44th CENTRAL CANADIAN SYMPOSIUM ON WATER QUALITY RESEARCH

Science Meets Policy

CAWQ ACQE

Canadian Association on Water Quality
Environment Canada

Program Schedule

FEBRUARY 23 & 24, 2009

Canada Centre for Inland Waters
Burlington, Ontario

Environment Canada Environnement Canada

Canada

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MESSAGE FROM THE PROGRAM CHAIR

It is with great pleasure that we welcome you to the 44th Central Canadian Symposium on Water Quality Research. This year's theme, "Science Meets Policy," builds on the backbone of the Symposia from previous years, and promises to deliver a strong and diverse technical program. Topics, ranging from the Great Lakes Water Quality Agreement to the application of genomics information in regulatory policies to water treatment technologies and the effects of groundwater and surface interactions on water quality, will benefit a broad range of delegates interested in a wide range of water quality issues. In addition, our plenary speaker, Dr. Derek Muir, will open the Symposium with a presentation on persistent and "pseudo-persistent" chemicals in the aquatic environment. On behalf of the organizing committee, welcome to Burlington. We wish you a successful and informative Symposium.

Veronique Hiriart-Baer
Environment Canada
Program Chair

44th Central Canadian Symposium on Water Quality Research
Plenary Presentation by Dr. Derek C.G. Muir, Environment Canada

Dr. Derek C.G. Muir

"Evaluating Persistent and 'Pseudo-persistent' Chemicals in the Aquatic Environment"

The vast majority of the more than 30,000 existing chemical substances widely used in commerce, along with a much greater number of minor use commercial chemicals, are not monitored in environmental media. Except for a relatively small group tracked by Environment Canada's National Pollutant Release Inventory (~400) little is known about the physical-chemical properties or ecotoxicity of these chemicals, or their actual release into the environment. This includes pharmaceuticals, food additives and pesticides (representing ~5,000 substances) for which considerable information is available on properties but less on releases, environmental fate and ecotoxicity. Apart from highly volatile substances which will mainly enter the atmosphere directly, most commercial chemicals will enter waste water treatment systems or landfills at some point in their life cycle. They may then enter surface waters and ground waters depending on the extent of biotransformation, and on the degradation and the properties of the matrix they are associated with. Assessment and regulation of chemicals focuses mainly on substances that are persistent (P), bioaccumulative (B) and toxic (T) and Environment Canada's recent assessment of the Domestic Substances List used PB&T criteria. However, it is increasingly recognized that "pseudo-persistence," whereby commonly used chemicals and their metabolites, continually enter waters resulting in chronic exposures of aquatic organisms is an important issue, particularly for pharmaceuticals and personal care products. Where chemical monitoring and assessment resources are limited, should priority be given to "pseudo-persistent" chemicals? This presentation will attempt to address this question by reviewing some relevant examples of studies on persistent and "pseudo-persistent" chemicals entering Canadian waters and waste effluents.

44th Central Canadian Symposium on Water Quality Research

Program Schedule and Presentations

Sunday, February 22, 2009

CCIW Boardroom (L205)	
14:00	CAWQ Board Meeting

Monday, February 23, 2009

Main Mall	
7:00	Registration and Poster Installation

Auditorium	
8:10	Opening Remarks: Dr. Ron Droste (President, CAWQ)
8:15	Welcome to the Canada Centre for Inland Waters and Introduction of Plenary Speaker: Dr. Veronique Hiriart-Baer (Program Chair)
8:20	CAWQ Plenary Lecture: Dr. Derek Muir "Evaluating Persistent and 'Pseudo-persistent' Chemicals in the Aquatic Environment"

