

MONICA B. EMELKO

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EDUCATION

Ph.D. Civil Engineering, UNIVERSITY OF WATERLOO	June, 2001
M.S. Civil Engineering, UNIVERSITY OF CALIFORNIA, LOS ANGELES (UCLA)	June, 1995
B.S. Environmental Engineering Science, MIT	January, 1994
B.S. Chemical Engineering, MIT	June, 1993

HONORS AND AWARDS

Member U.S. National Academies of Sciences, Engineering and Medicine, Water Science and Technology Board's Expert Committee on New York City's Operational Support Tool for Water Supply and Response to Climate Change.	2017-2018
Citation and Medallion from Premier Rachel Notley for service to the province of Alberta	2016
Graduate Student Supervision Recognition for AWWA Best Master's Thesis (1 st place, Charlebois) (2 awards in North America, 1 st & 2 nd place)	2016
Graduate Student Supervision Recognition for AWWA Best Master's Thesis (2 nd place, Wong) (2 awards in North America, 1 st & 2 nd place)	2016
University of Waterloo, Faculty of Engineering Outstanding Performance Award	2016
Michael R. Provart Runner-up Award (Shams et al., 2016) for best student paper/presentation. OWWA/OMWA Joint Annual Conference	2016
Emelko et al. (2011) was one of the first cited works by the Intergovernmental Panel on Climate Change (IPCC 5th Assessment Report; Chap. 3 & 26) in describing climate change threats to drinking water.	2015
Outstanding Reviewer Recognition for <i>Water Research</i> .	2015
Alberta Emerald Foundation Challenge Award: Water (Southern Rockies Watershed Project Co-PI)	2014
Canadian Council of the Federation – Excellence in Water Stewardship Award (Southern Rockies Watershed Project Co-PI; National award; first university research-based recipients)	2014
Graduate Student Supervision Recognition for AWWA Best Master's Thesis (2 nd place, McLellan) (2 awards in North America, 1 st & 2 nd place)	2014
Best Student Poster (McLellan and Emelko, 2012), International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment	2012
Michael R. Provart Award (Spanjers and Emelko, 2012) for best student paper/presentation. OWWA/OMWA Joint Annual Conference	2012
Best Master's Research Poster (Allin et al., 2012), Research Fair, Water Institute, UW	2012
Graduate Student Supervision Recognition for AWWA Best Master's Thesis (1 st place, Snider) (2 awards in North America, 1 st & 2 nd place)	2012
Philip Jones Award (Spanjers and Emelko, 2012), 47 th Central Canadian Symposium on Water Quality Research	2012
Graduate Student Supervision Recognition: AWWA Larson Aquatic Research Scholarship (LARS) for Master's Research (McLellan, 1 award in North America)	2011
Best University Research Poster Award (McLellan et al., 2010), American Water Works Association (AWWA) Annual Conference and Exhibition (international award).	2010
Best Research Poster Award (Emelko et al., 2009), AWWA Water Quality and Technology Conference (international award).	2009

Nominated for NSERC Discovery Accelerator Supplement grant for outstanding research program (100 recipients across all science and engineering disciplines in Canada)	2009
Graduate Student Supervision Recognition for AWWA Best Master's Thesis (1 st place, Scott) (2 awards in North America, 1 st & 2 nd place)	2009
University of Waterloo, Faculty of Engineering Distinguished Performance Award	2009
Graduate Student Supervision Recognition for AWWA Larson Aquatic Research Scholarship (LARS) for Master's Research (Arnold, 1 award in North America)	2007
Ontario Early Researcher Award for Research Excellence	2006
University of Waterloo, Faculty of Engineering Distinguished Performance Award	2004
AWWA Academic Achievement Award(2 nd place) for best doctoral dissertation in N. America	2002
Sir Sandford Fleming Foundation Teaching Assistantship Award, University of Waterloo	1997
OWWA/OMWA Annual Conference - Best Presentation Award	1997

RESEARCH AND WORK EXPERIENCE

Professor of Environmental and Civil Engineering, Univ. of Waterloo 2017-present

Cross-appointed:

Systems Design Engineering Department; Biology Department; School of Planning

Associate Professor of Environmental and Civil Engineering, Univ. of Waterloo 2006-2017

Cross-appointed:

Systems Design Engineering Department; Biology Department; School of Planning

Adjunct Professor, McMaster University 2002-present

Assistant Professor of Environmental and Civil Engineering, Univ. of Waterloo 2001-2006

Doctoral Dissertation 1996-2001

Performed investigation of the impact of filter design and operational parameters on pathogen removal during drinking water treatment. Developed analytical methods for the enumeration of *Cryptosporidium parvum* and designed and constructed a pilot-scale water treatment plant. Developed statistical tools for assessing the reliability of *Cryptosporidium* concentration and removal data. Non-thesis work included developing practical guidelines for the design and operation of conventional filters that maximize particulate removal while optimizing biological removal of biodegradable organic compounds.

Graduate Research Associate, UCLA 1994-1995

Defined the governing equations for a thermodynamically based partitioning model into an existing advection-dispersion model for surfactant enhanced pump-and-treat remediation. Conducted a study of arsenic adsorption onto the surfaces of amorphous oxides to elucidate the mechanisms for removal of arsenic (and other dissolved constituents) from water by enhanced coagulation.

Product Development Engineer, Procter & Gamble 1993-1994

Product development responsibilities included: product formulation, clinical testing for claims support, managing pilot plant manufacture, defining manufacturing and specifications for plant scale-up. Awarded a patent for an ultra-mild cleansing technology (U.S. Patent No. 5496493, 1996).

Product Development Engineer, Procter & Gamble 1992

Formulated a biologically active cleansing product and supervised pilot plant production.

Laboratory Technician, Boston Children's Hospital 1991
Full-time laboratory technician in the Molecular Cardiology group.

Research Associate, Brookhaven National Laboratory 1990
Evaluated the frequency and type of injuries associated with road types and traffic volumes for the U.S. Department of Transportation.

SERVICE

Associate Editor, <i>Scientific Reports</i> (Nature Publishing Group)	2017-present
Associate Chair for Undergraduate Studies, Dept. of Civil and Environmental Engineering, University of Waterloo	2016-present
Associate Editor, <i>Water Research</i>	2010-present
Chair, "2 nd Internatl. Conf. on Assessing Microbial Fate, Transport and Risk in Natural and Engineered Water Treatment"	2012
Invited Editor, <i>Water Research</i> , Special Issue "Transport and Fate of Colloids and Microbes in Granular Aqueous Environments"	2008-2009
Invited Editor, <i>Water Quality Research Journal of Canada</i> , Special Issue "Disinfection"	2007-2008
Chair, "1 st Internatl. Conf. on Microbial Transport and Survival in Porous Media"	2009
AWWA University Student Activities Committee (Chair)	2008-2011
AWWA University Student Activities Committee (Vice Chair)	2007-2008
AWWA University Student Activities Committee (Member)	2005-2007; 2011-present
Shad Valley Faculty (Program for Distinguished high school students in Canada)	2007-2008
Ontario Centres for Excellence Inc. Environmental Technology Committee	2005-2009
Convener for 2003 American and European Geophysical Unions (AGU/EUG) Conference	2003
ADRIO (Alternative Dispute Resolution Institute of Ontario) Certified Mediator	2002-present
Resolution Support Program Univ. of Waterloo Conflict Management/Human Rights	2002-present
AWWA Research Foundation Project Advisory Committees (various)	2002-present
AWWA Particulate Contaminants Research Committee (Chair)	2005-2008; 2014-present
AWWA Particulate Contaminants Research Committee (Vice Chair)	2003-2004
AWWA Particulate Contaminants Research Committee (Member)	2001-2003; 2008-2014

PUBLICATIONS

Refereed Scientific Journal Publications

One, two, or three asterisks (*) following the name of an author indicate that this person was respectively a graduate student*, PDF**, or research associate*** at the time the work was completed.

Note: I have adopted the convention of encouraging students to lead authorship and having my name appear last on publications from within my research group. Otherwise, the order in which authors are listed indicates the significance of the contribution made to the publication. A corresponding author designation (underline) indicates a significant role in all aspects of research design and interpretation.

Published/Accepted:

1. Jin, C.*, Zhao, W.*, Normani, S., Zhao, P., Emelko, M.B. Synergies of media surface roughness and ionic strength on particle deposition during filtration. *Water Research*. 114: 286-295, 2017.

2. Jin, C.**, Mesquita, M.***, **Emelko, M.B.**, Wong, A. Computerized Enumeration and Bio-volume Estimation of the Cyanobacteria *Anabaena flos-aquae*. *Jour. Computational Vision and Imaging Systems*. 2:1, 2016.
3. Jin, C.**, Mesquita, M.***, **Emelko, M.B.**, Wong, A. Automated enumeration and size distribution analysis of *Microcystis aeruginosa* via fluorescence imaging. *Jour. Computational Vision and Imaging Systems*. 2:1, 2016.
4. Jin, C.*, Ren, C.L., **Emelko, M.B.** Concurrent Modeling of Hydrodynamics and Interaction Forces Improves Particle Deposition Predictions. *Environ. Sci. Technol.* 50:8:4401-4412, 2016.
5. Price, J.I.*, Renzetti, S., Dupont, D., Adamowicz, W., **Emelko, M.B.** Production Costs, Inefficiency, and Source Water Quality: A Stochastic Cost Frontier Analysis of Canadian Water Utilities. *Land Economics*. 93:1-1-11, 2016.
6. Robinne, F.N.*, Miller, C., Parisien, M.A., **Emelko, M.B.**, Bladon, K.D., Silins, U., Flannigan, M. Global Index for Mapping Water Resources Exposure to Wildfire Activity. *Forests*. 7:22:1-16, 2016.
7. Silins U., Bladon, K.D., **Emelko, M.B.**, Stone, M., Spencer, S.A.*, Williams, C.H.S.*, Anderson, A. Southern Rockies Watershed Project. *Forestry Chronicle*. 92:1:39-42, 2016.
8. Jin, C.*, Glawdel, T.*, Ren, C.L., **Emelko, M.B.** Non-linear, Non-monotonic Effect of Nano-scale Roughness on Particle Deposition in Absence of an Energy Barrier: Experiments and Modeling. (Nature Publishing Group) *Scientific Reports*. 5, 17747:1-14, 2016.
9. **Emelko, M.B.**, Stone, M., Silins, U., Allin, D.*, Collins, A.L., Williams, C.H.S.*, Martens, A.M.*, Bladon, K.D. Sediment-phosphorus Dynamics Can Shift Aquatic Ecology and Cause Downstream Legacy Effects after Wildfire in Large River Systems. *Global Change Biology*. 22: 1168–1184, 2016. **Cover article.**
10. Kazemzadeh, F.*, Jin, C.*, Molladavoodi, S., Mei, Y., **Emelko, M.B.**, Gorbet, M.B., Wong, A. Lensfree Spectral Light-field Fusion Microscopy for Contrast- and Resolution-enhanced Imaging of Biological Specimens. *Optics Letters*. 40:16:3862-3865, 2015.
11. Jin, C.*, Normani, S., **Emelko, M.B.** Nano-scale roughness impacts on granular media filtration at favorable conditions. *Environ. Sci. Technol.* 49:13:7879–7888, 2015.
12. Bladon, K.D., **Emelko, M.B.**, Silins, U., Stone M. Wildfire and the Future of Water Supply. *Environ. Sci. Technol.*, 48:8936-8943, 2014. **Feature and Cover article.**
13. Wagner, M.J., Silins, U., Bladon, K.D., Williams, C.H.S., Boon, S., MacDonald, R.J.*, Stone, M., **Emelko, M.B.**, Martens, A.M., Anderson, A. Catchment-scale Stream Temperature Response to Land Disturbance by Wildfire Governed by Surface-Subsurface Energy Exchange and Atmospheric Controls. *Journal of Hydrology*, 517:328-338, 2014.

14. Schmidt, P.J.*, **Emelko, M.B.**, Thompson, M.E. Variance Decomposition: A Tool Enabling Strategic Improvement of the Precision of Analytical Recovery and Concentration Estimates Associated with Microorganism Enumeration Methods. *Water Research*, 55:5:203-214, 2014.
15. Silins, U., Bladon, K.D., Kelly, E., Esch, E., Spence, J., Stone, M., **Emelko, M.B.**, Boon, S., Wagner, M.J., Williams, C.H.S., Tichkowsky, I. Five-year Legacy of Wildfire and Salvage Logging Impacts on Nutrient Runoff and Aquatic Plant, Invertebrate, and Fish Productivity. *Ecohydrology*, 7:6:1508-1523, 2014.
16. Stone, M., Collins, A., Silins, U., **Emelko, M.B.** and Zhang, Y. The Use of Composite Fingerprints to Quantify Sediment Sources in a Wildfire Impacted Landscape, Alberta, Canada. *Sci. Total Environ.*, 473-474:642-650, 2014.
17. Schmidt, P.J.* , **Emelko, M.B.**, Thompson, M.E. Analytical Recovery of Protozoan Enumeration Methods: Have Drinking Water QMRA Models Corrected or Created Bias? *Water Research*, 47:7:2399-2408, 2013.
18. Stone, M., **Emelko, M.B.**, Droppo, I.G., Silins, U. Biostabilization and Erodibility of Cohesive Sediment Deposits in Wildfire-affected Streams. *Water Research*, 45:2:521-534, 2011.
19. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Implications of Land Disturbance on Drinking Water Treatability in a Changing Climate: Demonstrating the Need for "Source Water Supply and Protection" Strategies. *Water Research*, 45:2:461-472, 2011. **One of the first cited works by the International Panel on Climate Change (2015) when describing climate change threats to drinking water.**
20. Schmidt, P.J.* , **Emelko, M.B.** QMRA and Decision-making: Are We Handling Measurement Errors Associated with Pathogen Concentration Data Correctly? *Water Research*, 45:2:461-472, 2011.
21. **Emelko, M.B.**, Schmidt, P.J.* , Reilly, P.M. Particle and Microorganism Enumeration Data: Enabling Quantitative Rigor and Judicious Interpretation. *Environ. Sci. Technol.*, 44:5:1720-1727, 2010.
22. Schmidt, P.J.* , Reilly, P.M., **Emelko, M.B.** Quantification of Analytical Recovery in Particle and Microorganism Enumeration Methods. *Environ. Sci. Technol.*, 44:5:1705-1712, 2010.
23. Passmore, J.M.* , Rudolph, D.L., Mesquita, M.M., Cey, E.E., **Emelko, M.B.** The Utility of Microspheres as Surrogates for the Transport of *E. coli* RS2g in Agricultural Soil. *Water Research*, 44:4:1235-1245, 2010.
24. Mesquita, M.M.F.**, Stimson, J.* , Chae, G.-T., Tufenkji, N., Ptacek C. J., Blowes, D. W., **Emelko, M.B.** Optimal Preparation and Purification of PRD1-like Bacteriophages for Use in Environmental Fate and Transport Studies. *Water Research*, 44:4:1114-1125, 2010.
25. Stimson, J.*, Chae, G., Ptacek, C.J., **Emelko, M.B.**, Mesquita, M.M., Hirata, R., Blowes, D.W. Basic Oxygen Furnace Slag as a Treatment Material for Pathogens: Contribution of Inactivation and Attachment in Virus Attenuation. *Water Research*, 44:4:1150-1157, 2010.

