



24th Eastern Canada Symposium of the Canadian Association for Water Quality

and

8th Annual Symposium of the McGill Brace Centre for Water Resource Management

November 7, 2008

McGill University, Montréal



Scientific Organizing Committee:

Dominic Frigon, Chair, Brace Centre, McGill University

Ronald Gehr, Brace Centre, McGill University

Nathalie Tufenkji, Brace Centre, McGill University

Van Thanh Van Nguyen, Director of Brace Centre, McGill University

Jim Nicell, CAWQ Vice-President of East of Canada Section, Brace Centre, McGill University

Climate Change: Impact on Water Quality and Adaptation and Research on Water Quality and Treatment Technologies

PROGRAM

- 8:00-8:45** **Registration**
- 8:45-9:00** **Welcome address**
- 9:00-9:40** **Brace Symposium and CAWQ Keynote Speaker (plenary session)**
Dr. Linda Mortsch
Environment Canada
Climate Change: Implications for Water Quality
- 9:40-10:00** *Coffee Break*
- 10:00-11:40** **CAWQ Research Symposium (parallel sessions A to D)**
- 11:40-13:00** *Lunch*
- 13:00-14:40** **CAWQ Research Symposium (parallel sessions E to H)**
- 14:40-15:10** *Coffee Break*
- 15:10-17:10** **Brace Symposium (plenary session)**
Dr. Jiri Marsalek
National Water Research Institute of Canada
Urban Storm Drainage in Changing Climate: Fundamentals of Adaptation
- Dr. David Pearson
Laurentian University
Mainstreaming Climate Change into Source Water Protection: Policies and Practices
- Dr. Chandra Madramootoo
Brace Centre and McGill University
Climate Change Impact in Agriculture and Water Quality
- Panel discussion on theme
- 17:10- 18:00** *Reception Cocktail*



MCGILL BRACE CENTRE ANNUAL SYMPOSIUM

Climate Change: Impact on Water Quality and Water and Wastewater Industry Adaptation

Morning Plenary Session

Climate Change: Implications for Water Quality

Dr. Linda Mortsch, senior researcher with the Adaptation and Impacts Research Division of Environment Canada Coordinating Lead Author for the North America Chapter for the 2007 IPCC Fourth Assessment Report.

Afternoon Plenary Session

Urban Storm Drainage in Changing Climate: Fundamentals of Adaptation

Dr. Jiri Marsalek, research scientist and chief of the Urban Water Management Section with the Canada Centre for Inland Waters.

Mainstreaming Climate Change into Source Water Protection: Policies and Practices

Dr. David Pearson, professor in the Department of Earth Sciences at Laurentian University and Co-Chair of the Ontario Government Expert Panel on Climate Change Adaptation.

Climate Change Impact in Agriculture and Water Quality

Dr. Chandra Madramootoo, professor with the McGill Brace Centre and Dean of the Faculty of Environmental and Agricultural Sciences at McGill University.

Panel discussion on climate change and water quality issues.

Morning Parallel Sessions of Oral Presentations

(A) Water Quality - Monitoring and Climate Change (Ballroom A)

10:00-10:20	Impacts des changements climatiques sur l'évolution du carbone organique dissous et d'autres paramètres de qualité des eaux O. Thomas, E. Baures
10:20-10:40	DRAIN-WARMF: A watershed scale coupled surface and subsurface flow/water quality model S. Dayyani, S. Prasher, C. Madramootoo, A. Madani
10:40-11:00	Detection of trend and variability of precipitation in Southern Quebec and Ontario regions of Canada R. Doria, C.A. Madramootoo, A. Sarangi
11:00- 11:20	Use of Bayesian Blief networks to improve real time sensor information S. Murray, M. Ghazali
11:20-11:40	Reducing pollutant discharge into urban rivers by real-time control of the stormwater retention time in a stormwater pond J.F. Carpenter, M. Paré-Bourque, G. Pelletier, P. Van Rollegem

(B) Waste Treatment in Agriculture (Ballroom B)