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	Great Lakes Water Quality Agreement Chris Marvin, Gail Krantzberg	Drinking Water Source Protection Larry Moore, Simon Gautrey	Advances in Water Treatment Technologies and Approaches Kirsten Exall, Ron Hoffman	Effects of Groundwater-Surface Water Interaction on Water Quality Jim Roy, Allan Crowe
9:10	9:10 to 9:40 Great Lakes Great Responsibilities. G. KRANTZBERG	Approaches to intake protection zone delineation. F. DUCKETT, Q. LU, and R. ROBLIN	The application of artificial neural networks for optimization. K. GRIFFITHS and R.C. ANDREWS	Keynote Address: Characterizing groundwater discharge to surface water in southern Ontario. A.R. PIGGOTT
9:30	9:40 to 10:20 The Great Lakes science-policy dialogue at the Ontario Ministry of the Environment. R. MELZER and D. BOYD	Intake vulnerability on the St. Clair River. Q. LU, R. ROBLIN, J. READ, and R. GAUTHIER	Impact of UV/H_2O_2 or UV photolysis on subsequent chlorine stability and DBP formation potential. S. PANTIN and R. HOFFMAN	Low altitude and land-based infrared thermography to identify groundwater discharge in NWT rivers: Advantages and limitations. B. CONANT JR. and N.J. MOCHNACZ
9:50		Occurrence of waterborne pathogens at offshore drinking water intakes in Lake Ontario. T.A. EDGE, I.U.H. KHAN, B. BOOTY, A. LOCAS, L. MOORE, N, NEUMANN, P. PAYMENT, R. YERUBANDI, and S. WATSON	Removal of easily biodegradable carbon by drinking water biofiltration - Developing a quantitative basis for comparison. D. SHEN and P.M. HUCK	Flow Regime of an intermediate scale stream in south western Ontario. T. DAVIE and C. SMART
10:10		A simplified method for sample preparation for drinking water organic analyses. M.S. LIN, T. LUSTERIO, C. CLARKE, S. LI, and F. BLAIS	Statistical analysis of Ottawa lead in tap water data from 1997 to 1998. T. TSUI, and R.C. ANDREWS	Novel strategies for surface water monitoring and communication. C. SMART and T. DAVIE
10:30	BREAK & POSTER / EXHIBITOR SESSION – Main Mall			
10:55	10:55 to 11:25 Science meets policy – and politics! M. DIAMOND	Quantifying *E. coli* removal in single, saturated, variable-aperture fractures. S. RODRIGUES	Pilot-scale removal of NDMA, EDCs, and PPCPs by ozone, BAF, or membranes. S. WILSON and R. HOFFMAN	Modelling *E. coli* transport and persistence at the groundwater-beach-lake interface. A.S. CROWE and G.A. MEEK

Note: Names appearing in bold are student presenters competing for the Philip H. Jones Award