26. Silins, U., Stone, M., **Emelko, M.B.**, Bladon, K.D. Sediment Production Following Severe Wildfire and Post-Fire Salvage Logging in the Rocky Mountain Headwaters of the Oldman River Basin, Alberta. *Catena*, 79:3:189-197, 2009.
27. Silins, U., Bladon, K.D., Anderson, A., Diiwu, J., **Emelko, M.B.**, Stone, M., Boon, S. Alberta's Southern Rockies Watershed Project – How Wildfire and Salvage Logging Affect Water Quality and Aquatic Ecology. *Streamline*, 12:2:1-7, 2009.
28. Brown, T.J.* , **Emelko, M.B.** Chitosan and Metal Salt Coagulant Impacts on *Cryptosporidium* and Surrogate Removal by Filtration. *Water Research*, 43:2:331-338, 2009.
29. Knappett, P.*, **Emelko, M.B.**, Zhuang, J., McKay, L. Transport and Retention of MS-2 Bacteriophage and Microspheres in Saturated Porous Media: Impact of Ionic Strength and Grain Size. *Water Research*, 42:16:4368-4378, 2008.
30. Stone, M., Krishnappan, B.G., **Emelko, M.B.** The Effect of Bed Age and Shear Stress on the Size Distribution and Particle Morphology of Eroded Cohesive Sediment Deposits in an Annular Flume. *Water Research*, 42:15:4179-4187, 2008.
31. Bladon, K.D., Silins, U., Wagner, M.J., Stone, M., **Emelko, M.B.**, Mendoza, C.A., Devito, K., Boon, S. Wildfire impacts on nitrogen concentration and production from headwater streams in southern Alberta's Rocky Mountains. *Can. Jour. For. Res.* 38:9:2359-2371, 2008.
32. Lee, L.H.* , Arnold, A.J.* , Santillan, C.A.* , **Emelko, M.B.**, Dickson, S.E., Chang, J.S. Bench-Scale Disinfection of Bacteria and Viruses with Pulsed Arc Electrohydraulic Discharge. *Wat. Qual. Res. Jour. Can.*, 43:1:77-84, 2008.
33. **Emelko, M.B.**, Schmidt, P.J.* , Roberson, J.A. Quantification of Uncertainty in Microbial Data: Reporting and Regulatory Implications. *Jour. AWWA*, 100:3:94-104, 2008.
34. Chae, G.**, Stimson, J.* , **Emelko, M.B.**, Blowes, D.W., Ptacek, C.J., Mesquita, M.M. Statistical Assessment of the Accuracy and Precision of Bacteria- and Virus-Sized Microsphere Enumerations by Epifluorescence Microscopy. *Water Research*, 42:6-7:1431-1440, 2008.
35. Chang, J.S., Dickson, S., Guo, Y.P., Urashima, K. **Emelko, M.B.** Electrohydraulic Discharge Direct Plasma Water Treatment Processes. Advanced Plasma Technology. R. d'Agostino, P. Favia, Y. Kawai, H. Ikegami, N. Sato, and F. Arefi-Khonsari eds. Wiley-VCH Publishing Inc., 2008.
36. Angeloni, D.M.*, Dickson, S.E., **Emelko, M.B.**, Chang, J.S. Removal of Methyl-tert-butyl Ether from Water by a Pulsed Arc Electrohydraulic Discharge System. *Jap. Jour. Plasma Physics*, 45:10B:8290-8293, 2006.
37. Yamatake, A.**, Chang, J.S., Angeloni, D.M.* , Dickson, S., **Emelko, M.B.**, Yasuoka, K. Pulsed Electrohydraulic Discharge Characteristics in an Eccentric-Electrode Cylindrical Reactor Using PBS Water. *Jap. Jour. Plasma Physics*, 45:10B:8298-8301, 2006.
38. **Emelko, M.B.**, Huck, P.M., Smith, E.F. Full-scale Optimization of Single-Stage Biological Filtration. *Jour. AWWA*, 98:12:61-73, 2006.

39. **Emelko, M.B.**, Huck, P.M., Coffey, B.M. *Cryptosporidium* Removal by Filtration: A Review. *Jour. AWWA*, 97:12:101-115, 2005.
40. **Emelko, M.B.**, Huck, P.M. Microspheres as Surrogates for Filtration of *Cryptosporidium*. *Jour. AWWA*, 96:3:94-105, 2004.
41. **Emelko, M.B.**, Brown, T.* Granular Media Provide Effective Pathogen Removal. *Water Serv.*, 106:2:11-13, 2003.
42. **Emelko, M.B.**, Huck, P.M., Douglas, I.P. *Cryptosporidium* and Microsphere Removal During Late in Cycle Filtration. *Jour. AWWA*, 95:5:173-182, 2003.
43. **Emelko, M.B.** Removal of Viable and Inactivated *Cryptosporidium* Oocysts by Dual- and Tri-Media Filtration. *Water Research*, 37:12:2998-3008, 2003.
44. Huck, P.M., Coffey, B.M., Anderson, W.B., **Emelko, M.B.**, Maurizio, D.D., Slawson, R.M., Douglas, I.P., Jasim, S.Y., O'Melia, C.R. Using Turbidity and Particle Counts to Monitor *Cryptosporidium* Removals by Filters. *Wat. Sci. Technol. Wat. Supply*, 2:3:65-71, 2002.
45. Huck, P.M., Coffey, B.M., **Emelko, M.B.**, Maurizio, D.D., Slawson, R.M., Anderson, W.B., Van Den Oever, J., Douglas, I.P., O'Melia, C.R. Effects of Filter Operation on *Cryptosporidium* Removal. *Jour. AWWA*, 94:6:97-111, 2002.

In Review:

46. Wong, A.W.T.*, Jin, C.**, Du, W., **Emelko, M.B.** A Mass Balance Approach Explaining Nutrient Dynamics during Drinking Water Biofiltration. *Environ. Sci. Technol.*
47. Mesquita, M.M.F.***, Crumb, J., Jones, T., **Emelko, M.B.** Utility of F-RNA Coliphage Source Tracking in Assessing Microbial Contamination of Recreational Waters with Limited Monitoring. *Appl. Environ. Microbiol.*

In Final Preparation:

48. **Emelko, M.B.**, Schmidt, P.J. Confirming the Need for Virus Disinfection in Municipal Subsurface Drinking Water Supplies. *Wat. Res.*
49. Charlebois, G.*, Mesquita, M.M.F.***, **Emelko, M.B.** Elevated DOC Limits the Utility of Ozonation in Treating Microcystin in Drinking Water. *Wat. Res.*

Refereed Conference Papers, Books, Book Chapters, and Reports:

Published/Accepted:

50. **Emelko, M.B.**, Sham, C.H. Wildfire Impacts on Water Supplies and the Potential for Mitigation. Canadian Water Network and Water Research Foundation. 2014.
51. Allin, D.*, Stone, M., Silins, U., **Emelko, M.B.**, Collins, A. The Effects of Wildfire on Sediment-associated Phosphorus Speciation in the Crowsnest River Basin, Alberta. Proceedings of the IAHS-

ICCE International Conference on Wildfire and Water Quality: Processes, Impacts and Challenges, 354: 1-8. 2012.

52. Mesquita, M.M.F.** , **Emelko, M.B.** Bacteriophages as Surrogates for the Fate and Transport of Pathogens in Source Water and in Drinking Water Treatment Processes. Bacteriophages. I. Kurtboke Ed. InTech, 2012.
53. Tufenkji, N., **Emelko, M.B.** Groundwater Pollution: Impacts on Human Health: Fate and Transport of Microbial Contaminants, pp. 715-726. Encyclopedia of Environmental Health, J. Nriagu, Ed., Elsevier Publishing Inc., 2011.
54. **Emelko, M.B.**, Tufenkji, N., Stone, M. Rudolph, D.L., Marsalek, J. RBF Treatment of Waters Impacted by Urban Stormwater and/or Polluted Rivers. Effects of Urbanization on Groundwater: An Engineering Case-based Approach for Sustainable Development. N.B Chang, ed. Reston, Virginia: ASCE Publications, Chapter 7, pp.165-198, 2010.
55. Silins, U., Stone, M., **Emelko, M.B.**, Bladon, K.D. Impacts of Wildfire and Post-Fire Salvage Logging on Sediment Transfer in the Oldman Watershed, Alberta. Proceedings of the IAHS-ICCE International Symposium on Sediment Dynamics in Changing Environments, 325: 510-515. 2008.
56. Lagan, S.M.*, **Emelko, M.B.**, Dixon, D., Stone, M.F., 2006. An Investigation into the Effects of Polyelectrolyte Charge Density on Silica-Silica Interactions. In *Proc. 1st Australian Young Water Professionals Conference*, UNSW, Sydney, Australia, February 15 -17, 2006.
57. **Emelko, M.B.**, Hood, E.D., Cox, E.E., Edwards, E.A. Bioaugmentation for Chlorinated Solvent Remediation. In *Proc. of the 2006 IASTED International Conference on Advanced Technology in the Environmental Field*, Lanzarote, Spain, February 6-10, 2006.
58. **Emelko, M.B.**, Schmidt, P.J.* Guidance for Reporting and Regulating Microbial Concentrations and Removals. In *Proc. 12th National Conference on Drinking Water*, Saint John, NB, Canada, April 1-4, 2006.
59. Huck, P.M., **Emelko, M.B.**, Coffey, B.M., Maurizio, D.D., O'Melia, C.R. Filter Operation Effects on Pathogen Passage. American Water Works Association Research Foundation, Denver, CO, 2001.
60. **Emelko, M.B.**, Huck, P.M., Slawson, R.M. Optimizing *Cryptosporidium* Removal during Drinking Water Filtration. In *Proc. 8th National Conference on Drinking Water*, Québec City, QC, Canada, October 28-30, 1998.

Non-Refereed Publications/Presentations (Abstract-reviewed)

Published/Accepted:

1. **Emelko, M.B.**, Ahmed, A. Approach for Determining Minimum Treatment Requirements for Well-Based Municipal Systems: Complete Draft Update of the MOE's GUDI ToR. *17th Canadian National Conference on Drinking Water*, Ottawa, ON, Canada, October 16-18, 2016.

2. **Emelko, M.B.**, Ruecker, N., Mayberry, P., Schmidt, P.J. Assessing Parasite Concentrations in Source Water for Decision Making and Risk Assessment. *17th Canadian National Conference on Drinking Water*, Ottawa, ON, Canada, October 16-18, 2016.
3. **Emelko, M.B.**, Silins, U., Ruecker, N., Stone, M. Assessing Wildfire Risk to Municipal Waterworks. *Western Canada Water Annual Conference*, Calgary, AB, Canada, October 4-7, 2016.
4. **Emelko, M.B.**, Ruecker, N., Mayberry, P., Schmidt, P.J. Evaluating Parasite Occurrence in Source Waters: Preventing Bias and Erroneous Interpretation. *Western Canada Water Annual Conference*, Calgary, AB, Canada, October 4-7, 2016.
5. Eykelbosh, A., **Emelko, M.B.**, Silins, U., Stone, M. Fires, Floods, and Bugs: How Climate Change Impacts Drinking Water Source Quality. *Canadian Institute of Public Health Inspectors 2016 Annual Conference*, Edmonton, AB, Canada, September 25-28, 2016.
6. **Emelko, M.B.**, Eykelbosh, A., Silins, U., Stone, M. Strategies to Prepare for and Mitigate Climate Change Impacts on Drinking Water Treatability: A Small Systems Approach. *Canadian Institute of Public Health Inspectors 2016 Annual Conference*, Edmonton, AB, Canada, September 25-28, 2016.
7. Shams, S.* , **Emelko, M.B.**, Stewart, D.M.* , Walton, T.* Roles of Different Drinking Water Treatment Processes on the Removal and Changes of NOM Fractions and DBP Precursors. *OWWA/OMWA Joint Annual Conference*, Windsor, ON, Canada, May 1-4, 2016. ***Awarded Michael R. Provart Runner Up Award for best paper/presentation.***
8. Walker, T.* , Mesquita, M.M.F.* , **Emelko, M.B.** Propagation and Purification of Bacillus sp. Endospores for Water Treatment Process Performance Evaluation. *OWWA/OMWA Joint Annual Conference*, Windsor, ON, Canada, May 1-4, 2016.
9. **Emelko, M.B.**, Ahmed, A. Determining Minimum Treatment Requirements for Well-Based Municipal Systems: the Complete MOE Proposed GUDI Terms of Reference. *OWWA/OMWA Joint Annual Conference*, Windsor, ON, Canada, May 1-4, 2016.
10. Charlebois, G.* , **Emelko, M.B.**, Mesquita, M.M.F.* , Westrick, J. The Relationship between *Microcystis* Sp. And Microcystin Destruction by Ozone in Water Treatment. *AWWA Water Quality and Technology Conference*, Salt Lake City, UT, November 15-19, 2015.
11. Walton, T.* , Mesquita, M.M.F.* , **Emelko, M.B.** Impact of a New Approach for Groundwater Under the Influence of Surface Water in Ontario: A Case Study. *AWWA Water Quality and Technology Conference*, Salt Lake City, UT, November 15-19, 2015.
12. Wong, A.W.T.* , **Emelko, M.B.**, Walton, T.* Optimizing Biological Filtration Performance with Innovative Capping Material Designs and Nutrient Amendments. *AWWA Water Quality and Technology Conference*, Salt Lake City, UT, November 15-19, 2015.
13. Walton, T.* , Mesquita, M.M.F.* , **Emelko, M.B.** Impact of a New Approach for Groundwater Under the Influence of Surface Water in Ontario: A Case Study. *CWWA National Water and Wastewater Conference*. Whistler, BC, Canada, October 25-28, 2015.