10:00-10:20	Removing poultry pharmaceuticals in agricultural runoff with a constructed wetland S. Hussain, S. Prasher, R. Patel
10:20-10:40	In-storage psychrophilic anaerobic digestion: a wastewater treatment strategy adapted to the needs of Canada's pork producers S. King, S. Barrington, S. Guiot
10:40-11:00	Caractérisation et réduction des émissions de N ₂ O et de CH ₄ dans un biofiltre à milieu organique traitant du lisier de porc C. Dufour-L'Arrivée, C. Bourgault , P. Lessard, Y. Le Bihan, N. Turgeon, G. Buelna
11:00- 11:20	Sédimentation, coagulation et séparation solide-liquide d'un lisier de porc A. Beaulavon, R. Leduc
11:20-11:40	Conception et performance d'un système novateur pour la gestion des rejets piscicoles P.Y. LeFrançois, J. Puigagut, F. Chazarenc, Y. Comeau

(C) Water Quality - Monitoring (Room C14-A)

10:00-10:20	Water quality risk assessment in rapidly growing municipalities in sub Saharan Africa: case of Buea-Cameroon F. Folifac, S. Gaskin, L. Lifongo
10:20-10:40	Investigation of water quality improvement option in Jajrood river S. Isazadeh, N. Saborimanesh, M. Pourabdollah, A. Karaji
10:40-11:00	Risk assessment of using domestic greywater for the irrigation of food crops S. Finley, S. Barrington, D. Lyew
11:00- 11:20	Non-invasive visualization of bacteria in porous media using X-ray Computed Tomography A. Bhakta, G. McKenna, N. Tufenkji, S. Ghoshal
11:20-11:40	The use of fluorometric probes for monitoring of cyanobacteria blooms in two sources of potable water N. McQuaid, A. Zamyadi, M. Prévost, D.F. Bird, S. Dorner

(D) Wastewater Treatment - Physicochemical Technologies (Room C14-B)

10:00-10:20	Analyse granulométrique des débris inorganiques (grit) des boues activées séparés par hydrocyclonage M. Mansour-Geoffrion, D. Lamarre, P. Dold, I. Takacs, Y. Comeau
10:20-10:40	Génération in situ d'acide hypochloreux pour le traitement électrolytique d'effluents contaminés par des colorants synthétiques F. Zaviska, P. Drogui, J.-F. Blais, G. Mercier
10:40-11:00	Improvement of the activated sludge mixed liquor properties by electrocoagulation process W. Hirzallah, K. Bani-Melhem, M. Elektorowicz, J. Oleszkiewicz
11:00- 11:20	Rheological changes during Fenton oxidation and ultrasonication of wastewater sludge T. Pham, S. Brar, R. Tyagi
11:20-11:40	Effect of particles and bioflocculation on ultraviolet disinfection K. Kollu, B. Ormeci

Afternoon Parallel Sessions of Oral Presentations

(E) Water Quality – Issues with Phosphorus and Pathogens (Ballroom A)

13:00-13:20	Karaj river water quality assessment with TMDL approach N. Saborimanesh, A. Torkian
13:20-13:40	Examining the influence of cell concentration on bacterial migration in granular porous media C. Chornewich, M.B. Emelko, N. Tufenkji
13:40-14:00	Treatment of surface water by nonwoven geotextile filtration for removal of suspended and dissolved solids T. Inoue, C. N. Mulligan, M. Fukue, and D.Zaghtiti
14:00- 14:20	Hydrologic, seasonal and management controls on water quality response in Fourchette twin watersheds experiment, Beauce region, Québec A.R. Michaud, J. Desjardins, D. Lemelin, J. Deslandes, V. Samson, E. van Bochove
14:20-14:40	Influence des microorganismes aquatiques sur les flux de phosphore au sein d'élevages piscicoles en étangs M.-L. Boutray, J. Puigagut, Y. Comeau

(F) Wastewater Treatment – New Technologies and Modeling (Ballroom B)

13:00-13:20	Production de laccase à l'aide de boues d'épuration pour la biorémédiation des polluants récalcitrants dans les eaux usées J.-A. Majeau, R.D. Tyagi
13:20-13:40	Simulation du comportement d'une station par biofiltration P. Lessard, G. Samie, V. Rocher
13:40-14:00	Caractérisation du résidu endogène de boues activées produites dans un bioréacteur à membranes aérobie A. Ramdani, P.L. Dold, A. Gadbois, Y. Comeau
14:00- 14:20	Novel aspects in mathematical modeling of activated sludge wastewater treatment systems M. Tajparast, D. Frigon
14:20-14:40	Multi-variable model of pre-treatment processes for anaerobic digestion of primary and secondary sludge R.L. Droste, É.L. Bordeleau