11:15	Continued: M. DIAMOND 11:25 to 12:15 PANEL DISCUSSION	A comparison of bicolloid and colloid transport in single, saturated fractures. J. QU	Removal of certain taste and odor compounds from drinking water using UV-based advanced oxidation processes. J. KIM, R. HOFFMAN, and S. ANDREWS	Quantifying groundwater discharge at the lake-groundwater-beach interface at recreational beaches. H.R. SWITZMAN and A.S. CROWE
11:35		The well vulnerability concept in the identification of agricultural areas for the effective application of beneficial management practices. R. RAHMAN, D.L. RUDOLPH, and E.O. FRIND	Select of representative emerging contaminants for removal studies, a statistical approach. X. JIN, S. PELDSZUS, and P.M. HUCK	The role of groundwater-stream interaction on the presence of *E. coli* in groundwater below beaches at Lake Huron, Ontario. E.L. SARARAS and A.S. CROWE
11:55		Assessment of the potential impact of beneficial management practices: Case study in the Thornton Well Field, Woodstock, ON. M. SOUSA, D.L. RUDOLPH, and N.R. THOMSON	A removal of perchlorate (ClO_4-) from water using pulsed arc electrohydraulic discharge (PAED). D. DENG	Improved understanding of mechanisms impacting colloid and pathogen transport in saturated GUDI environments. N.L. MCLELLAN, M.B. EMELKO, J. STIMSON, and N. TUFENKJI
12:15	A N N U A L G E N E R A L M E E T I N G - A u d i t o r i u m			
12:20	L U N C H - M a i n M a l l			
13:00	P O S T E R / E X H I B I T O R S E S S I O N : " M e e t a n d G r e e t "			
	AUDITORIUM Environmental Modeling Ferdous Ahmed, Onita Basu	SOUTH SEMINAR Drinking Water Source Protection Larry Moore, Simon Gautrey	NORTH SEMINAR Advances in Water Treatment Technologies and Approaches Kirsten Exall, Ron Hoffman	GUEST LOUNGE Effects of Groundwater-Surface Water Interaction on Water Quality Jim Roy, Allan Crowe
13:20	Calibration and testing of a simple mass balance model for quantifying stormwater management benefits of extensive green roofs. B. PAUDEL, R. SETH, P. KALUVAKOLANU, and D. CARPENTER	The science behind the *Clean Water Act*, 2006. M. KELLER	Catalytic degradation of salicylic acid with iron oxide and Ozonation. F. WAXMAN and S. MASTEN	Screening of groundwater quality discharging to selected urban rivers. G. BICKERTON, J. ROY, and J. VORALEK
13:40	Environmental risk assessment and adaptive management implementation in Hamilton Harbour. M. RAMIN and G.B.ARHONDITSIS	Paleolimnological tools for source water protection studies: A case study. D. KOSTER, T. KARST-RIDDOCH, and N.J. HUTCHINSON	Pilot tests to evaluate the performance of cationic activated silica polymer as coagulant aid. O. ALSIKH, T. ROBLES, S. NDIONGUE, S. JASIM, D. BORIKAR, and L. LI	Evaluation of stormwater infiltration trench performance and potential for groundwater contamination. C.E. SYKES and B.J. ADAMS
		SOUTH SEMINAR Genomics Data in Risk Assessments and Application in Regulatory Policies Bin Zhu, François Gagne		
14:00	Comprehensive review and compilation of pre-treatments for anaerobic digestion in municipal wastewater treatment plants. R.L. DROSTE and É.L. BORDELEAU	Generation and validation of survival data of *Bacillus* strains on the Domestic Substance List in water microcosms. B. ZHU, J.R. LAWRENCE, Y. WEI, J. ROY, and T. HE	Technology for on-site monitoring of *E. coli* and coliforms in source water and drinking water. R. S. BROWN, E.J.-P. MARCOTTE, C.E. DUNKINSON, W.P. ASTON, P.J. GALLANT, and D. WILTON	Groundwater discharge affects alpine lake and stream algal communities. J.W. ROY, S.B. WATSON, B. ZAITLIN, M. HAYASHI, AND J.M. ROBILLARD
				GUEST LOUNGE Great Lakes Nearshore Water Quality Issues - Nutrient Perspective Ralph Smith, Todd Howell
14:20	Using watershed models to derive design flood flows. F. AHMED	The strategic applications of genomics in the Environment Program. P. JIAPIZIAN and M. SCHACKER	Fractal dimensions and settling of flocs. B. GORCZYCA	When the rains came: Water quality at a northern nearshore study area in Lake Ontario in two summers of contrasting runoff. S. MALKIN, R. SMITH, and L. LEON
14:40	B R E A K & 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 l l			