14. Charlebois, G.*, **Emelko, M.B.**, Mesquita, M.M.F.*, Westrick, J. Destruction of Microcystin-LR and Anatoxin-a by Ozone in Drinking Water Treatment. OWWA/OMWA Joint Annual Conference, Toronto, ON, Canada, April 26-28, 2015.
15. Mesquita, M.M.F.*, **Emelko, M.B.** New Guidance for Groundwater Under the Direct Influence of Surface Water: The How and Why of F-specific Coliphage. OWWA/OMWA Joint Annual Conference, Toronto, ON, Canada, April 26-28, 2015.
16. Jin, C.*, Glawdel, T., Ren, C., **Emelko, M.B.** Surface Roughness Impacts on Particle Removal by Granular Media Filtration. AWWA Water Quality and Technology Conference, New Orleans, LA, November 16-20, 2014.
17. Charlebois, G.*, **Emelko, M.B.**, McDermott, L., Walton, T. Identifying Operational Constraints for Microcystin Destruction by Ozonation. AWWA Water Quality and Technology Conference, New Orleans, LA, November 16-20, 2014.
18. **Emelko, M.B.**, Ahmed, A. Approach for Determining Minimum Treatment Requirements for Well-Based Municipal Systems: an Update of the MOE's GUDI Terms of Reference. 16th National Conference on Drinking Water, Gatineau, QC, Canada, October 26-29, 2014.
19. Snider, R.A.*, Walton, T., **Emelko, M.B.**, McDermott, L. Improving the Efficiency and Sustainability of the Filtration Process Through Extended Terminal Subfluidization Wash Implementation at a Municipal Drinking Water Treatment Plant. 16th National Conference on Drinking Water, Gatineau, QC, Canada, October 26-29, 2014.
20. Campbell, A., McLellan, N.*, Banihashemi, A.**., Douglas, I.P., **Emelko, M.B.** Evaluating Pathogen Removal Performance through Pilot Plant Challenge Studies. 16th National Conference on Drinking Water, Gatineau, QC, Canada, October 26-29, 2014.
21. Silins, U., Bladon, K.D.**., Wang, X.**., Robinne, F.*, Emelko, M.B., Flannigan, M., Dupont, D., Parisien, M.A., Renzetti, S., Tymstra, C., Schroeder, D., Thompson, D., de Groot, B., Kienzle, S., Wolford, D., Stone, M., Waddington, M., Devito, K., Wotton, M. Management of Wildfire Risk to Downstream Municipal Drinking Water Treatment in Alberta. Wildland Fire Canada: 2014 Conference, Halifax, NS, Oct. 7-9, 2014.
22. Shams, S.*, **Emelko, M.B.**, Silins, U., Bladon, K.D.**., Stone, M., Williams, C.H.S.*, Martens, A.M.* Long-term wildfire impacts on THM formation potential. 248th American Chemical Society National Meeting, San Francisco, CA, USA, August 10-14, 2014.
23. Jin, C.*, Glawdel, T.*, **Emelko, M.B.**, Ren, C. Non-Linearity Impact of Nano-scale Surface Roughness on Particle Deposition in Parallel Plates. American Society of Mechanical Engineers (ASME) 4th Joint US-European Fluids Engineering Division Summer Meeting and 12th International Conference on Nanochannels, Microchannels and Minichannels, Chicago, IL, USA, August 3-7, 2014.
24. Wong, A.W.T.*, **Emelko, M.B.**, Walton, T. Enhancing Biologically Active Filtration Performance with Innovative Capping Material Designs. AWWA Annual Conference, Boston, MA, USA, June 8-12, 2014.

25. Chik, A.H.S.* , **Emelko, M.B.**, Stone, M., Silins, U., Dixon, J., Mielke, L. Extending the Phosphorus Transfer Continuum Concept: Linking Source Water Quality to Treatment Impacts: Evaluating Phosphorus as a Source Water and Treatment Vulnerability Indicator. AWWA Annual Conference, Boston, MA, USA, June 8-12, 2014.
26. Robinne, F.N.* , Flannigan, M.D., Parisien, M.A., Bladon, K.D.** , Wang, X., Silins, U., **Emelko, M.B.** A Spatial Analysis of Wildfire Risk to Alberta’s Drinking-water Supply. Large Fire Conference, Missoula, MT. May 19-23, 2014.
27. Ahmed, A., **Emelko, M.B.** Updating the MOE’s GUDI Terms of Reference Document. OWWA/OMWA Joint Annual Conference, London, ON, Canada, May 4-7, 2014.
28. Charlebois, G.* , **Emelko, M.B.**, McDermott, L. Optimization of Microcystin Removal by Ozone. OWWA/OMWA Joint Annual Conference, London, ON, Canada, May 4-7, 2014.
29. Wong, A.W.T.* , **Emelko, M.B.**, Walton, T. Enhancing Biologically Active Filtration Performance with Innovative Capping Material Designs. OWWA/OMWA Joint Annual Conference, London, ON, Canada, May 4-7, 2014.
30. Banihashemi, A.** , Emelko, M.B., Douglas, I.P., Campbell, A., McLellan, N.L.* Assessing Microbial Risk During Drinking Water Treatment: Linking Pilot Studies to Plant Performance. OWWA/OMWA Joint Annual Conference, London, ON, Canada, May 4-7, 2014.
31. Snider, R.A.* , **Emelko, M.B.**, McDermott, L., Walton, T. Extended Terminal Subfluidization (ETSW) Costs and Benefits: A Case Study in Full-Scale Implementation and Optimization. OWWA/OMWA Joint Annual Conference, London, ON, Canada, May 4-7, 2014.
32. Chik, A.H.S.* , **Emelko, M.B.**, Stone, M., Silins, U., Dixon, J., Mielke, L. Extending the Phosphorus Transfer Continuum Concept: An Innovative Framework for Linking Source Water Quality and Drinking Water Treatability. 49th Central Canadian Symposium on Water Quality Research, Niagara-on-the-Lake, ON, Canada, March 5-7, 2014.
33. Wong, A.W.T.* , **Emelko, M.B.**, Walton, T. Enhancing Biologically Active Filtration Performance with Innovative Capping Material Designs. 49th Central Canadian Symposium on Water Quality Research, Niagara-on-the-Lake, ON, Canada, March 5-7, 2014.
34. Charlebois, G.* , **Emelko, M.B.**, McDermott, L. Optimization of Microcystin Removal by Ozone. 49th Central Canadian Symposium on Water Quality Research, Niagara-on-the-Lake, ON, Canada, March 5-7, 2014.
35. **Emelko, M.B.**, Silins, U., Bladon, K.D.** , Stone, M. Post-fire DOC, DBPs and Nutrients: Justifying and Achieving Robust Treatment. AWWA Water Quality and Technology Conference, Long Beach, CA, November 3-7, 2013.
36. Silins, U., **Emelko, M.B.**, Bladon, K.D.** , Stone, M. Assessing Wildfire Impacts on Water Quality and Treatability: Which Effects are Attributable to Wildfire? AWWA Water Quality and Technology Conference, Long Beach, CA, November 3-7, 2013.

37. Stone, M., Silins, U., **Emelko, M.B.**, Krishnappan, B.G., Collins, A.L., Bladon, K.D.***, Williams, C.H.S. Assessing Downstream Propagation of Wildfire Impacts on Water Quality. AWWA Water Quality and Technology Conference, Long Beach, CA, November 3-7, 2013.
38. Bladon, K.D.***, Silins, U., Flannigan, M.D., **Emelko, M.B.**, Dupont, D.P., de Groot, B., Kienzle, S.W., Parisien, M.A., Robinne, F.*, Schroeder, D., Stone, M., Thompson, D.K., Tymstra, C., Wang, X.***, Waddington, J.M., Woolford, D.G., Wotton, B.M. Minimizing Wildfire Risk to Municipal Water Works by Active Source Water Protection. AWWA Water Quality and Technology Conference, Long Beach, CA, November 3-7, 2013.
39. Douglas I., Campbell, A., Elliott, J., **Emelko, M.B.**, McLellan, N.* Methods for Evaluating Pathogen Log Removal Performance in a Water Treatment Plant. AWWA Water Quality and Technology Conference, Long Beach, CA, November 3-7, 2013.
40. Stone, M., Silins, U., **Emelko, M.B.**, Bladon, K.D.***, Krishnappan, B.G., Collins, A.L., Droppo, I.G. Biological Modification of Sediment Transport Processes in Wildfire Impacted River Systems. Synthesizing Empirical Results to Improve Predictions of Post-wildfire Runoff and Erosion Response, American Geophysical Union: Chapman Conference, Estes Park, CO, USA, August 25-31, 2013.
41. **Emelko, M.B.**, Silins, U., Stone, M., Bladon, K.D.***, Wagner, M.J., Williams, C.S.H., Martens, A. Long Term Implications of Wildfire to Drinking Water Treatment. American Water Resources Association (AWRA) Summer Specialty Conference: Healthy Forests = Healthy Water, Hartford, CT, USA, June 27-28, 2013.
42. Bladon, K.D.***, Silins, U., Flannigan, M.D., **Emelko, M.B.**, Dupont, D.P., Kienzle, S.W., Parisien, M.A., Schroeder, D., Thompson, D.K., Tymstra, C., Waddington, J.M., Wang, X., Woolford, D.G., Wotton, M. Management of Wildfire Risk in Forested Regions of Alberta to Downstream Municipal Drinking Water Treatment. American Water Resources Association (AWRA) Summer Specialty Conference: Healthy Forests = Healthy Water, Hartford, CT, USA, June 27-28, 2013.
43. Silins, U., Bladon, K.D.***, Wagner, M.J., Williams, C.S.H., Stone, M., **Emelko, M.B.**, Anderson, A., Collins, A., Krishnappan, B.G. Shifting Disturbance Regimes in Forested Source Water Landscapes in Alberta's Rocky Mountains: Long-term Impacts of Wildfire on Water Quantity, Quality, and Stream Ecology. American Water Resources Association (AWRA) Summer Specialty Conference: Healthy Forests = Healthy Water, Hartford, CT, USA, June 27-28, 2013.
44. Stone, M., Krishnappan, B.G., Silins, U., **Emelko, M.B.**, Collins, A., Bladon, K.D.***. Modeling Flow and Sediment Transport in Three Rivers and a Reservoir in the Upper Basin of the Oldman River Watershed in Alberta, Canada. American Water Resources Association (AWRA) Summer Specialty Conference: Healthy Forests = Healthy Water, Hartford, CT, USA, June 27-28, 2013.
45. Ahmed, A.S., **Emelko, M.B.**, Chik, A.H.S.* Updating of GUDI Terms of Reference Document to Determine Minimum Treatment Requirements for Well-based Municipal Residential Drinking Water Systems. OWWA/OMWA Joint Annual Conference, Ottawa, ON, Canada, May 5-8, 2013.

46. Chik, A.H.S.*, Conant, B., **Emelko, M.B.**, Ahmed, A. A Science-based Approach for Environmental Policy Development: Groundwater Under Direct Influence (GUDI) of Surface Water Terms of Reference Review. 43rd Annual Conference of the Urban Affairs Association, San Francisco, CA, USA, Apr. 3-6, 2013.
47. Spanjers, M.G.*, **Emelko, M.B.** Implications of Media Selection and Design on Biofilter Performance. AWWA Biological Treatment Symposium, Denver, CO, USA, Mar. 28-29, 2013.
48. McLellan, N.L.*, **Emelko, M.B.**, Douglas, I.P., Campbell, A. Pilot-Scale Removal of Pathogen Surrogates: Informing QMRA for Water Treatment. Canadian Water Network Connecting Water Resources 2013: Changing the Water Paradigm Conference, Ottawa, ON, Canada, Mar. 18-21, 2013.
49. McLellan, N.L.*, **Emelko, M.B.**, Douglas, I.P., Campbell, A. Pilot and Full-Scale Evaluations of Pathogen Removal: Enabling QMRA for Plant Risk Management. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
50. Spanjers, M.G.*, **Emelko, M.B.** Turbidity Dampening and Headloss Development in Biological Filters. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
51. Arnold, A.J.*, **Emelko, M.B.** Predicting Full-Scale Chemical Pre-Treatment and Particle Removal Process Performance. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
52. **Emelko, M.B.**, Geng, X.*, Silins, U., Stone, M. Climate Change Effects in Canadian Source Watersheds: Implications to NOM Character and Treatability. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
53. **Emelko, M.B.**, Schmidt, P.J.* How QMRA is Conducted Matters: Case Studies Demonstrating Pitfalls of Data Interpretation and How They Can Be Avoided. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
54. Schmidt, P.J. Fazil, A.M., Pintar, K.D.M., **Emelko, M.B.**, Topp, E. Enhancing our Knowledge about Microbial Risks in Drinking Water by Evaluating the Uncertainty in Dose-Response Model Parameters. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
55. Schmidt, P.J.*, **Emelko, M.B.**, Thompson, M.E. Drinking Water QMRA: Necessary Considerations for Decision-Making. *Proc. World Congress on Risk*, Sydney, Australia, July 18-20, 2012.
56. Spanjers, M.G.*, **Emelko, M.B.** Rough Engineered Ceramic Filtration Media for Biologically Active Filtration. AWWA Annual Conference, Dallas, TX, USA, June 10-14, 2012.
57. Silins, U., Stone, M., **Emelko, M.B.**, Collins, A., Krishnappan, B.G., Boon, S., Bladon, K.D., Wagner M.J., Williams, C.H.S., Anderson, A. Long Term Watershed Research Sites as Platforms for Trans-disciplinary Insights for Regional Watershed Management: The Tale of One Study. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.

58. Bladon, K.D., Silins, U., Stone, M., Boon, S., **Emelko, M.B.**, Williams, C.H.S., Wagner M.J. Incomplete Recovery of Water Quality after Wildfire in Alberta's Rocky Mountains: Insights from Eight Years of Watershed Research. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.
59. Wagner M.J., Silins, U., Williams, C.H.S., Boon, S., Bladon, K.D., Stone, M., **Emelko, M.B.** Effects of Wildfire and Salvage Logging on Stream Temperature in Front Range Rocky Mountains: A Long Term Perspective. Annual Meeting of the Canadian Geophysical Union, Banff, AB., June 5-8, 2012. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.
60. Spanjers, M.G., **Emelko, M.B.** Comparison of 4 Media Types for Traditional and Biofiltration Treatment Goals: Assessment of Rough Engineered Media and Implications for Filter Media Choice. OWWA/OMWA Joint Annual Conference, Niagara Falls, ON, Canada, May 6-9, 2012. **Awarded Michael R. Provart Award for best paper/presentation.**
61. Jin, C.*, **Emelko, M.B.** Improving Granular Media Filtration Performance by Media Roughness. AWWA Water Quality Technology Conference, Phoenix, AZ, USA, Nov. 13-17, 2011.
62. McLellan, N.L.*, **Emelko, M.B.** Extracellular Polymeric Substance Effects on Pathogen Transport: Implications for Landuse Management and Filter Operation. AWWA Water Quality Technology Conference, Phoenix, AZ, USA, Nov. 13-17, 2011.
63. McLellan, N.L.*, **Emelko, M.B.** "Wall Effects" During Filtration Investigations: Reconsideration of Column-Diameter to Collector-Diameter Ratio Recommendations when Conducting Colloid Transport Studies. AWWA Water Quality Technology Conference, Phoenix, AZ, USA, Nov. 13-17, 2011.
64. **Emelko, M.B.**, Geng, X.*, Silins, U., Stone, M. Fire Management in Source Watersheds: Implications to NOM Character and Treatability. AWWA Water Quality Technology Conference, Phoenix, AZ, USA, Nov. 13-17, 2011.
65. Silins, U., Williams, C.H.S., Wagner, M.J., Bladon, K.D., Boon, S., Stone, M., **Emelko, M.B.** Changes in Streamflow Production and Timing after Wildfire in the Southern Rocky Mountains of Alberta, Canada. American Chemical Society (ACS), Fall National Meeting & Exposition, Chemistry of Air, Space, & Water, Denver, CO, USA, Aug. 28 – Sept. 1, 2011.
66. Boon, S., Burles, K.*, Williams, C.H.S., Wagner, M.J., Silins, U., Bladon, K.D., Stone, M., **Emelko, M.B.** Changes in Snow Accumulation and Melt after Wildfire in the Southern Rocky Mountains of Alberta, Canada. American Chemical Society (ACS), Fall National Meeting and Exposition, Chemistry of Air, Space, & Water, Denver, CO, USA, Aug. 28 – Sept. 1, 2011.
67. Bladon, K.D., Silins, U., Williams, C.H.S., Wagner, M.J., Stone, M., **Emelko, M.B.**, Boon, S. Phosphorus and Nitrogen Linkages to Changes in Aquatic Ecosystems after wildfire in the Rocky Mountains of Alberta, Canada., American Chemical Society (ACS), Fall National Meeting and Exposition, Chemistry of Air, Space, & Water, Denver, CO, USA, Aug. 28 – Sept. 1, 2011.
68. Stone, M., Silins, U., **Emelko, M.B.**, Bladon, K.D., Williams, C.H.S., Wagner, M.J., Boon, S. Long Term Impacts of Wildfire and Post-fire Salvage Logging on Sediment Transfer in the Rocky Mountain

