Y. ZHOU</p>	<p>CFD Modeling for Floc Breakage in Orifice Flow</p> <p><u>A. FERNANDES</u>, J. GIBSON, Y. LAWRYSHYN, R. FARNOOD</p>	<p>Occurrence and Predictive Correlations of <i>E. Coli</i> and <i>Enterococci</i> at Sandpoint Beach (Lake St. Clair) Windsor, ON and Holiday Beach (Lake Erie), Amherstberg, ON</p> <p><u>K. MCPHEDRAN</u>, R. SETH, R. BENJANKIWAR</p>	<p>PANEL DISCUSSION CONTINUED</p>
15:10	<p>Preparation of Whey Stabilized ZnO Nanoparticles for Degradation of Bisphenol A, an Endocrine Disrupting Compound in Water</p> <p><u>D.P. MOHAPATRA</u>, S.K. BRAR, P. PICARD, R.D. TYAGI</p>	<p>Use of Linoleic Acid to Enhance Anaerobic Sulphate Reduction in Semi-Continuous Reactors</p> <p><u>T. BISWAS</u>, R. SETH, N. BISWAS</p>	<p>Microbial Source Tracking of Fecal Pollution Sources at Region of Niagara Beaches</p> <p><u>T. EDGE</u>, S.HILL, H.SCHELLHORN, S.WONG, R.ZHENG, A. O'BRIEN, I.ANDZANS, G.HUDGIN</p>	
15:30	<p>A Review of Applications of Nanofiber Membranes in Water and Wastewater Treatment</p> <p><u>S. TABE</u>, T. MATSUURA</p>	<p>TOC removal of a Secondary Effluent of Synthetic Slaughterhouse Wastewater using UV/H<sub>2</sub>O<sub>2</sub></p> <p><u>C. LECOMPTE</u>, M. MEHRVAR, E. QUIÑONES-BOLAÑOS</p>	<p>Virulence of <i>Escherichia coli</i> in Receiving Waters Impacted by Wastewater Effluents</p> <p><u>M. YIP WOON SUN</u>, T. EDGE, D. FRIGON, A. MAZZA, L. MASSON, R. GEHR</p>	
15:50				
16:10	<p>P R E S E N T A T I O N O F P H I L I P H . J O N E S A W A R D &amp; C O N C L U D I N G R E M A R K S - A u d i t o r i u m</p>			