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	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	Environmental Modeling Ferdous Ahmed, Onita Basu	Genomics Data in Risk Assessments and Application in Regulatory Policies Bin Zhu, François Gagne	Linking Policy Outcomes to Science Objectives Catherine Jefferson, Jackie McCall	Great Lakes Nearshore Water Quality Issues - Nutrient Perspective Ralph Smith, Todd Howell
15:00	Modeling total phosphorus load to a large lake with infrequent historical monitoring. K. HARGAN, P. DHILLON, and A. PATERSON	Occurrence of the transgenic corn cry1Ab gene in freshwater mussels (*Elliptio complanata*) near corn fields: Evidence of exposure by bacterial ingestion. M. DOUVILLE, F. GAGNE, C. ANDRE, and C. BLAISE	Surveying the science information needs of Conservation Authorities in Ontario. G. KRANTZBERG, K. SCHAEFER, and G. SHEIKHELDIN	Hydrodynamic and point source influences on water quality at a northern nearshore study area in Lake Ontario: Insights from three dimensional modeling. L. LEON, S. MALKIN, R. SMITH, R. YERUBANDI, and T. HOWELL
15:20	Landscape-scale control on carbon budget of Lake Simcoe: A process-based modelling approach. S. ONI, MARTYN FUTTER and P. DILLON	DNA microarray detection of virulence and antibiotic resistance genes in *Escherichia coli* isolates from fecal sources of contamination at Hamilton Harbour. S. HILL, T. EDGE, J. TREVORS, H. LEE, and L. MASSON	Lake Simcoe: An Ontario example of linking science to policy development. J. MCCALL	Comprehensive watershed management for control of cyanobacteria in small freshwater lakes. B.C. ANDERSON, B. HUSK, A. BLAIS, and B. WOOTTON
15:40	Predicting the frequency of water quality standard violations using Bayesian calibration of eutrophication models. W. ZHANG and G.B.ARHONDITSIS	Using DNA microarray technology to test *E. coli* pathogenicity in wastewater effluents. D. ZHENG, L. MASSON, A. MAZZA, D. FRIGON and R. GEHR	15:40 to 16:20 The science of clear language: communicating water policy effectively to public audiences. D. SHURA	Impact of weather and temperature on the occurrence of thermophilic campylobacters at Lake Ontario beaches. I.U.H. KHAN, A. LOUGHBOROUGH, and T.A. EDGE
16:00	Modeling of mobility of 17α-ethynylestradiol in different environmental conditions. M. ELEKTOROWICZ and A. ALSHAFIE	Biotic and abiotic factors that trigger toxin production in cyanobacteria. S. BECKER and S. WATSON		Detection and quantification of indicator *E. coli* and bacterial pathogens associated with Cladophora in Lake Ontario. P. DURIEZ
16:20				Spatial and temporal patterns in nitrogen compounds in the nearshore of eastern Lake Huron. E.T. HOWELL
16:40	POSTER / EXHIBITOR SESSION: "Meet and Greet"			
17:00	MONDAY NIGHT MIXER at "Emma's Back Porch"			

Thank you to our Gold Sponsors: Conservation Ontario and EPCOR; our Silver Sponsors: City of Hamilton and Anachemia Science; our Social Event Sponsor: Rice Earth Sciences; our Special Session Sponsor: Walkerton Clean Water Centre; and our Volunteer Sponsor: Seneca College.