- Headwaters of Alberta, Canada. American Chemical Society (ACS), Fall National Meeting and Exposition, Chemistry of Air, Space, & Water, Denver, CO, USA, Aug. 28 – Sept. 1, 2011.
69. **Emelko, M.B.**, Silins, U., Stone, M., Bladon, K.D., Williams, C.H.S., Wagner, M.J., Boon, S. Drinking Water Treatment Implications and Challenges: A Seven Year Post-wildfire Canadian Case Study. American Chemical Society (ACS), Fall National Meeting and Exposition, Chemistry of Air, Space, & Water, Denver, CO, USA, Aug. 28 – Sept. 1, 2011.
 70. Silins, U., Stone, M., **Emelko, M.B.**, Boon, S., Bladon, K.D., Collins, A., Krishnappan, B., Anderson, A. Southern Rockies Watershed Project: Evaluating long-term effects of severe wildfire on water and ecosystem services. International Association for Sediment Water Science (IASWS) Conference, Dartington, England, June 19-23, 2011.
 71. Stone, M., Collins, A.L., **Emelko, M.B.**, Silins, U. The effect of landscape disturbance by wildfire on the physical, geochemical and contaminant properties of suspended solids in the Oldman River basin, Alberta, Canada. Proc. International Association for Sediment Water Science (IASWS) Conference, Dartington, England, June 19-23, 2011.
 72. Jin, C.*, **Emelko, M.B.** Utilizing media roughness to improve particle removal and process robustness during granular media filtration. AWWA Annual Conference, Washington, DC, USA, June 12-16, 2011.
 73. Geng, X.*, Silins, U., **Emelko, M.B.** Wildfire Impacts on Natural Organic Matter in Drinking Water Sources: Implications to Treatability. AWWA Annual Conference, Washington, DC, USA, June 12-16, 2011.
 74. Arnold, A.J.*, **Emelko, M.B.** Evaluation and Quantification of Engineered Floccs and Drinking Water Treatability. AWWA Annual Conference, Washington, DC, USA, June 12-16, 2011.
 75. Stone, M., Collins, A.L., **Emelko, M.B.**, Silins, U., The Effect of Landscape Disturbance by Wildfire on the Physical, Geochemical and Contaminant Properties of Suspended Solids in the Oldman River Basin, Alberta, Canada. Joint Meeting of the Canadian Geophysical Union and the Canadian Soc. of Ag. & For. Meteorology, Banff, AB, Canada, May 15-18, 2011.
 76. Schmidt, P.J.*, **Emelko, M.B.**, Thompson, M.E. Addressing Variability, Uncertainty, and Measurement Error in Quantitative Microbial Risk Assessment. *Proc. Conference on Statistics, Science, and Public Policy*, Herstmonceux Castle, Hailsham, UK, April 18-20, 2011.
 77. Schmidt, P.J.*, **Emelko, M.B.** Using Pathogen Occurrence Data for Risk Analysis and Treatment Decisions: Preventing Bias by Addressing Measurement Error. AWWA Water Quality Technology Conference, Savannah, GA, USA, Nov. 14-18, 2010.
 78. **Emelko, M.B.**, Silins, U., Stone, Bladon, K.D. Water Quality, Treatability, and Mitigation: Implications of a 7-Year Post-Wildfire Case Study. AWWA Water Quality Technology Conference, Savannah, GA, USA, Nov. 14-18, 2010.

79. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Climate Change Effects on Canadian Landscapes: A Demonstrated Need for Changing the Source Water Protection Paradigm. *14th National Conference on Drinking Water*, Saskatoon, SK, Canada, October 30-November 2, 2010.
80. **Emelko, M.B.**, Schmidt, P.J.* QMRA: Making Definite Steps toward Improved Decision-Making under Ever-Present Uncertainty. *14th National Conference on Drinking Water*, Saskatoon, SK, Canada, October 30-November 2, 2010.
81. Schmidt, P.J.*, **Emelko, M.B.** *Case studies of the analysis of microbial data: Are random measurement errors associated with data causing us to disregard important results?* *14th National Conference on Drinking Water*, Saskatoon, SK, Canada, October 30-November 2, 2010.
82. Chik, A.H.S.*, Stimson, J.**, Mesquita, M.M.F.**, McLellan, N.L.*, **Emelko, M.B.** Evaluating Pathogen Removal by Subsurface Filtration: Unintentional Impacts of Aerobic Endospores on Pathogen Transport. AWWA Annual Conference, Chicago, IL, USA, June 20-24, 2010.
83. McLellan, N.L.*, Stimson, J.**, Mesquita, M.M.F.**, Tufenkji, N., **Emelko, M.B.** Physical and chemical factors affecting pathogen and colloid removal by filtration: A mechanistic approach. AWWA Annual Conference, Chicago, IL, USA, June 20-24, 2010. **Best University Research Poster Award.**
84. Snider, R.A.*, **Emelko, M.B.**, Smith, E.F. Design and Operational Impacts on Deep Bed, High Rate Biological Filter Performance. AWWA Annual Conference, Chicago, IL, USA, June 20-24, 2010.
85. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S., Williams, C.H.S., Wagner, M., Esch, E.*, Spence, J. Ecohydrological Linkages between Water Quality and Aquatic Ecology after Severe Wildfire in Rocky Mountain Catchments. 44th Annual CMOS Congress 36th Annual Scientific Meeting of CGU 3rd Joint CMOS-CGU Congress, Ottawa, ON, Canada, May 31-June 4, 2010.
86. Silins, U., Bladon, K.D., Boon, S., Stone, M., **Emelko, M.B.**, Williams, C.H.S., Wagner, M. After the flames are out: Catchment-scale effects of wildfire on runoff and flow regime in the Canadian Rocky Mountains. 44th Annual CMOS Congress 36th Annual Scientific Meeting of CGU 3rd Joint CMOS-CGU Congress, Ottawa, ON, Canada, May 31-June 4, 2010.
87. **Emelko, M.B.** GUDI Assessment and Demonstration of Effective *In Situ* Filtration: Laboratory and Field Considerations. OWWA/OMWA Joint Annual Conference, Windsor, ON, Canada, May 2-5, 2010.
88. Chik, A.H.S.*, Stimson, J.**, Mesquita, M.M.F.**, McLellan, N.L.*, **Emelko, M.B.** Evaluating Pathogen Removal by Subsurface Filtration: Unintentional Impacts of Aerobic Endospores on Pathogen Transport. OWWA/OMWA Joint Annual Conference, Windsor, ON, Canada, May 2-5, 2010.
89. McLellan, N.L.*, Stimson, J.**, Mesquita, M.M.F.**, Tufenkji, N., **Emelko, M.B.** Investigation of Concurrent Physical and Chemical Factors Affecting Pathogen and Colloid Removal by Filtration. OWWA/OMWA Joint Annual Conference, Windsor, ON, Canada, May 2-5, 2010.

90. Roberson, J.A., Schmidt, P.J.*, **Emelko, M.B.** Using Statistical Models to Transform Microbial Monitoring Data into Information for Decision-Makers. AWWA International Symposium on Waterborne Pathogens, Manhattan Beach, CA, USA, May 2-4, 2010.
91. Stimson, J.***, Chik, A.H.S.*, Mesquita, M.M.F.***, McLellan, N.L.*, **Emelko, M.B.** Field-scale Evaluation of the Co-transport Impacts of *Bacillus subtilis* Endospores on Other Pathogen Surrogates. 2009 American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 14-18, 2009.
92. Silins U., Bladon K.D., Boon S., Stone M., **Emelko M.B.**, Williams C.H.S., Wagner, M.* After the Fire's Out: Catchment-scale Effects of Wildfire on Runoff and Flow Regime in the Canadian Rocky Mountains. 2009 American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 14-18, 2009.
93. McLellan, N.L.*, Stimson, J.***, Tufenkji, N., **Emelko, M.B.** Concurrent Effects of Grain Characteristics, NOM and Ionic Strength on Pathogen and Surrogate Transport in Porous Media. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 15-19, 2009.
94. **Emelko, M.B.**, Silins, U., Stone, M., Boon, S., Bladon, K.D. Treatability Implications of Upstream Land Disturbance in a Changing Climate. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 15-19, 2009.
95. **Emelko, M.B.**, Silins, U., Stone, M., Bladon, K.D., Boon, S., Anderson, A., Diiwu, J. Climate Change Implications to Drinking Water Treatability and Public Health. 4th National Stewardship and Conservation Conference. Calgary, AB, Canada. July 8-11, 2009.
96. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Wildfire Impacts on Drinking Water Treatability. Wildfire and Watershed Hydrology Workshop, Kelowna, BC, Canada, June 3-4, 2009.
97. Stone, M., Droppo, I., Deignan, S.* , **Emelko, M.B.**, Silins, U. The Effect of Wildfire on Biostabilization and Erodibility of Cohesive Sediment Deposits in Headwater Streams of the Oldman River, Alberta. Wildfire and Watershed Hydrology Workshop, Kelowna, BC, Canada, June 3-4, 2009.
98. Silins, U., Bladon, K.D., Stone, M., Boon, S., **Emelko, M.B.**, Williams, C.H.S., Wagner, M. Effects of Wildfire and Salvage Logging on Hydrologic and Sediment regimes in Alberta's Southern Rocky Mountains. Wildfire and Watershed Hydrology Workshop, Kelowna, BC, Canada, June 3-4, 2009.
99. Bladon, K.D., Silins, U., **Emelko, M.B.**, Stone, M., Esch, E.* , Spence, R., Williams, C.H.S. Wildfire and salvage harvesting in the Rocky Mountains: Linked effects on water quality and aquatic ecology. Wildfire and Watershed Hydrology Workshop, Kelowna, BC, Canada, June 3-4, 2009.
100. **Emelko, M.B.** Demonstrating Effective *In Situ* Filtration of Pathogens in Saturated Environments: Laboratory and Field Considerations. American Geophysical Union Joint Assembly, Toronto, ON, Canada. May 24-27, 2009.
101. **Emelko, M.B.**, Stimson, J.***, McLellan, N.* , Tufenkji, N. Mechanisms of Pathogen and Surrogate Transport in Saturated Porous Media: Concurrent Effects of Grain Characteristics, Ionic Strength and NOM. American Geophysical Union Joint Assembly, Toronto, ON, Canada. May 24-27, 2009.

102. McLellan, N.L.*, Stimson, J.**, Mesquita, M.M.F.**, Tufenkji, N., **Emelko, M.B.** Breakthrough of Pathogens and Surrogates in Saturated Porous Media: Concurrent Effects of Selected Transport Parameters. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
103. Watling, M.T.*, Stimson, J.**, **Emelko, M.B.** Colloid Transport in Granular Saturated Media: Impact of Flow Orientation. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
104. Chornewich, C.*, **Emelko, M.B.**, Tufenkji, N. Investigating the Influence of Cell Concentration and Media Pre-coating on Bacterial Migration in Granular Porous Media. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
105. Mesquita, M.M.F.**, Stimson, J.*, Chae, G.-T.**, **Emelko, M.B.**, Tufenkji, N., Ptacek, C.J., Blowes, D.W. Optimal Preparation and Purification of PRD1-like Bacteriophage Suspensions for Use in Environmental Fate and Transport Studies. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
106. Stimson, J.*, Chae, G.-T.**, Blowes, D.W., Ptacek, C.J., **Emelko, M.B.** Inverse Modeling of Two-site Kinetic Attachment/Detachment and Liquid/Solid Inactivation from Virus Surrogate Breakthrough Observed in Column Studies of Saturated Basic Oxygen Furnace Slag Media. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
107. McLellan, N.L.*, **Emelko, M.B.**, Stimson, J.**, Tufenkji, N. Improved Understanding of Mechanisms Impacting Colloid and Pathogen Transport in Saturated GUDI Environments. 44th Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 23-24, 2009.
108. Superina, K.M.*, Mesquita, M.M.F.**, **Emelko, M.B.** Ultraviolet Disinfection of *E. coli* in Municipal Wastewater: Effects of Microbial Population Source. 44th Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 23-24, 2009.
109. Higgins, K.A.*, McLellan, N.*, Mesquita, M.M.F.**, Tufenkji, N., **Emelko, M.B.** Pathogen Transport in Porous Media: Understanding the Role of Experimental Design, Ionic Strength and NOM. AWWA Water Quality Technology Conference, Cincinnati, OH, USA, Nov. 16-20, 2008.
110. Schmidt, P.J.*, **Emelko, M.B.**, Thompson, M.E. Getting Better Microbial Data: Strategies to Quantify and Reduce Uncertainty. AWWA Water Quality Technology Conference, Cincinnati, OH, USA, Nov. 16-20, 2008.
111. Mesquita, M.M.F.**, Stimson, J.*, Chae, G.-T.**, **Emelko, M.B.**, Tufenkji, N., Ptacek C. J., Blowes, D.W. Preparation of high titer bacteriophage suspensions for use as pathogenic virus surrogates in environmental experiments. AWWA Water Quality Technology Conference, Cincinnati, OH, USA, Nov. 16-20, 2008.

112. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Drinking Water Treatability Implications of Severe Wildfire. AWWA Water Quality Technology Conference, Cincinnati, OH, USA, Nov. 16-20, 2008.
113. Schmidt, P.J.*, **Emelko, M.B.** Statistical Analysis of Microbial Data Obtained by Serial Dilution – Agar Plate Methods. AWWA Water Quality Technology Conference, Charlotte, NC, USA, Nov. 4-8, 2007.
114. Scott, D.J.*, **Emelko, M.B.**, Bolton, J. Study of Conventional and Engineered Granular Media Filtration Performance. AWWA Water Quality Technology Conference, Charlotte, NC, USA, Nov. 4-8, 2007.
115. Thomas, K.*, **Emelko, M.B.**, Stone, M., Silins, U., Arnold, A.* The Effects of Wildfire in the Oldman River Basin: Implications for Drinking Water Treatment. AWWA Annual Conference, Toronto, ON, Canada, June 24-28, 2007.
116. Scott, D.J.*, **Emelko, M.B.**, Bolton, J. Investigating Operational Robustness of Conventional and Engineered Granular Media Filtration. AWWA Annual Conference, Toronto, ON, Canada, June 24-28, 2007.
117. **Emelko, M.B.**, Scott, D.J.*, Bolton, J. Minimizing Chemical Dependency of Filtration by the Use of Engineered Filtration Media. *Proc. of the 12th International Gothenburg Symposium on Chemical Treatment of Water and Wastewater*. Ljubljana, Slovenia, May 20-23, 2007.
118. Arnold, A.J.*, **Emelko, M.B.** Analytical Method Development for Minimizing Uncertainty in *Cryptosporidium* and Microsphere Enumeration from Large Water Volumes. AWWA Water Quality Technology Conference, Denver, CO, USA, Nov. 5-9, 2006.
119. Scott, D.J.*, **Emelko, M.B.**, Bolton, J. Minimizing Chemical Dependency of Filtration by the Use of Engineered Filtration Media. AWWA Water Quality Technology Conference, Denver, CO, USA, Nov. 5-9, 2006.
120. **Emelko, M.B.**, Arnold, A.J.*, Santillan, C.A.*, Dickson, S.E., Chang, J.S. Treatment of Drinking Water with Pulsed Arc Electrohydraulic Discharge: Promising Outcomes and Future Challenges. *Asia-Pacific International Symposium on Air and Water Treatment by Green Oxidation/Reduction Technologies (AP-AWTGORT)*. Dalian, Liaoning China September 6-8, 2006.
121. Chang J.-S., Angeloni D.M.*, Ukai H., Dickson S.E., **Emelko M.B.**, Urashima K., Ono S. Mechanism of methyl-tert butyl ether treatment in water by a pulsed arc electrohydraulic discharge. *Proceedings, 5th International Symposium on New Trends in Physics*, France, June 22, 2006.
122. Yamatake, A.***, Angeloni, D.M.*, Dickson, S., **Emelko, M.B.**, Yasuoka, K., Chang, J.S. Pulsed Electrohydraulic Discharge Characteristics in an Eccentric-Electrode Cylindrical Reactor with PBS. *6th International Conference on Reactive Plasmas*, Matsushima/Sendai, Japan, January 24-27, 2006.
123. Angeloni, D.M.*, Dickson, S.E., **Emelko, M.B.**, Chang, J.S. Removal of MTBE by a Pulsed Arc Electrohydraulic Discharge System. *6th International Conference on Reactive Plasmas*, Matsushima/Sendai, Japan, January 24-27, 2006.

124. Silins, U., Devito, K., Mendoza, C., Gan, T., Rolston, B., Schindler, D., Petrone, R., Curry, A., Culp, J., Stone, M., **Emelko, M.B.**, 2005. Wildfire effects on watershed function in high-yielding Rocky Mountain catchments in southern Alberta. Sustainable Forest Management Network Workshop: "Towards a systems approach for management in terrestrial, riparian, and aquatic ecosystems," July 14-15, 2005, Vancouver, BC, Canada.
125. Silins, U. Wagner, M., Devito, K., Mendoza, C., Gan, T. Curry, A, Culp, J., Stone, M., **Emelko, M.B.**, 2005. Initial Hydrologic Effects of Fire in High Yielding Watersheds in Alberta's Southern Rockies, 6th Fire and Forest Meteorology Symposium, American Meteorological Society, October 25-27, 2005, Canmore, AB, Canada.
126. Silins, U., Wagner, M., Devito, K., Mendoza, C., Gan, T. Stone, M., **Emelko, M.B.**, 2005. Potential hydro-ecological feedbacks with climate change in Alberta's southern Rockies, "Hydrologic impact of climate change, climate extremes, and anthropogenic disturbances, and Downscaling", SFM/CWN workshop, August 19, 2005, Edmonton, AB, Canada.
127. Yamatake, A., Chang, J.S., Angeloni, D.M.*, Dickson, S., **Emelko, M.B.**, Yasuoka, K. Pulsed Electrohydraulic Discharge Characteristics in an Eccentric-Electrode Cylindrical Reactor. *4th Asia-Pacific International Symposium on the Basics and Applications of Plasma Technology*, 2005.
128. Schmidt, P.J.*, **Emelko, M.B.**, Reilly, P.M. Design and Analysis of Recovery Studies for Discrete Particle Enumeration Methods. AWWA Water Quality Technology Conference, Quebec City, QC, Canada, Nov. 6-10, 2005.
129. Chang, J.-S., Dickson, S.E., Guo, Y.P., Urashima, K., **Emelko, M.B.** Pulsed arc electrohydraulic discharge: direct plasma drinking and waste water treatment processes. *2nd International School of Advanced Plasma Technology*, ADTEC Plasma Technology Ltd., Asada Eiichi Research Foundation, Pearl Kogyo Co. Ltd., Varenna, Italy, Sept.27 - Oct.1, 2004.
130. **Emelko, M.B.**, Brown, T.J.* Chitosan Coagulation at Low, Cost-Effective Dosages: Impacts on Filtration of Particles and Pathogens. *11th International Gothenburg Symposium on Chemical Treatment*. Orlando, FL, USA, Nov. 8-10, 2004.
131. **Emelko, M.B.**, Lee, L.*, Dickson, S.E., Chang, J.S. Pathogen Disinfection with Pulsed Arc Electrohydraulic Discharge. AWWA Water Quality Technology Conference, San Antonio, TX, USA, Nov. 14-18, 2004.
132. Brown, T.J.*, **Emelko, M.B.** Full-Scale Quantification of Particle Removal and Quantification of System Failure Risk. AWWA Annual Conference, Orlando, FL, USA, Jun. 13-17, 2004.
133. Lee, L.*, **Emelko, M.B.**, Dickson, S.E., Chang, J.S. Pulsed Arc Electrohydraulic Discharge (PAED) Disinfection of *E. coli* and *B. subtilis*. AWWA Annual Conference, Orlando, FL, USA, Jun. 13-17, 2004.
134. Angeloni, D.*, Dickson, S.E., Chang, J.S., **Emelko, M.B.** The use of Pulsed Arc Electrohydraulic Discharge (PAED) for the treatment of methyl-*tert*-butyl ether (MTBE) in Drinking Water. OWWA/OMWA Joint Annual Conference & Trade Show 2004 OWWA/OMWA Joint Annual Conference, Niagara Falls, ON, May 9-11, 2004.

135. Douglas, I.P., **Emelko, M.B.**, Springthorpe, S.A. Day in the Life of a *Cryptosporidium* Cyst: Tracking Pathogen Removal through a Water Treatment Plant. AWWA Water Quality Technology Conference, Anaheim, CA, USA, Nov. 15-19, 2003.
136. **Emelko, M.B.**, Dickson, S.E., Chang, J.S. Pulsed Arc Electrohydraulic Discharge (PAED) – Potentially More Effective and Less Expensive than UV. AWWA Water Quality Technology Conference, Anaheim, CA, USA, Nov. 15-19, 2003.
137. **Emelko, M.B.**, Watling, M.T.*, Côté, M.M.* Laboratory and Field Strategies for Assessing Pathogen Removal by Riverbank Filtration. *2nd International Conference on Riverbank Filtration*. NWRI:Fountain Valley, CA, 2003.
138. Brown, T.J.*, **Emelko, M.B.** Developing a Model to Assess the Risk of *Cryptosporidium* Passage Through Conventional Drinking Water Treatment Systems. OWWA/OMWA Joint Annual Conference, Hamilton, ON, Canada, May 4-6, 2003.
139. Brown, T.J.*, **Emelko, M.B.** Operational Effects on Pathogen Passage: Assessing the Risk of *Cryptosporidium* Passage Through Drinking Water Filters. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 10-14, 2002.
140. Côté, M.M.*, **Emelko, M.B.**, Thomson, N.R. Factors Influencing Prediction of *Cryptosporidium* Removal in Riverbank Filtration Systems: Focus on Filtration. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 10-14, 2002.
141. **Emelko, M.B.**, Reilly, P.M. Reporting and Regulating *Cryptosporidium* Concentrations and Removals. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 10-14, 2002.
142. Watling, M.T.*, **Emelko, M.B.** Laboratory Approaches for Assessing Microbial Contaminant Removal by Riverbank Filtration. AWWA Water Quality Technology Conference, Seattle, WA, USA, Nov. 10-14, 2002.
143. **Emelko, M.B.** Filter Operation Effects on Pathogen Removal. AWWA Annual Conference, New Orleans, LA, USA, Jun. 16-20, 2002.
144. **Emelko, M.B.**, Brown, T.* Effects of Coagulant Type and Conditions on *Cryptosporidium* and Surrogate Removal by Filtration. *10th International Gothenburg Symposium on Chemical Treatment*. Gothenburg, Sweden, June 17-19, 2002.
145. **Emelko, M.B.**, Douglas, I.P., Van Den Oever, J. Assessing *C. parvum* Removal by Filtration Using Pilot- and Full-scale Microsphere Removal Data. AWWA Water Quality Technology Conference, Nashville, TN, USA, Nov. 11-15, 2001.
146. **Emelko, M.B.**, Guembel, K.W.*, Douglas, I.P., Van Den Oever, J. Assessing *Cryptosporidium* Removal by Filtration: Impacts of Seeded Concentration. AWWA Water Quality Technology Conference, Nashville, TN, USA, Nov. 11-15, 2001.
147. **Emelko, M.B.**, Huck, P.M., Douglas, I.P. Polystyrene Microspheres as Surrogates for *Cryptosporidium* Removal during Optimal and Challenged Filtration. *Chartered Institution of Water*

and Environmental Management (CIWEM) International Conference on Advances in Rapid Granular Filtration in Water Treatment, CIWEM: London, U.K., 2001.

148. Huck, P.M., Coffey, B.M., O'Melia, C.R., **Emelko, M.B.** Removal of *Cryptosporidium* by Filtration under Various Process Conditions. *Chartered Institution of Water and Environmental Management (CIWEM) International Conference on Advances in Rapid Granular Filtration in Water Treatment*, CIWEM: London, UK, 2001.
149. **Emelko, M.B.**, Huck, P.M., Dougals, I.P., Van Den Oever, J. *Cryptosporidium* and Microsphere Removal during Low Turbidity End-of-Run and Early Breakthrough Filtration. AWWA Water Quality Technology Conference, Salt Lake City, UT, USA, Nov. 5-9, 2000.
150. Huck, P.M., Coffey, B.M., **Emelko, M.B.**, O'Melia, C.R. The Importance of Coagulation for Removal of *Cryptosporidium* and Surrogates by Filtration. *9th International Gothenburg Symposium on Chemical Treatment*. Istanbul, Turkey, October 2-4, 2000.
151. Huck, P.M., Coffey, B.M., **Emelko, M.B.**, O'Melia, C.R. Removal of *Cryptosporidium* by Granular Media Filtration: Impact of Coagulation. *4th International Conference on Municipal and Rural Water Supply and Water Quality*, Kraków, Poland, 2000.
152. Huck, P.M., Coffey, B.M., O'Melia, C.R., **Emelko, M.B.** Removal of *Cryptosporidium* by Filtration under Conditions of Process Challenge. AWWA Water Quality Technology Conference, Salt Lake City, UT, USA, Nov. 5-9, 2000.
153. **Emelko, M.B.**, Huck, P.M., Slawson, R.M. Design and Operational Strategies for Optimizing *Cryptosporidium* Removal by Filters. AWWA Water Quality Technology Conference, Tampa, FL, USA, Oct. 31-Nov. 3, 1999.
154. Coffey, B.M., Huck, P.M., Maurizio, D., **Emelko, M.B.**, Douglas, I.P., Van den Oever. The Effect of Coagulation on the Removal of *Cryptosporidium parvum* and *Bacillus subtilis*. AWWA Water Quality Technology Conference, Tampa, FL, USA, Oct. 31-Nov. 3, 1999.
155. **Emelko, M.B.**, Huck, P.M., Smith, E.F. Full-Scale Evaluation of Backwashing Strategies for Biological Filtration. AWWA Annual Conference, Atlanta, GA, USA, Jun. 15-19, 1999.
156. Huck, P.M., Coffey, B.M., **Emelko, M.B.**, Maurizio, D., O'Melia, C.R. Assessing Removal of *Cryptosporidium* under Vulnerable Filtration Conditions. *IWSA, IAWQ, and IOA International Conference on Minimizing the Risk from Cryptosporidium and Other Waterborne Diseases*, Paris, France, April 19-22, 1999.
157. Huck, P.M., Coffey, B.M., **Emelko, M.B.**, Maurizio, D., Douglas, I.P. Using Spores and Particles to Assess the Robustness of Filters for *Cryptosporidium* Removal. *AWWA Symposium on Particle Measurement and Characterization in Drinking Water*. Nashville, TN, Mar. 28-30 1999.
158. **Emelko, M.B.**, Huck, P.M. Optimizing *Cryptosporidium* Removal by Filters. *AMERICANA 1999 Conference*, Montréal, QC, Canada, 1999.

159. **Emelko, M.B.**, Huck, P.M., Smith, E.F. Full-Scale Optimization of Single-Stage Biological Filtration. *3rd International Conference on Municipal and Rural Water Supply and Water Quality*, Poznan, Poland, 1998.
160. Coffey, B.M., Huck, P.M., **Emelko, M.B.**, Bouwer, E.J., Hozalski, R.L., Smith, E.F. The Effect of BOM and Temperature on Biological Filtration: An Integrated Comparison at Two Treatment Plants. AWWA Water Quality Technology Conference, Denver, CO, Nov. 9-12, 1997.