## Poster Presentations

	<i>Session a</i>	<i>Authors<sup>b</sup></i>	<i>Title</i>
1	CCG	M. ANTHONY, M. FARROW, C. PIRIE	Climate Change Action Plan
2	EMC	D. MUIR, H. LEE, T. PEART, C. TEIXEIRA, A. SETT, J. STRUGER, S. BACKUS	Organophosphorus Flame Retardants and Benzotriazoles in Open Waters and Tributaries of the Great Lakes
3	EMC	J. ANDERSON, J. GUCHARDI, D. HOLDWAY	The Acute and Chronic Effects of Hydroxypropyl- $\beta$ -Cyclodextrin on American Flagfish ( <i>Jordanella floridae</i> ) over One Complete Life-cycle
4	EMC-WWT	F. CLOUTIER, L. CLOUZOT, P. VANROLLEGHEM	A Modelling Tutorial to Predict the Removal of Emerging Contaminants in Wastewater Treatment Plants
5	GEN	J. GUCHARDI, R. KRAUSE, R. ORREGO, D. HOLDWAY	Vitellogenin Detection in Rainbow Trout ( <i>Oncorhynchus mykiss</i> ) Using Cryotechniques and Immunofluorescence
6	GEN	Z. PANDELIDES, R. ORREGO, J. GUCHARDI, D. HOLDWAY	Dehydroabietic Acid (DHAA) Alters Energy Metabolism and the Effects of E2 in Rainbow Trout ( <i>Oncorhynchus mykiss</i> )
7	GEN	L. BEYGER, J. GUCHARDI, D. HOLDWAY	Does Holding Back Juvenile Rainbow Trout Growth Using Restricted Rations Affect Copper Toxicity Tolerance?
8	GEN	C.H. BARRETT, P.M.C. ANTUNES, K. TAILLON, K. KIM, S-J. AN,	Use of Multiple Lines of Evidence to Support Sediment Remediation and Management Decisions for the St. Marys River Area of Concern
9	GEN	R. BRADSHAW	Introducing Pollution Trading based on Willingness to Pay
10	HAB	A. MORLEY, J. WINTER	Algal blooms in Ontario: Incidences and Response
11	HAB	J. KINGSTON	Occurrence, Levels and Distribution of Cyanobacterial Toxins in Ontario's Municipal Drinking Water and Drinking Water Sources, 2004-2010
12	HAB	T. DECOLA, P. DECOLA, S.B. WATSON, S. OGUNLAJA, T. EDGE AND I. KHAN	Localised Differences in Dressenid Mussel Populations and Associated Biofilms and Pseudofaecal Material in the Bay Quinte: Implications for Drinking Water and Source Management
13	HAB	J. MCLAUGHLIN, I.F. CREED, C.G. TRICK	Bioassays as Tools for Improved Algal Bloom Screening
14	HAB	E.A. STELZER, D.H. DUMOUCHELLE, D.S. FRANCY	Assessment of Water-Quality Conditions, Cyanobacteria, and Microcystin Toxin in Grand Lake St. Marys, Ohio
15	NNT	R. LIANG, A. HU, X. ZHANG, D. LUONG, K. OAKES, M. SERVOS AND Y. ZHOU	TiO <sub>2</sub> Nanowire Membranes for Pharmaceutical Degradation in Wastewater
16	SGQ	C. HAMILTON, M. WOUNDNEH, G. WANG, R. GRACE	LC - MS/MS Analysis of Naphthenic Acids in Environmental Analysis
17	SGQ	V.B. HEWLETT, S. NDIONGUE, L. MOORE	Monitoring Surface Water Quality of Inland Lakes Prone to Cyanobacteria
18	SGQ	J. THOMAS AND M. MOHAMED	Spatial, Temporal, and Host Source Distribution of Waterborne Protozoa Isolated from Urban and Rural Streams
19	SGQ	T.Y. KIM, R.E.H. SMITH, P. J. DILLION	The Spatial and Temporal Patterns of Planktonic Production - An Emphasis to Contribution of Non-summer Production to Annual Photosynthesis in a Large Oligo-mesotrophic Lake
20	SGQ	A. TODD, G. KALTENECKER	Warm Season Chloride Concentrations in Stream Habitats of Freshwater Mussel Species at Risk
21	SGQ	M. ELEKTOROWICZ, Z. KEROPIAN	Indian Mustard ( <i>Brassica juncea</i> ) as a Buffer Preventing Leaching of Lithium to Surface and Groundwater
22	WWT	D. YANG, B.C. ANDERSON, A. CHOUINARD	Multi-functional Wetlands and Landscape Design to Advance Chinese Ecological Infrastructure Development

<sup>a</sup> CCG – Climate change; EMC – Contaminants of Emerging Concern; GEN – General; HAB – Harmful Algal Blooms; NNT – Nanotechnology; SGQ – Surface and Groundwater Quality; WWT – Advances in Wastewater Treatment

<sup>b</sup> Student authors of poster presentations are not competing for the Philip H. Jones Award.