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Tuesday, February 24, 2009

	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	Emerging Contaminants Issues Peter Vanrolleghem, Vimal Balakrishnan	**Advances in Aquatic Environmental Monitoring and Assessment** Chris Jones, Lee Grapentine	**Advances in Wastewater Treatment Technologies and Approaches** Hongde Zhou, Jim Higgins, Wayne Parker	**Water Policy: Engaging Science and the Public** Bob Sneyd
8:00	Glyphosate detection in water by enzyme-linked Immunosorbent assay (ELISA). E. CHEN, J. PARMAR, J. LI, and C. LO	Are brown bullhead (*Ameirus nebulosus*) in the Cornwall Area of Concern exposed to environmental estrogens? S. CLARENCE, S. BROWN, M. MCMASTER, and J. SHERRY	Application of aerobic and anaerobic respirometry for optimization of wastewater treatment. J. KOCHANY and E. LIPCZYNSKA-KOCHANY	Integrated watershed management public input to the science and policy table: Caledon case study. H. BRETON
8:20	Groundwater nitrate and nitrous oxide in the Black Brook watershed: Insights from stable isotopes. J. SPOELSTRA, M. LEVESQUE, T.L. CHOW, S.L. SCHIFF, W.D. ROBERTSON, and Y. JIANG	Influence of tributaries on the perfluorinated acid content in the water columns of the Great Lakes. A.O. DE SILVA, B.F. SCOTT, C. SPENCER, C. MARVIN, E. LOPEZ, and D.C.G. MUIR	Simultaneous sludge solids and pathogens reduction, settling and dewatering (SSPRSD) using filamentous fungal strain isolated from wastewater sludge. B. SELLAMUTHU, S. YAN, R.D. TYAGI and R.Y. SURAMPALLI	Bridging the science-policy discourse for water resource management. G. KRANTZBERG
8:40	Plant 15N as an indicator of soil nitrogen cycling in an agricultural catchment. E. THUSS, M.C. ENGLISH, and J. SPOELSTRA	Effects of antidepressants on fathead minnows. J. PARROTT and C. METCALFE	A new theory for the ecology of activated sludge bacteria: the heterotroph-specialist model. M. MANCHESTER and D. FRIGON	Local capacity building: Water Guardian Networks experience. M. LAYTON
9:00	Nitrate and nitrous oxide at the Strawberry Creek catchment: Tracing sources and processes using stable isotopes. D. SNIDER, M. REMPEL, S. SCHIFF, J. SPOELSTRA, and M. ENGLISH	Water pollution analysis in a small lake in western Mexico. T. GREENBERG and H. SHEAR	Transformation of estrogenic steroids in sewage treatment plants: A critical review. C. POTVIN	Policy research initiative on sustainable grassroots engagement: Saving Canadian lakes and rivers. B. SNEYD
9:20	The gendered implications of chronic chemical exposures through Canadian drinking water: Preliminary research findings. J. PHARTIYAL, T. DIXON, B. HALPIN, S. HAMM, P. HANIA, L. HARRIS, and D. SCOTT	What qualifies as a reference-site: Defining criteria for minimal impact. F. C. JONES	Membrane pervaporation to reuse contaminated water for agriculture irrigation. E. QUIÑONES-BOLAÑOS and H. ZHOU	Great Lakes science needs from the municipal perspective. S. RANG
9:40	B R E A K & 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 l l			
	AUDITORIUM **Bisphenol A: Technical Session** Miriam Diamond, Sean Backus			
10:10	Bisphenol A in the Canadian environment. S.BACKUS and M. DIAMOND	Quantifying the factors that influence flow response to storm events in headwater. L. STANFIELD and D. JACKSON	Biofilm formation in full-scale submerged membrane bioreactors to treat municipal wastewater. V.X. ZHANG, L. LAFLEUR, and H. ZHOU	The Ottawa-Gatineau Watershed Atlas. E. MACDONALD and F. TONTO
10:30	The environmental screening assessment of Bisphenol A under the *Canadian Environmental Protection Act* (CEPA 1999). J. PASTERNAK, L. SUFFREDINE, D. GUTZMAN	Bioassessment of wet-weather flow impacts on fine sediments in urban waters: Coupling two different approaches. G. TIXIER, Q. ROCHFORT, L. GRAPENTINE, J. MARSALEK, and M. LAFONT	Efficacy of a hybrid subsurface flow constructed wetland for the treatment of aquaculture wastewater. A. SNOW, B.C. ANDERSON, B. WOOTTON, and A. HELLEBUST	Gateway through the maze of Canadian water policy research: Toward overcoming the roadblocks to engagement. K. GOODMAN
10:50	Bisphenol A, what we have learned in the last ten years. B. LEE	The use of principal component analysis for an assessment of the health status of wild fish from Wheatley Harbour, Ontario. E. B. DUSSAULT, M.E. MCMASTER, J.L. PARROTT, J.P. SHERRY and S.B. BROWN	Knee deep in "it": Understanding plant community responses to sewage inundation in the Canadian Arctic for treatment wetland construction. C.N. YATES, S.D. MURPHY, and B. WOOTTON	Enhancing Canada's oversight of laboratory biosafety and biosecurity: Bill C-11. M. HEISZ