INVITED TALKS/SEMINARS

1. Emelko, MB. 2017. Wildfire, watersheds, and drinking water. British Columbia Ministry of Health, Health Protection Branch Webinar, June 21, 2017.
2. Emelko, MB. 2017. Fires, floods, and other natural disasters: Climate change threats to water across Canada. Nature Unleashed Dialogs, The Museum, Kitchener, ON, February 5, 2017.
3. Silins, U., **Emelko, M.B.**, Adamowicz, V., Anderson, A., Boxall, P., Collins, A., Dupont, D., Dyck, M., Krishnappan, B., Sear, D., Stone, M. Healthy Forests and Resilient Communities. Alberta Innovates Tech Talks. Calgary, AB, Canada, November 30, 2016.
4. **Emelko, M.B.**, Ahmed, A. Changing Ontario's Proposed New Terms of Reference for GUDI: Making the Scientific Case and Emphasizing Key Differences from U.S. Policies. U.S. EPA Conference on Aerobic Spores & Other Microbial Indicators to Determine Ground Water Under the Direct influence of Surface Water (GWUDI). Riverside, CA, USA, September 6-8, 2016.
5. **Emelko, M.B.**, Mesquita, M.M.F. Propagation and Purification of *Bacillus sp.* Endospores for Water Treatment Process Performance Evaluation: Implications to Subsurface Transport. U.S. EPA Conference on Aerobic Spores & Other Microbial Indicators to Determine Ground Water Under the Direct influence of Surface Water (GWUDI). Riverside, CA, USA, September 6-8, 2016.
6. **Emelko, M.B.**, Chik, A.H.S., Stimson, J., Mesquita, M.M.F., McLellan, N. Field Observations of Microbial Transport in the Presence and Absence of *Bacillus subtilis* Endospores. U.S. EPA Conference on Aerobic Spores & Other Microbial Indicators to Determine Ground Water Under the Direct influence of Surface Water (GWUDI). Riverside, CA, USA, September 6-8, 2016.
7. **Emelko, M.B.** Changing Climate and Water Supply Resiliency: Finding Another New Normal. Canadian Water Network (CWN) Blue Cities 2016 - Water Resiliency for the New Normal. Toronto, ON, Canada, May 18, 2016.
8. **Emelko, M.B.** Threats to Global Drinking Water Security from Climate Change. Water Institute Research Symposium, University of Waterloo, Waterloo, ON, Canada, April 28, 2016.
9. **Emelko, M.B.** How Partnerships Can Advance Sustainable Management and Use of Water. Sarnia-Lambton Water Symposium, Sarnia, ON, Canada, April 14, 2016.

10. **Emelko, M.B.**, Silins, U., Stone, M. Implications of Forest Disturbance to Drinking Water Supply and Treatability. Sustaining Alberta's Forested Headwaters: Science Symposium, Calgary, AB, Canada, November 26, 2015.
11. Silins, U., **Emelko, M.B.**, Stone, M. Coupled Sediment, Nutrient, and Stream Ecological Responses to Disturbance in the Headwaters. Sustaining Alberta's Forested Headwaters: Science Symposium, Calgary, AB, Canada, November 26, 2015.
12. Stone, M., Silins, U., **Emelko, M.B.** Linking Downstream River Condition to Disturbance in the Headwaters. Sustaining Alberta's Forested Headwaters: Science Symposium, Calgary, AB, Canada, November 26, 2015.
13. **Emelko, M.B.**, Silins, U., Stone, M. Wildfire Examples: What We Wish We'd Known and What We've Done. CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
14. **Emelko, M.B.**, Silins, U., Stone, M. Fires and Floods—Expected and Unexpected Differences and Impacts on Treatability. CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
15. Silins, U., **Emelko, M.B.**, Stone, M. Extreme Events—Is this Really the “New Normal”? CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
16. Silins, U., **Emelko, M.B.**, Stone, M. Mitigating the Impacts of Events 1: Active Source Water Protection through Watershed Management. CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
17. Stone, M. Silins, U., **Emelko, M.B.** Does What Happens Up in the Pile of Rocks Really Affect Me? CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
18. **Emelko, M.B.**, Charlebois, G.*, Mesquita, M.M.F.* Dissolved Organic Carbon and the Challenges of Microcystin Treatment. CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
19. **Emelko, M.B.**, Crumb, J.*, Stone, M., Mesquita, M.M.F.* Reservoir Management to Mitigate Algal Bloom Risks. CWWA National Water and Wastewater Conference. Whistler, BC, Canada, October 25-28, 2015.
20. **Emelko, M.B.** Understanding New Risks: Issues at the Source. Canadian Water Network Municipal Consortium Leadership Group Meeting, Montréal, QC, Canada, November 6, 2015.
21. Silins, U., **Emelko, M.B.**, Stone, M. Extreme events: Is this really the new normal? Canadian Water Network “Changing Climate, Watershed Disturbance, and Risks to Municipal Waterworks” Webinar, November 3, 2015.
22. Stone, M., Silins, U., **Emelko, M.B.** Does what happen up on the pile of rocks really affect me? Canadian Water Network “Changing Climate, Watershed Disturbance, and Risks to Municipal Waterworks” Webinar, November 3, 2015.

23. **Emelko, M.B.**, Silins, U., Stone, M. Fires, floods, and other disturbances: Are the treatment challenges the same? Canadian Water Network “Changing Climate, Watershed Disturbance, and Risks to Municipal Waterworks” Webinar, November 3, 2015.
24. Silins, U., **Emelko, M.B.**, Flannigan, M., Dupont, D., Bladon, K.D., Wang, X., Robinne, F.N., Parisien, M.A., Adamowicz, W., Boxall, P., Renzetti, S., Tymstra, C., Schroeder, D., Thompson, D., de Groot, B., Kienzle, S., Reid, D., Wolford, D., Stone, M., Waddington, M., Devito, K., Wotton, M. Mitigating the Impacts of Events: Source Water Protection through Watershed Management. Canadian Water Network “Changing Climate, Watershed Disturbance, and Risks to Municipal Waterworks” Webinar, November 3, 2015.
25. Silins, U., **Emelko, M.B.**, Flannigan, M., Dupont, D., Bladon, K.D., Wang, X., Robinne, F.N., Parisien, M.A., Adamowicz, W., Boxall, P., Renzetti, S., Tymstra, C., Schroeder, D., Thompson, D., de Groot, B., Kienzle, S., Reid, D., Wolford, D., Stone, M., Waddington, M., Devito, K., Wotton, M. Management of Wildfire Risk to Downstream Municipal Drinking Water Treatment in Alberta. Alberta Environment and Parks, Drinking Water Data Summit, September 3, 2015.
26. Silins, U., **Emelko, M.B.**, Flannigan, M., Dupont, D., Bladon, K.D., Wang, X., Robinne, F.N., Parisien, M.A., Adamowicz, W., Boxall, P., Renzetti, S., Tymstra, C., Schroeder, D., Thompson, D., de Groot, B., Kienzle, S., Reid, D., Wolford, D., Stone, M., Waddington, M., Devito, K., Wotton, M. Management of Wildfire Risk to Downstream Municipal Drinking Water Treatment in Alberta. Canadian Water Network, Annual Board Meeting, July 19, 2015.
27. Silins, U., **Emelko, M.B.**, Flannigan, M., Dupont, D., Bladon, K.D., Wang, X., Robinne, F.N., Parisien, M.A., Adamowicz, W., Boxall, P., Renzetti, S., Tymstra, C., Schroeder, D., Thompson, D., de Groot, B., Kienzle, S., Reid, D., Wolford, D., Stone, M., Waddington, M., Devito, K., Wotton, M. Management of Wildfire Risk to Downstream Municipal Drinking Water Treatment in Alberta. Global Water Research Coalition, Ottawa, ON, Canada. March 13, 2015.
28. Silins, U., **Emelko, M.B.**, Stone, M., Bladon, K.D., Anderson A. Extreme events: Is this really the new normal? Fires, Floods and Other Extreme Events: Is Your Utility Ready? 40th Annual Alberta Water and Wastewater Operators Association Conference, Banff, AB, Canada. March 9, 2015.
29. Stone, M., Silins, U., **Emelko, M.B.** Does what happens up in the pile of rocks really affect me? 40th Annual Alberta Water and Wastewater Operators Association Conference, Banff, AB, Canada. March 9, 2015.
30. **Emelko, M.B.**, Silins, U., Stone, M. Fires and floods – Expected and unexpected differences and impacts on treatability. 40th Annual Alberta Water and Wastewater Operators Association Conference, Banff, AB, Canada. March 9, 2015.
31. Silins, U., **Emelko, M.B.**, Stone, M., Bladon, K.D., Anderson, A. Active Source Water Protection through Watershed Management. 40th Annual Alberta Water and Wastewater Operators Association Conference, Banff, AB, Canada. March 9, 2015.

32. **Emelko, M.B.** The Colorado High Park Fire: What We Wish We'd Known and What We've Done. Fires, Floods and Other Extreme Events: Is Your Utility Ready? 40th Annual Alberta Water and Wastewater Operators Association Conference, Banff, AB, Canada. March 9, 2015.
33. **Emelko, M.B.**, Silins, U. **Keynote address.** Forests, wildfire, and drinking water security: A mandate for active source water protection. International Wildland Fire Conference, Halifax, NS, Canada. Oct. 7-9, 2014.
34. **Emelko, M.B.** Emerging Chemical Contaminants: State of the Science. Water Research Foundation Workshop on Emerging Contaminants, Toronto, ON, Canada. October 7, 2014.
35. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. **Keynote address.** Linking Upstream Watershed Activity to Downstream Treatment Performance (This Month's DOC may not be Last Month's DOC). OWWA Spring Treatment Seminar, Etobicoke, ON, Canada. March 27, 2014.
36. Stone, M., Silins, U., **Emelko, M.B.**, Bladon, K.D. Large scale landscape disturbance by wildfire on water quality in the Oldman River Basin, Alberta, Water Institute, University of Waterloo, Waterloo, ON, Canada. March 12, 2014.
37. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Post-fire DOC, DBPs and nutrients: Justifying and achieving robust treatment. Water Quality and Technology Conference 2013, American Water Works Association, Long Beach, CA, USA. Nov. 3-7, 2013.
38. Ahmed, A.S., **Emelko, M.B.** Updating of GUDI Terms of Reference Document to Determine Minimum Treatment Requirements for Well-based Municipal Residential Drinking Water Systems. WOMWA Meeting, Woodstock, ON, Canada. Oct. 30, 2013.
39. Ahmed, A.S., **Emelko, M.B.** Updating of GUDI Terms of Reference Document to Determine Minimum Treatment Requirements for Well-based Municipal Residential Drinking Water Systems. OWWA Fall Groundwater Workshop, Vaughan, ON, Canada. Oct. 9, 2013.
40. Ahmed, A.S., **Emelko, M.B.** and Chik, A.H.S.* Updating of GUDI Terms of Reference Document to Determine Minimum Treatment Requirements for Well-based Municipal Residential Drinking Water Systems. OWWA/OMWA Joint Annual Conference, Ottawa, ON, Canada. May 5-8, 2013.
41. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. The Lost Creek Wildfire of Southern Alberta, Canada: 10 years, 7 Watersheds and Continued Impacts. Water Research Foundation (WRF) Workshop: Wildfire Readiness and Response Workshop – Is your utility prepared? Denver, CO, USA. Apr. 4, 2013.
42. **Emelko, M.B.** Assessing Pathogen Transport and Risk in Natural and Engineered Systems. Sustainable Bedrock Supplies for Ontario Communities, Ontario Research Fund (ORF) Symposium Guelph, ON, Canada. Mar. 1, 2013.
43. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. **Keynote address.** Wildfires and Drinking Water Treatment: A Spectrum of Headwaters Issues and Their Critical Relevance to Municipal Waterworks. International Commission on Continental Erosion & International Association of Hydrological

Science, Wildfire and Water Quality: Processes, Impacts and Challenges. Banff, AB, Canada. Jun. 12, 2012.

44. **Emelko, M.B.**, Silins, U., Bladon, K.D., Stone, M. Water Quality, Treatability, and Mitigation: Implications of a 7-Year Post-Wildfire Case Study. AWWA Water Quality and Technology Conference, Savannah, GA, USA. Nov. 14, 2010.
45. **Emelko, M.B.** Groundwater Under the Direct Influence of Surface Water (GUDI): Shifting the Paradigm. International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment, Banff, AB, Canada, September 23, 2012.
46. **Emelko, M.B.** *Cryptosporidium* and Potential Surrogate Removal by Bank Filtration at the Woolner Wellfield, Kitchener-Waterloo, Ontario. USEPA Symposium on Ground Water-borne Infectious Disease Epidemiology, Etiologic Agents and Indicators, Washington, DC, USA, Jan. 26, 2010.
47. **Emelko, M.B.** Climate Change: Drinking Water Treatability Implications of Changes in Particle Loads and Characteristics. American Water Works Association (AWWA) Annual Conference, San Diego, CA, USA. Jun. 17, 2009.
48. **Emelko, M.B.** Wildfire Impacts on Drinking Water Treatability. Wildfire and Watershed Hydrology Workshop, Kelowna, BC, Canada, June 4, 2009.
49. **Emelko, M.B.** Quantitative Microbiological and Statistical Approaches for Reporting and Regulating Waterborne Parasites. 2nd Annual International Southern Tropical Medicine Conference and 44th Annual Conference of the Brazilian Tropical Medicine Society, Porto Alegre, RGS, Brazil. March 7, 2008.
50. **Emelko, M.B.** Improved Water Quality by RBF: Beyond Microbial Reductions. American Water Works Association (AWWA) Annual Conference, Toronto, ON, Canada. Jun. 26, 2007.
51. **Emelko, M.B.** Rigorous Quantitative Demonstration of Pathogen Removal by Drinking Water Treatment Processes: A Series of Case Studies. Brace Lecture Series, McGill University, Montréal, QC, Canada. Nov. 17, 2006.
52. **Emelko, M.B.**, Chang, J.S., Dickson, S.E. Treatment of Drinking Water with Pulsed Arc Electrohydraulic Discharge: Promising Outcomes and Future Challenges. Asia-Pacific International Symposium on Air and Water Treatment by Green Oxidation/Reduction Technologies (AP-AWTGORT), Dalian, Liao'ning China. Sep. 7, 2006.
53. **Emelko, M.B.** Filter Operation Effects on Pathogen Passage: A Case Study Providing Guidance for Reporting and Regulating Pathogen Concentrations and Removals and Demonstrating Pathogen Removal by Drinking Water Treatment Processes. École Polytechnique de Montréal, QC, Canada. May 23, 2006.
54. **Emelko, M.B.** Reporting and Regulating *Cryptosporidium* Removals and Concentrations. University of New Hampshire, Durham, NH, USA. Feb. 28, 2005.

55. **Emelko, M.B.** Assessing Pathogen Removal during Drinking Water Treatment. University of New Hampshire, Durham, NH, USA. Feb. 28, 2005.
56. **Emelko, M.B.** Full-Scale Quantification of Particle Removal and Quantification of System Failure Risk. American Water Works Association (AWWA) Annual Conference. Orlando, FL, USA. Jun. 15, 2004.
57. **Emelko, M.B.** *Cryptosporidium* and *Giardia* Regulatory Development in North America. International Symposium on Emerging Waterborne Pathogens. Campinas, SP, Brazil. Nov. 2, 2004.
58. **Emelko, M.B.** Quantifying the Reliability of Pathogen Data. International Symposium on Emerging Waterborne Pathogens. Campinas, SP, Brazil. "Quantifying the Reliability of Pathogen Data." Nov. 2, 2004.
59. **Emelko, M.B.** Pathogen Removal during Water Treatment. International Symposium on Emerging Waterborne Pathogens. Campinas, SP, Brazil. Nov. 2, 2004.
60. **Emelko, M.B.** Riverbank Filtration: Research Needs. U.S. National Water Research Institute (NWRI) Second International Conference on Riverbank Filtration. Cincinnati, OH, USA. Sep. 18, 2003.
61. **Emelko, M.B.** Filter Operation Effects on Pathogen Removal. American Water Works Association (AWWA) Annual Conference. New Orleans, LA, USA. Jun. 20, 2002.
62. **Emelko, M.B.** *Cryptosporidium* Removal by Filtration. Brazilian Conference on Water Treatment. Campinas, SP, Brazil. Aug. 13, 2001.
63. **Emelko, M.B.** *Cryptosporidium* and Microsphere Removal During Low Turbidity End-of-Run and Early Breakthrough Filtration. Chesapeake Section AWWA Conference. Washington, D.C., USA. Nov. 16, 2001.