(G) Groundwater Quality and Bioremediation (Room C14-A)

13:00-13:20	Aggregation of titanium dioxide nanoparticles: role of a fulvic acid, pH and ionic strength R. Domingos, K.J. Wilkinson
13:20-13:40	Bare and modified nanoiron characterization and transport in sand packed column G. Naja, T. Raychoudhury, S. Ghoshal
13:40-14:00	A laboratory study of bacterial pathogen transport in Quebec agricultural soil T. Schinner, A. Letzner, S. Liedtke, F.D. Castro, I. Eydelnant, N. Tufenkji
14:00- 14:20	Petroleum hydrocarbon biodegradation in extreme environment: Effect of cold temperature fluctuation and seasonal freezing W. Chang, L. Spagnuolo, P. Simon, L. Whyte, S. Ghoshal
14:20-14:40	Faisabilité de l'utilisation des déchets pour la production de la diète d'insecte (<i>Cydia pomonella</i>) J.-R. Gnepe, S. K. Brar, R.D. Tyagi, J.R. Valero, R.Y. Surampalli

(H) Drinking Water Treatment (Room C14-B)

13:00-13:20	Recycling membrane backwash water: effects on recovery, coagulant demand and organic removal in UF membrane filtration S.L. Gora, M. Chaulk, M.E. Walsh
13:20-13:40	Control of Manitoba's potable water with chlorine dioxide J.M. Rak-Banville, B. Gorczyca
13:40-14:00	Preparation of an alum water treatment residual solid as an adsorbent for arsenate M. Gibbons, G. Gagnon
14:00- 14:20	The detection of water quality aberrations after the injection of <i>Escherichia coli</i> into tap water K. Journal, M. Ghazali, E. McBean
14:20-14:40	Multi-stage response and probability metric selection in data mining for identifying contaminant source ingress to a water distribution system H. Shen, E. McBean, M. Ghazali

Poster Session

Climate Change and Water Quality

1. Réponse du bassin versant de la rivière aux Brochets en termes d'érosion et de perte de nutriments, sous deux scénarios de changement climatique, modélisés à l'aide de SWAT : le calibrage. **C. Gombault**, I. Beaudin, A. Michaud, M. Chikhaoui, C. Madramootoo
2. Stochastic and deterministic approaches of climate data to evaluate the potential climate change impacts. **M. Khalili**, V. T. van Nguyen, P. Gachon

Wastewater Treatment

3. Effects of unsaturated long chain fatty acids (LCFAs) and volatile fatty acids (VFAs) on hydrogen consumption. **S.J. Reaume**, J.M. Roy, J.A. Lalman.
4. Effects of lauric acid (C12) on hydrogen production from glucose by an anaerobic mixed culture. **N. Saady**, J. Lalman
5. Traitement physicochimique des biofilms adhérent sur des installations agroalimentaires afin d'éviter la contamination des eaux usées industrielles. **F. Gassara**, T. Benezech, N. Rossi, J. Diaz, S. K. Brar, R.D. Tyagi.
6. Etude de la biodégradabilité des effluents de l'industrie papetière à base de pâte d'alfa. **T. Rouissi**, D. Schieder, M. Faulstich, R. Beichekh, S.K. Brar, R.D. Tyagi.
7. Kinetic formulations for growth and substrate uptake in biological wastewater treatment. R.L. Droste, **Q. Zhang**.
8. Municipal and industrial wastewater treatment by adsorption onto inert solid biomaterial derived from *Launea arborescens* plant. M. Chiban, A. Soudani, F. Sinan, M. Persin.
9. Développement d'un lit filtrant réactif constitué de scories pour la rétention du phosphore des rejets piscicoles. **Z. ANJAB**.

Groundwater Quality and Bioremediation

10. Transport and retention of engineered nanomaterials in model groundwater systems. **A.R. Petosa**, N. Tufenkji.
11. Role of water chemistry on the groundwater contamination potential of quantum dots. **I.R. Quevedo**, M. Joos, N. Tufenkji.
12. Biopile bioremediation of petroleum hydrocarbons in soils from a northern site. **J. Snelgrove**, W. Chang, S. Ghoshal