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	AUDITORIUM	SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
	Bisphenol A: Technical Session Miriam Diamond, Sean Backus	Advances in Aquatic Environmental Monitoring and Assessment Chris Jones, Lee Grapentine	Advances in Wastewater Treatment Technologies and Approaches Hongde Zhou, Jim Higgins, Wayne Parker	Water Quality, Quantity, and Conservation: Agricultural Perspective David Armitage, Tiffany Svensson
11:10	Modelling microconstituent fate and transport in the environment: Dynamic behaviour of Bisphenol A in wastewater treatment plants. P.A. VANROLLEGHEM, F. CLOUTIER, E. LINDBLOM, and P.S. MIKKELSEN	Canadian Aquatic Biomonitoring Network (CABIN): A national approach to biological monitoring. T. PAULL and R. KENT	Sludge retention time and pretreatment conditions effects on mesophilic and thermophilic sludge digestion. N. COELHO, W. PARKER, K. KENNEDY, R. DROSTE	Assessing the risk of microbial contaminant occurrence within the wellhead protection area of a municipal well field in an agricultural setting. M. CHRISTIE, D. RUDOLPH, P. PAYMENT, and A. LOCAS
11:30	Rapid and sensitive determination of Bisphenol A in river water. J. MARTIN and J. VUKOVIC	Getting our feet wet: Preliminary data on algal blooms and nutrients in Lake of the Woods, Year 1. T. PASCOE, S. WATSON, J. STRUGER, R. YERUBANDI, J. GUO, and L. GAGNON	Tracing sulfur in digestion of sludges from municipal wastewater treatment. W. DU and W.J. PARKER	Fractured bedrock aquifers and agriculture: Importance of source protection in this vulnerable setting. J. LEVISON and K. NOVAKOWSKI
11.50	L U N C H - M a i n M a l l			
11:50	S Y M P O S I U M D E B R I E F M E E T I N G - L 2 0 5			
11:50	W Q R J C E D I T O R I A L B O A R D L U N C H E O N - L 7 0 1			
12:20	P O S T E R & E X H I B I T O R S E S S I O N : " M e e t a n d G r e e t "			
	AUDITORIUM			
12:45	Bisphenol A: Special Session Miriam Diamond, Sean Backus Sponsor: Walkerton Clean Water Centre	Evaluation of spatial and temporal coverage of a water quality monitoring program. C. CRAWLEY and C. SMART	Development of protocols for predicting the impact of ozonation on WAS Digestibility. P. KIANMEHR, W. PARKER, and P. SETO	Progress in adoption of beneficial management practices and Environmental Farm Plans under the Agricultural Policy Framework 2005-2008. P. SMITH
13:05	An Overview of Bisphenol A. M. DIAMOND	Towards an Ontario Stream Monitoring Network: A new way of doing business. L. STANFIELD, S. STROBL, and H. BALL	Energy & mass balance – A tool to evaluate enhanced methane production in anaerobic sludge digestion. P. SRIDHAR, S. YAN, R. D. TYAGI, and R.Y. SURAMPALLI	Rural well owners dealing with water shortages. M.J. CONBOY
		SOUTH SEMINAR Applications of Remote Sensing & Geomatics Technologies in Watershed Health Raul Ponce-Hernandez, Frank Kenny		
13:25	BPA regulation of synaptic plasticity in the hippocampus and cerebral cortex. N. MACLUSKY	Spatial analysis of contaminant trends in Lake St. Clair: 1970, 1974, and 2001. J. DEKRYGER and K.W. FORSYTHE	Greenhouse gas emissions analysis of biosolids management options. S. YAN, B. SELLAMUTHU, R. D. TYAGI, and R. Y. SURAMPALLI	Impact of incorporation and pre-tillage combined with surface application of liquid swine manure on survival and transport of faecal bacteria and pathogens. A. SAMARAJEEWA, S. GLASAUER, J. LAUZON, I. O'HALLORAN, and K. DUNFIELD
13:45	Real Progress: Canada's Approach to Regulating BPA. J.WITZEL	Progress towards an agricultural resource iInventory in the southern part of the Lake Huron watershed. S.J. SWEENEY, J.D. ASPINALL, D. BIHARI, J. BIRCHMORE, and E. POLLOCK	Ultrasonic cavitation and ultraviolet irradiation for enhanced disinfection of primary and secondary effluents. J.H. GIBSON, R. FARNOOD, I.G. DROPPO, and P. SETO	Developing capacity for multi-user agricultural group projects in Ontario- An overview of a recent irrigation project in southern Ontario. R.W. MORRISON