**NON-PAPER PRESENTATIONS
(abstract reviewed)**

1. Silins, U., **Emelko, M.B.**, Bladon, K.D., Stone, M., Williams, C.H.S.*, Martens, A.M.*, Wagner, M.J. Longer-term Stream Nitrogen Dynamics after Wildfire and Salvage Harvesting: Implications for Management Concepts based on Trajectories of Post-disturbance Watershed Recovery, Abstract H31D-1439, American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 13-16, 2015.
2. Stone, M., Silins, U., **Emelko, M.B.**, Bladon, K.D., Martens, A.M.*, Williams, C.H.S.*, Collins, A. Exploring the Linkage Between Fine Sediment, Phosphorus, and Stream Ecology in Wildfire Impacted Watersheds. 9th International SedNet Conference "Solving Societal Challenges; Working with Sediments," Krakow, Poland, September 23-26, 2015.
3. **Emelko, M.B.**, Shams, S.*, Silins, U., Stone, M., Williams, C.H.S.*, Martens, A.M.* Approaches for Characterizing Landscape Disturbance Impacts on NOM: A Wildfire Case Study. 6th IWA Specialist Conference on Natural Organic Matter Research, Malmö, Sweden, September 7-10, 2015.

4. Shams, S.*, **Emelko, M.B.**, Stewart, D.M.*, Walton, T.*, Kundert, K.*, Scott, D. Evaluation of NOM Characterization Techniques as Methods of Detecting THM Formation. 6th IWA Specialist Conference on Natural Organic Matter Research, Malmö, Sweden, September 7-10, 2015.
5. Bladon, K.D.*, Wagner, M.J.*, Silins, U., Williams, C.H.S.*, Martens, A.M.*, **Emelko, M.B.**, Stone, M. On the Complexity of Catchment Scale Temperature Response to Land Disturbance By Wildfire and PostFire Salvage Logging in the Rocky Mountains. 145th Annual American Fisheries Society Conference, Portland, OR, USA, August 16-20, 2015.
6. Kazemzadeh, F.***, Jin, C.*, Khodadad, I., Amelard, R., Haider, S.A., Saini, S.S., **Emelko, M.B.**, Wong, A. Multispectral Digital Holographic Microscopy with Applications in Water Quality Assessment. SPIE – International Society for Optics and Photonics - Novel Optical Systems Design and Optimization XVIII Conference, San Diego, CA, USA, August 10-12, 2015.
7. Stone, M., Silins, U., **Emelko, M.B.**, Martens, A.M.*, Williams, C.H.S.*, Bladon, K.D. Long Term Impacts of Severe Wildfire and Post-Fire Salvage Logging on Sediment Production in the Oldman River Basin, Alberta. 26th General Assembly of the International Union of Geodesy and Geophysics, Prague, Czech Republic, June 22-July 2, 2015.
8. Charlebois, G.*, **Emelko, M.B.**, Mesquita, M.M.F.***, Westrick, J. Destruction of Microcystin-LR and Anatoxin-a by Ozone in Drinking Water Treatment. 50th Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 18, 2015.
9. **Emelko, M.B.**, Stone, M., Silins, U., Bladon, K.D. Wildfire Impacts on Sediment and Nutrient Storage and Downstream Delivery to Drinking Water Treatment Plants. ICCE/IAHS International Symposium – Sediment Dynamics: From the Summit to the Sea. New Orleans, LA, USA, December 11-14, 2014.
10. Silins, U., Stone, M., Hawthorn, K.*, Allin, D.*, **Emelko, M.B.**, Bladon, K.D., Martens, A.M., Williams, C.H.S.* Channel Storage of Sediment-Phosphorus Governs Legacy Forest Disturbance Effects on Stream Benthos Decades after Wildfire and Forest Harvest. ICCE/IAHS International Symposium – Sediment Dynamics: From the Summit to the Sea. New Orleans, LA, USA, December 11-14, 2014.
11. Bladon, K.D., Silins, U., **Emelko, M.B.**, Flannigan, M.D., Dupont, D.P., Kienzle, S.W., Parisien, M., Robinne, F., Schroeder, D., Stone, M., Thompson, D.K., Tymstra, C., Waddington, M.J., Wang, X. Assessing the Impact of Active Land Management in Mitigating Wildfire Threat to Source Water Supply Quality. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 15-19, 2014.
12. Williams, C.H.S.*, Silins, U., Wagner, M.J., Bladon, K.D., Martens, A.M., Anderson, A., Stone, M., **Emelko, M.B.** Impacts of Wildfire on Interception Losses and Net Precipitation in a Sub-alpine Rocky Mountain Watershed in Alberta, Canada. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 15-19, 2014.
13. **Emelko, M.B.**, Ahmed, A. Approach for Determining Minimum Treatment Requirements for Well-Based Municipal Systems: an Update of the MOE's GUDI Terms of Reference. 16th National Conference on Drinking Water, Gatineau, QC, Canada, October 26-29, 2014.

14. Kundert, K.* , **Emelko, M.B.**, Mielke, L., Elford, T., Ruecker, N. Alberta Flood 2013 – City of Calgary Water Treatment System Resiliency. *16th National Conference on Drinking Water*, Gatineau, QC, Canada, October 26-29, 2014.
15. Snider, R.A.* , Walton, T., **Emelko, M.B.**, McDermott, L. Improving the Efficiency and Sustainability of the Filtration Process through Extended Terminal Sub-fluidization Wash Implementation at a Municipal Drinking Water Treatment Plant. *16th National Conference on Drinking Water*, Gatineau, QC, Canada, October 26-29, 2014.
16. Campbell, A., Douglas, I.P., Banihashemi, A.** , **Emelko, M.B.**, McLellan, N. Evaluating Pathogen Removal Performance through Pilot Plant Challenge Studies. *16th National Conference on Drinking Water*, Gatineau, QC, Canada, October 26-29, 2014.
17. Silins, U., Bladon, K.D.** , Wang, X.** , Robinne, F.* , **Emelko, M.B.**, Flannigan, M.D., Dupont, D.P., Parisien, M., Thompson, D.K., Tymstra, C., Schroeder, D., Kienzle, S.W., Reid, D., Waddington, J.M., Woolford, D.G., Wotton, B.M. Management of Wildfire Risk in Forested Regions of Alberta to Downstream Municipal Drinking Water Treatment. *Wildland Fire Canada Conference*, Halifax, NS, Canada, October 7-9, 2014.
18. **Emelko, M.B.**, Jin, C.* , Glawdel, T.** , Ren, C. Non-linear Particle Removal by Granular Media Filtration Attributable to Media Surface Roughness. *9th International Symposium on Subsurface Microbiology*, Pacific Grove, CA, USA, October 5-10, 2014.
19. Shams, S.* , **Emelko, M.B.**, Silins, U., Bladon, K.D.** , Stone, M., Williams, C.H.S., Martens, A.M. Long-term Wildfire Impacts on THM Formation Potential. *248th American Chemical Society (ACS) National Meeting - Occurrence, Formation, Health Effects, and Control of Disinfection By-Products Session*, San Francisco, CA, USA, August 10-14, 2014.
20. Robinne, F.* , Bladon, K.D.** , Parisien, M., Flannigan, M., **Emelko, M.B.**, Silins, U., Wang, X. Spatial analysis of wildfire risk to Alberta's drinking-water supply. *Large Wildland Fires: Social, Political, & Ecological Effects*, Missoula, MT, USA, May 19-23, 2014.
21. **Emelko, M.B.**, Geng, X.* , Shams, S.* , Bladon, K.D.** , Silins, U., Stone, M., Williams, C.H.S., Wagner, M.J., Martens, A.M. Forested Catchment Fire and Post-fire Management: Implications to NOM Character and Treatability. *5th IWA Specialist Conference on Natural Organic Matter Research*, Perth, Western Australia, Australia, October 1-4, 2013.
22. Shams, S.* , Spanjers, M.G.* , **Emelko, M.B.**, Walton T. Implications of NOM Removal by Various Biofiltration Media Configurations. *5th IWA Specialist Conference on Natural Organic Matter Research*, Perth, Western Australia, Australia, October 1-4, 2013.
23. **Emelko, M.B.**, Douglas, I.P., Campbell, A., McLellan, N.M.* Pilot and Full-Scale Evaluations of Pathogen Removal: Informing QMRA for Plant Risk Management. *Canadian Water Network Connecting Water Resources Conference*, Ottawa, ON, Canada, March 18-21, 2013.
24. Chik, A.H.S.* , Conant, B., **Emelko, M.B.**, Ahmed, A. A Science-based Approach for Environmental Policy Development: Groundwater Under Direct Influence (GUDI) of Surface Water Terms of

- Reference Review. 43rd Annual Conference of the Urban Affairs Association, San Francisco, CA, USA, Apr. 3-6, 2013.
25. Spanjers, M.G.*, **Emelko, M.B.** Implications of Media Selection and Design on Biofilter Performance. AWWA Biological Treatment Symposium, Denver, CO, USA, Mar. 28-29, 2013.
 26. Allin, D.*, Stone, M., Silins, M., **Emelko, M.B.**, Collins, A.L. The Effects of Wildfire on Sediment-Associated Phosphorus Forms and Sorption Behavior in the Crowsnest River Basin, Alberta. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 3-7, 2012.
 27. Silins, U., Bladon, K.D., Stone, M., **Emelko, M.B.**, Collins, A., Boon, S., Williams, C.S.H., Wagner, M.J., Martens, A., Anderson, A. Differential Recovery of Water Quality Parameters Eight Years after Severe Wildfire and Salvage Logging in Alberta's Southern Rocky Mountains. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 3-7, 2012.
 28. McLellan, N.L.*, **Emelko, M.B.**, Douglas, I.P., Campbell, A. Pilot and Full-Scale Evaluations of Pathogen Removal: Enabling QMRA for Plant Risk Management. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
 29. Spanjers, M.G.*, **Emelko, M.B.** Turbidity Dampening and Headloss Development in Biological Filters. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
 30. Arnold, A.J.*, **Emelko, M.B.** Predicting Full-Scale Chemical Pre-Treatment and Particle Removal Process Performance. AWWA Water Quality Technology Conference, Toronto, ON, Canada, Nov. 4-8, 2012.
 31. **Emelko, M.B.**, Geng, X.*, Silins, U., Stone, M. Climate Change Effects in Canadian Source Watersheds: Implications to NOM Character and Treatability. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
 32. **Emelko, M.B.**, Schmidt, P.J.* How QMRA is Conducted Matters: Case Studies Demonstrating Pitfalls of Data Interpretation and How They Can Be Avoided. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
 33. Schmidt, P.J., Fazil, A.M., Pintar, K.D.M., **Emelko, M.B.**, Topp, E. Enhancing our Knowledge about Microbial Risks in Drinking Water by Evaluating the Uncertainty in Dose-Response Model Parameters. *15th National Conference on Drinking Water*, Kelowna, BC, Canada, October 21-24, 2012.
 34. Schmidt, P.J.*, **Emelko, M.B.**, Thompson, M.E. Drinking Water QMRA: Necessary Considerations for Decision-Making. Society for Risk Analysis World Congress on Risk. Sydney, Australia. July 18-20, 2012.
 35. McLellan, N.L.*, **Emelko, M.B.** Impacts of Bacterial pathogen Extracellular Polymeric Substances on Transport: Implications for Landuse Management and Filter operation. 2nd International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment. Banff, AB, Canada. September 23-26, 2012. **Best student poster award.**

36. Chik, A.H.S.*, Stimson, J.R.***, Mesquita, M.M.F.***, McLellan, N.L.*, **Emelko, M.B.** Assessing Pathogen Removal in the Subsurface: Impact of *Bacillus subtilis* Spores on (Bio)colloid Transport. 2nd International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment. Banff, AB, Canada. September 23-26, 2012.
37. Gray, L.S.*, Mesquita, M.M.F.***, **Emelko, M.B.** *Bacillus subtilis* Strain Variability: Implications for Subsurface Transport Investigations. 2nd International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment. Banff, AB, Canada. September 23-26, 2012.
38. Ahmed, A., **Emelko, M.B.**, Chik, A.H.S.* Determination of Treatment Requirements for Well Water in Ontario. 2nd International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment. Banff, AB, Canada. September 23-26, 2012.
39. **Emelko, M.B.**, Schmidt, P.J.*, Thompson, M.E. Preventing Bias during QMRA. 2nd International Conference on Assessing Pathogen Fate, Transport and Risk in Natural and Engineered Water Treatment. Banff, AB, Canada. September 23-26, 2012.
40. Allin, D.*, Stone, M., Silins, M., **Emelko, M.B.**, Collins, A.L. The Effects of Wildfire on Phosphorus Transport and Speciation in the Crowsnest River, Alberta. International Commission on Continental Erosion & International Association of Hydrological Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.
41. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S., Williams, C.S.H., Wagner, M.J. Limiting Nutrients, Algae, and Macroinvertebrates: A Cascading Series of Ecohydrological Effects after Wildfire in Canada's Rocky Mountains. International Commission on Continental Erosion & International Association of Hydrological Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.
42. Geng, X.K.*, **Emelko, M.B.**, Silins, U. Wildfire and Post-fire Salvage Logging: Long-term Effects on Organic Carbon and Implications for Drinking Water Treatment. International Commission on Continental Erosion & International Association of Hydrological Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.
43. Krishnappan, B.G., Stone, M., Silins, U., **Emelko, M.B.**, Wagner, M.J., Williams, C.H.S. Modeling of Flow and Sediment Transport in Three Rivers and a Reservoir in the Oldman River Basin in Alberta, Canada. International Commission on Continental Erosion & International Association of Hydrological Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.
44. Stone, M., Silins, U., **Emelko, M.B.**, Bladon, K.D., Wagner, M.J., Williams, C.H.S., Droppo, I., Collins, A.L. Sediment Transport Processes in Wildfire Impacted Rivers. International Commission on Continental Erosion & International Association of Hydrological Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.
45. Wagner, M.J., Silins, U., Williams, C.H.S., Boon, S., Bladon, K.D., Stone, M., **Emelko, M.B.** Effects of Wildfire and Salvage Logging on Stream Temperature in Front Range Rocky Mountain Watersheds. International Commission on Continental Erosion & International Association of Hydrological

Science, Wildfire and Water Quality: Processes, Impacts and Challenges, Banff, AB, Canada, June 11-14, 2012.