# Poster Session and Reception

Tuesday February 21, 2012

We are hosting a special Poster Session and Reception on Tuesday Feb. 21, 2012 from 4:30 to 6:30 p.m. at the [Holiday Inn, 3063 South Service Rd, Burlington](#)

Directions from CCIW:

There are two simple routes. Head out of the CCIW parking lot and:

1)

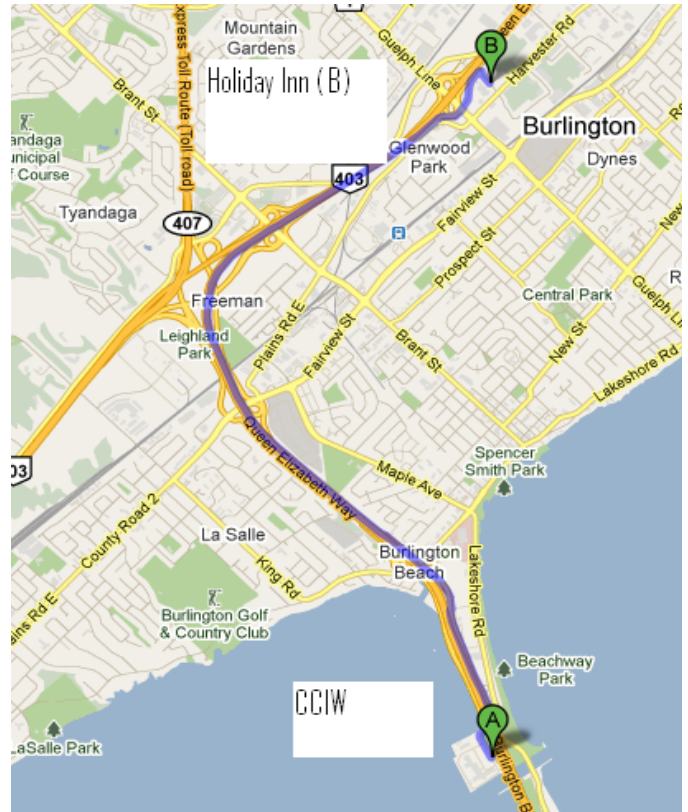
- Turn left onto the ramp just on the other side of the Skyway Bridge that will take you to the QEW Toronto
- Follow the signs for QEW Toronto
- Take the Guelph Line exit
- Go straight through the lights from the off ramp across Guelph line
- Turn right onto South Service Road and the Holiday Inn is on the right

OR

2)

- Continue straight through the lights and stay on Lakeshore Rd as it veers left and travels along the beach strip
- Turn right at the lights (Lakeshore Rd) and continue to Guelph Line
- Turn left to head north on Guelph Line to Harvester Road
- Turn right on Harvester Road and you will see the Holiday Inn as the second building on the left
- Turn left into the parking lot from Guelph Line, or turn left at the lights at the South Service Road and into the parking lot from there

Burlington Taxi: (905) 333-3333



# Symposium Committee

**Symposium President:** Chris Marvin

**Symposium Coordinator:** Kyle Barclay

**Program Committee**

**Chair:** Kirsten Exall, Environment Canada

**Poster Session:** Hans Biberhofer, Environment Canada

**Session Chairs:**

Mehran Alaei, Environment Canada

Yaldah Azimi, University of Toronto

Adrienne Bartlett, Environment Canada

Roland Bradshaw, Associated Engineering

Hazel Breton, Conservation Hamilton

Jane Challen Urbanic, Environment Canada

Scott Dunlop, Environment Canada

Gabrielle Ferguson, Ontario Ministry of Agriculture, Food and  
Rural Affairs

John Gibson, Environment Canada

Ève Gilroy, Green House Science

Paula Guerra, Environment Canada

Frank Gu, University of Waterloo

Veronique Hiriart-Baer, Environment Canada

Ron Hofmann, University of Toronto

Anming Hu, University of Waterloo

David Kim, Environment Canada

Lori Lishman, Environment Canada

Michael Lywood, AMEC Environment & Infrastructure

Jacqui Milne, Environment Canada

Lewis Molot, York University

Souleymane Ndongue, Walkerton Clean Water Centre

Shirley Anne Smyth, Environment Canada

John Spoelstra, Environment Canada

Sue Watson, Environment Canada

Jennifer Winter, Ontario Ministry of the Environment