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14:05	DISCUSSION / QUESTIONS	Indicator monitoring of domestic military training activities using satellite remote sensing. W. PAIN, N. KOUREPINIS, and K. CREBER	The impacts of UV/H_2O_2 treatment or UV alone and subsequent chlor(am)ination on nitrosamine formation. M. HARVEY and S. ANDREWS	Whitemans Creek low water response pilot project. J.ETIENNE, A.WONG, and S.SHIFFLETT
14:25		BREAK; POSTER / EXHIBITOR SESSION & LUCKY DRAW (Pure1) - Main Mall		
		SOUTH SEMINAR	NORTH SEMINAR	GUEST LOUNGE
		Applications of Remote Sensing & Geomatics Technologies in Watershed Health Raul Ponce-Hernandez, Frank Kenny	Advances in Wastewater Treatment Technologies and Approaches Hongde Zhou, Jim Higgins, Wayne Parker	Water Quality, Quantity, and Conservation: Agricultural Perspective David Armitage, Tiffany Svensson
14:50		Advances in method development for automated landform recognition and segmentation from high resolution digital elevation models. J.D. ASPINALL	Ultraviolet disinfection of *E. Coli* in municipal wastewater: Effects of microbial population source. K.M. SUPERINA, M.M.F. MESQUITA, and M.B. EMELKO	Water quality survey of the Big Creek watershed, Norfolk County, Ontario. J. SPOELSTRA
15:10		A remote sensing based approach to monitoring watershed ecosystem health and degradation at source and the impacts of changes on watershed primary productivity and water quality. R. PONCE-HERNANDEZ	Biological removal and sequestration of chromium in ground water using paper waste products as a carbon source and as adsorption sites. A.MATTES, L. EVANS, B. WOOTTON, J. BAKER, D. WALLSCHLÄGER, and J. HIGGINS	Development of an integrated water use management strategy for Innisfil Creek. T. SVENSSON and R. POST
15:30		Towards developing a spatial watershed fabric for Ontario's far north using remotely sensed inputs. F. KENNY, J. ZHAO and B. MATTHEWS	Post treatment of azo-dyeing wastewater using an inexpensive biomaterial "chitosan". P.R. MODAK and K.S. SINGH	
15:50	PRESENTATION OF PHILIP H. JONES AWARD & CONCLUDING REMARKS - Auditorium			

Thank you to our Exhibitors!

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CORICA – Centre ontarien de ressources sur les impacts climatiques et l'adaptation

WCWC – Walkerton Clean Water Centre – An agency of the Government of Ontario

CWAE – Centre de Walkerton pour l'assainissement de l'eau – Un organisme du gouvernement de l'Ontario

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Poster Presentations

	Sessions	Authors	Title
1	AAEM	C. BROWN, B. KNIGHT, M. MCMASTER, K. MUNKITTRICK, G. TETREAULT, and M. SERVOS	The effects of municipal wastewater on fish communities in the Speed River.
2	AAEM	S. CLARENCE, A. MUTTRAY, C. REINISCH, S. ST. JEAN, S. BALDWIN, and J. SHERRY	Cancer regulating proteins in neoplastic *Mytilus edulis* and *Mytilus trossulus* from contaminated sites in the Greater Vancouver Region.
3	AAEM	A. LOUGHBOROUGH, I.U.H. KHAN, T.A. EDGE, B. BOOTY, A. LOCAS, L. MOORE, N. NEUMANN, P. PAYMENT, R. YERUBANDI, and S. WATSON	Development of a novel DNA-based detection method for Enterococcus species in Lake Ontario based on the 16S-23S rRNA Internal Transcribed Spacer (ITS) Region Gene.
4	AAEM	Y. KAWASAKI, K. KAWAI, T. OKUBO, and K. KANEFUJI	Long-term trend analysis of water quality in Lake Biwa.
5	AAEM	R. ORREGO, J. GUCHARDI, V. HERNANDEZ, R. KRAUSE, L. ROTI, and D. HOLDWAY	Endocrine disruption in rainbow trout following intra-peritoneal injection of pulp and paper mill effluent extracts.
6	AWT	H. ZHANG	An overview of disinfectant residual degradation and disinfectant byproduct formation in distribution systems.
7	AWWT	N. ROSSO, B. WOOTTON, B.C. ANDERSON, and C. METCALFE	Assessing the ability of Treatment Wetlands to mitigate contaminants from Wood Waste Leachate in Ontario.
8	AWWT	Y. HE, K. EXALL, and V. BALAKRISHNAN	The removal of sulfonamide antibiotics during ultrafiltration: The impact of surfactants and sediments.
9	DWSP	N. THOMSON, B. WOOTTON, and P. JAVOR	Performance comparison of large diameter residential drinking water wells
10	DWSP	D. CHRISTOPHER, P. DONAHUE, W. HUMBER, and N. KELTON	Windmill aeration as a cost-effective method of improving water quality in small urban lakes.
11	EM	J.M. SLOMKA, K. MACCORMACK, and C.H. EYLES	Sedimentological analysis and 3-dimensional modeling of a shallow quaternary aquifer in the Georgetown region, Ontario.
12	EM	B. WOOTTON, S.E. JØRGENSEN, V. SANTIAGO, C.N. YATES, and S.D. MURPHY,	SubWet 2.0: A modeling approach to treatment wetland design, evaluation, and management.
13	GLN	J. GUO, T. MURPHY, and S. PAGE	Stability of sediment phosphorus In Lake Winnipeg.
14	LPOSO	G. TETREAULT, M. MCMASTER, J. BENNETT, B. KNIGHT, S. SPINA, R. MCINNIS, A. MCKEAG, and M. SEROVS	Comparison of community, population and individual responses of fish along gradient of multiple municipal wastewater effluents in Canada.