46. Spanjers, M.G.*, **Emelko, M.B.** Rough Engineered Ceramic Filtration Media for Biologically Active Filtration. AWWA Annual Conference, Dallas, TX, USA, June 10-14, 2012.
47. Silins, U., Stone, M., **Emelko, M.B.**, Collins, A., Krishnappan, B.G., Boon, S., Bladon, K.D., Wagner M.J., Williams, C.H., Anderson, A. Long Term Watershed Research Sites as Platforms for Trans-disciplinary Insights for Regional Watershed Management: The Tale of One Study. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.
48. Bladon, K.D., Silins, U., Stone, M., Boon, S., **Emelko, M.B.**, Williams, C.H.S., Wagner M.J. Incomplete Recovery of Water Quality after Wildfire in Alberta's Rocky Mountains: Insights from Eight Years of Watershed Research. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.
49. Wagner M.J., Silins, U., Williams, C.H., Boon, S., Bladon, K.D., Stone, M., **Emelko, M.B.** Effects of Wildfire and Salvage Logging on Stream Temperature in Front Range Rocky Mountains: A Long Term Perspective. Annual Meeting of the Canadian Geophysical Union, Banff, AB., June 5-8, 2012. Annual Meeting of the Canadian Geophysical Union, Banff, AB, June 5-8, 2012.
50. Allin, D.*, Stone, M. Silins, U., **Emelko, M.B.**, Collins, A. The Effects of Wildfire on Sediment-Associated Phosphorus Speciation in the Crowsnest River Basin, Alberta. Water Institute Water Research Conference, Waterloo, ON, Canada, March 22, 2012.
51. Spanjers, M.G.*, **Emelko, M.B.** Comparison of 4 Media Types for Traditional and Biofiltration Treatment Goals: Assessment of Rough Engineered Media and Implications for Filter Media Choice. 47th Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 21-22, 2012. **2012 Philip Jones Award for best student presentation.**
52. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S. Watershed Disturbance by Wildfire and Salvage Logging: The Legacy of Effects on Hydrology, Heavy Metals, Nutrients, and Aquatic Ecology. Coldwater Indian Band Water Working Group. Merritt, BC, November 17, 2011. (Invited)
53. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S. After the Fire's out: The Legacy of Wildfire Effects on Hydrology, Water Quality, and Aquatic Ecosystems. Environmental Sciences Seminar Series. Kamloops, BC, October 27, 2011. (Invited)
54. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S. Ecohydrology: Sustainable Water Resource and Ecosystem Management. Eco-Health, Ecosystems, and Watersheds Workshop. Merritt, BC, October 18-19, 2011. (Invited)
55. Silins, U., Bladon, K.D., Boon, S., Stone, M., **Emelko, M.B.**, Williams, C.H.S., Wagner, M.J. After the Flames are Out: Catchment-scale Effects of Wildfire on Runoff and Flow Regime in the Canadian Rocky Mountains. Canadian Meteorological and Oceanographic Society - Canadian Geophysical Union - 3rd Joint Congress, Ottawa, ON, May 31- June 4, 2010.
56. Bladon, K.D., Silins, U., **Emelko, M.B.**, Stone, M., Boon, S., Williams, C.H.S., Wagner, M.J., Esch, E.*, Spence, J.D. Ecohydrological Linkages between Water Quality and Aquatic Ecology after Severe

Wildfire in Rocky Mountain Catchments. Canadian Meteorological and Oceanographic Society - Canadian Geophysical Union - 3rd Joint Congress, Ottawa, ON, May 31- June 4, 2010.

57. **Emelko, M.B.** Demonstrating Effective *In Situ* Filtration of Pathogens in Saturated Environments: Laboratory and Field Considerations. American Geophysical Union Joint Assembly, Toronto, ON, Canada. May 24-27, 2009.
58. **Emelko, M.B.**, Stimson, J.** , McLellan, N.* , Tufenkji, N. Demonstrating Effective *In Situ* Filtration of Pathogens in Saturated Environments: Laboratory and Field Considerations. American Geophysical Union Joint Assembly, Toronto, ON, Canada. May 24-27, 2009.
59. McLellan, N.L.* , Stimson, J.** , Mesquita, M.M.F.** , Tufenkji, N., **Emelko, M.B.** Breakthrough of Pathogens and Surrogates in Saturated Porous Media: Concurrent Effects of Selected Transport Parameters. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
60. Watling, M.T.* , Stimson, J.** , **Emelko, M.B.** Colloid Transport in Granular Saturated Media: Impact of Flow Orientation. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
61. Chornewich, C.* , **Emelko, M.B.**, Tufenkji, N. Investigating the Influence of Cell Concentration and Media Pre-coating on Bacterial Migration in Granular Porous Media. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
62. Mesquita, M.M.F., Stimson, J.* , Chae, G.-T.** , Emelko, M.B., Tufenkji, N., Ptacek, C.J., Blowes, D.W. Optimal Preparation and Purification of PRD1-like Bacteriophage Suspensions for Use in Environmental Fate and Transport Studies. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
63. Stimson, J.* , Chae, G.-T.** , Blowes, D.W., Ptacek, C.J., and **Emelko, M.B.** Inverse Modeling of Two-site Kinetic Attachment/Detachment and Liquid/Solid Inactivation from Virus Surrogate Breakthrough Observed in Column Studies of Saturated Basic Oxygen Furnace Slag Media. 1st International Conference on Microbial Transport and Survival in Porous Media, Niagara-on-the-Lake, ON, Canada, May 10-13, 2009.
64. McLellan, N.L.* , **Emelko, M.B.**, Stimson, J.** , and Tufenkji, N. Improved Understanding of Mechanisms Impacting Colloid and Pathogen Transport in Saturated GUDI Environments. 44th Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 23, 2009 - February 24, 2009.
65. Bladon, K.D., Silins, U., Wagner, M.J., Stone, M., **Emelko, M.B.**, Mendoza, C.A., Devito, K., Boon, S. Wildfire and Salvage Logging Impacts on Stream Water Nitrogen. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 15-19, 2008.
66. Mesquita, M.M.F.** , Stimson, J.* , Chae, G.-T.** , **Emelko, M. B.**, Higgins, K.H.* , Tufenkji, N., Ptacek C. J., Blowes, D. W. An Improved Method for PR772 Bacteriophage Propagation for Use in Studies of

Pathogenic Virus Transport in the Subsurface. 7th International Symposium for Subsurface Microbiology, Shizuoka, Japan, November 16-21, 2008.

67. Bladon, K.D., Silins, U., Stone, M., **Emelko, M.B.**, Boon, S. Cascading Ecohydrological Effects of Wildfire and Post-Fire Salvage Logging in the Eastern Slopes, Alberta. 2008 North American Lakes Management Society Conference, Lake Louise, AB, Canada, November 11-14, 2008.
68. Arnold, A.J.*, **Emelko, M.B.** A Low Cost Method for Protozoan Enumeration from Large Water Volumes for Performance Demonstrations. 43rd Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 11-12, 2008.
69. Schmidt, P.J.*, **Emelko, M.B.** Rigorous Quantitative Analysis of Microbial and Particulate Data. 43rd Central Canadian Symposium on Water Quality Research, Burlington, ON, Canada, February 11-12, 2008.
70. Chae, G.-T.**, Stimson, J.***, **Emelko, M.B.**, Blowes, D.W., Ptacek, C.J., Mesquita, M.M. Data Quality Assessment of Direct Counts of Virus-Sized Microsphere in Water Samples by Epifluorescence Microscopy. American Geophysical Union Fall Meeting, San Francisco, CA, USA, December 10-14, 2007.
71. Silins, U., Stone, M., **Emelko, M.B.** Impacts of Wildfire on Sediment and Water Quality in Headwater Regions of the Oldman River Basin, Alberta. IUGG XXIV IUGG General Assembly – IAHS, Perugia, Italy, July 2-13, 2007.
72. Stone, M., **Emelko, M.B.**, Silins, U., Thomas, K.* Wildfire effects on particle morphology and size distribution of suspended solids in fire impacted and control catchments in the Rocky Mountains, southern Alberta. IUGG XXIV IUGG General Assembly – IAHS, Perugia, Italy, July 2-13, 2007.
73. Knappett, P.*, **Emelko, M.B.**, Zhuang, J., McKay, L. Transport and Retention of MS-2 Bacteriophage and Bacteria-Sized Microspheres in Saturated Porous Media: Impact of Ionic Strength and Grain Size. IAH-UNESCO International Symposium on Managed Artificial Recharge, Phoenix, AZ, Oct. 28 – Nov. 2, 2007.
74. Côté, M.M.*, **Emelko, M.B.**, Thomson, N.R. “Pathogen Removal by Riverbank Filtration,” International EGS/AGU/EUG Joint Assembly, Nice, France, Apr. 7-112003.
75. **Emelko, M.B.**, Slawson, R.M., Huck, P.M. “Optimizing Filter Removal of Viable and Inactivated *Cryptosporidium* During Challenge Periods,” International Symposium on Emerging Waterborne Pathogens, Milwaukee, WI, Aug. 31 - Sep. 1, 1999.
76. **Emelko, M.B.**, Slawson, R.M., Huck, P.M. “Optimizing *Cryptosporidium parvum* Removal During Drinking Water Filtration,” OWWA/OMWA Joint Annual Conference, Niagara Falls, ON, May 3-6, 1998.
77. **Emelko, M.B.** and Huck, P.M. “Optimization of Backwashing Strategies for Full-Scale Biological Filtration,” OWWA/OMWA Joint Annual Conference, Hamilton, ON, May 4-7, 1997.

PATENTS

Lee, H.S. and **Emelko, M.B.** US Patent & Trademark Office provisional patent, “Method & Apparatus for Detection of Microorganisms using Microbial Electrochemical Cells” filed June 13, 2011, #:61/457,821.

Cox, S.V. and **Emelko, M.B.** Mild Cleansing Bar Containing Smaller-sized Particular Wax.
WO/1995/030736 A1.

NON-CONFIDENTIAL ADVISORY COMMITTEES, PEER REVIEW & REPORTS

1. State of Ohio Department of Health Expert Panel member on Direct Potable Reuse (2015-present).
2. Expert Technical Reviewer for “Drinking Water Guideline Technical Document for Protozoa”. Health Canada (2015).
3. Advisory committee to Water Research Foundation “Wildfire Impacts on Drinking Water Treatment Process Performance: Development of Evaluation Protocols and Management Practices” project (2014-present).
4. Expert Technical Reviewer of Alberta Drinking Water Standards and Guidelines. Contributed to expert panel report “Draft Report to the Province of Alberta on a New Drinking-Water System Standard” Alberta Environment and Sustainable Resource Development (2014-2015).
5. Lead Author and Committee Chair of Ontario Ministry of Environment Terms of Reference revision of “Hydrogeological Study to Examine Groundwater Sources Potentially under the Direct Influence of Surface Water” (2013-present).
6. Expert Technical Reviewer of Alberta Drinking Water Standards and Guidelines. Contributed to expert panel report “Drinking Water Expert Recommendations Report” Alberta Environment and Sustainable Resource Development (2013-2014).
7. Expert Consultant to Health Canada “Accounting for Measurement Error in Protozoan Count Data in the Health Canada QMRA Model”. Emelko MB, Normani SD and Schmidt PJ (2013).
8. Advisory committee to Water Research Foundation “Impact of Wildfires on Source Water Quality and Implications for Water Treatment and Finished Water Quality” project focused on Colorado Wildfires, particularly the High Park Fire (2013-present).
9. Expert Advisor on “Water Quality Sampling and Impacts after Wildfire and Treatability Implications”. Fort Collins, Colorado (2013).
10. Expert Advisor on “Water Quality Sampling and Impacts after Wildfire”. Milk River, Alberta (2013).
11. Invited Expert to brief Hon. Minister Diana McQueen (Minister, Alberta Environment and Sustainable Resource Development) and Bruce Mayer (Asst. Deputy Minister-ESRD): 2hour briefing on strategic issues in developing integrated source water protection strategies for Alberta’s eastern slopes forest reserves, with Dr. U. Silins (U. Alberta) Aug., 14, 2012.
12. Ontario Ministry of the Environment Expert Advisory Panel on “Regulation of Subsurface Drinking Water Supplies and Current/Emerging Science of Pathogen Transport in Groundwater” (2010-pres.).
13. Expert Panel on Pathogens in Groundwater. Nova Scotia Environment (2011).
14. Expert Technical Reviewer for “Guideline Technical Document—Enteric Viruses”. Health Canada (2010).
15. American Water Works Association Expert Advisory Panel on “Biological Drinking Water Treatment” (2010).
16. Alberta Sustainable Resource Development: Review of Alberta Landuse Framework RAC Guidance Task Worksheet and Potential Contribution of the Southern Rockies Watershed Project (2010).
17. Expert Technical Reviewer for “Guideline for Canadian Drinking Water Quality on Turbidity”. Health Canada (2009-2010).

18. Expert Technical Reviewer for “Guidelines for Validation of Treatment Processes for Water Recycling”. Province of Victoria, Australia (2009-2010).
19. Grand River Wells Water Treatment Plant: Water Supply Assessment Project, Regional Municipality of Waterloo, Ontario (2005-2010).
20. Mannheim Water Treatment Plant Filter Upgrade Project, Regional Municipality of Waterloo, Ontario (2005-2006).
21. Mannheim Water Treatment Plant Optimization Project, Regional Municipality of Waterloo, Ontario. (2005-2006)
22. Mannheim Water Treatment Plant RPU Upgrade Project, Regional Municipality of Waterloo, Ontario (2005-2006).
23. Advisory committee to American Water Works Association Research Foundation (AWWARF)/USEPA “Methods to Assess GWUDI and Bank Filtration Performance” project #3121 (2005-2010).
24. U.S. National Water Research Institute’s Expert Panel on Riverbank Filtration for Washington State Department of Health (2004-2006).
25. Ontario Parks Treatability Study: Sioux Narrows, Ontario, Stantec Consulting (2004-2005).
26. Advisory committee to American Water Works Association Research Foundation and USEPA “Characterization of Particles in Filter Effluents” project #2858 (2003-2006).
27. Advisory committee to American Water Works Association “Qualitative Procedures for Identifying Particulate Matter in Distribution Waters and at the Customer's Tap” project #2866 (2003-2006).
28. Invited expert member of Ontario Centres for Excellence Inc. (formerly CRESTech) Environmental Technology Committee (assists in setting research direction) (2003-2008).
29. Advisory committee to U.S. EPA for the Long-Term 2 Enhanced Surface Water Treatment Rule. AWWA Water Industry Technical Action Fund (WITAF) (2000-2005).
30. Coagulation Optimization Study, Regional Municipality of Niagara (2003-2004).
31. Assessment of *In Situ* Filtration Performance, Regional Municipality of Halton (2003).
32. Assessment of *In Situ* Filtration Performance, Regional Municipality of Waterloo (2002).
33. Assessment of *In Situ* Filtration Performance, City of Guelph Waterworks (2002).

PROFESSIONAL AFFILIATIONS

Canadian Association on Water Quality	1999-present
International Association on Water Quality	1999-present
American Water Works Association	1996-present
Ontario Water Works Association	1996-present
American Chemical Society	1995-1999; 2010-2012
American Institute of Chemical Engineers	1992-1998
Society of Women Engineers	1991-1995