Session Acronyms:

AAEM:	Advances in Aquatic Environmental Monitoring and Assessment
AWT:	Advances in Water Treatment Technologies and Approaches
AWWT:	Advances in Wastewater Treatment Technologies and Approaches
DWSP:	Drinking Water Source Protection
EM:	Environmental Modeling
GLN:	Great Lakes Nearshore Water Quality Issues: Nutrient Perspective
LPOSO:	Linking Policy Outcomes to Science Objectives

44TH CENTRAL CANADIAN SYMPOSIUM ON WATER QUALITY RESEARCH

MONDAY NIGHT MIXER

We are hosting a complimentary social event on Monday, Feb. 23, 2009, at Emma's Back Porch in Burlington. The event is a short distance down the street from the Travelodge Hotel, and parking lots on Old Lakeshore Rd. and Lakeshore Rd. are available.

Emma's Back Porch
2084 Old Lakeshore Road (access via Lakeshore Rd., east of Brant St.)
Tel.: (905) 634-2084

Burlington Taxi: (905) 333-3333
CCIW is accessible by Hamilton Transit (www.hamilton.ca/hsr) via Parkdale bus 11. Local transit within Burlington is also available from Burlington Transit (http://cms.burlington.ca/Page146.aspx).

Symposium Committee

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Michael Forbes

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Advances in Aquatic Environmental Monitoring and Assessment
Chairs: Chris Jones and Lee Grapentine

Advances in Wastewater Treatment and Technologies
Chairs: Hongde Zhou, Wayne Parker and Jim Higgins

Advances in Water Treatment Technologies and Approaches
Chairs: Ron Hoffman and Kirsten Exall

Applications of Remote Sensing and GIS to the Assessment of Watershed Health
Chairs: Raul Ponce-Hernandez and Frank Kenny

Bisphenol A
Chairs: Miriam Diamond and Sean Backus

Drinking Water Source Protection
Chairs: Larry Moore and Simon Gautrey

Effects of Groundwater-Surface Water Interaction on Water Quality
Chairs: Allan Crowe and Jim Roy

Emerging Contaminants Issues
Chairs: Peter Vanrolleghem and Vimal Balakrishnan

Environmental Modeling
Chairs: Ferdous Ahmed and Onita Basu

Genomics Data in Risk Assessments and Application in Regulatory Policies
Chairs: Bin Zhu and François Gagne

Great Lakes Nearshore Water Quality Issues: Nutrient Perspective
Chairs: Ralph Smith and Todd Howell

Great Lakes Water Quality Agreement
Chairs: Chris Marvin and Gail Krantzberg

Linking Policy Outcomes to Science Objectives
Chairs: Catherine Jefferson, Jackie McCall

Water Policy: Engaging Science and the Public
Chair: Bob Sneyd

Water Quality, Quantity, and Conservation: Agricultural Perspective
Chairs: David Armitage and Tiffany Svensson

Symposium Coordinator
Naomi Warrier
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Ron Droste, Janet McAvella, Alex Bielak, Karl Schaefer, Dan Christopher and Janet Jardine