

## **APPENDICES**

### **APPENDIX A: MITE-RN Output (Publications, Reports, Theses and Presentations at Conferences from 1999-2004)**

*Canadian Network of Toxicology Centres*

# **Metals in the Environment Research Network**

**Final Report**

**JUNE 2004**

APPENDIX A

MITE-RN Output

(Publications, Reports, Theses and Presentations at Conferences from 1999-2004)

*Please Note : Network publications included in this report were current at the time of publication (June 2004). For updated listings, see < <http://www.mite-rn.org/research/publication.asp>>.*

## MITE-RN SOURCES DOMAIN OUTPUT 1999-2004<sup>1</sup>

### PUBLICATIONS

#### **2004**

Gallon, C., A. Tessier, C. Gobeil and C. Alfaro-De la Torre. 2004. Modeling diagenesis of lead in sediments of a Canadian Shield lake. *Geochim. Cosmochim. Acta* (in press).

#### **2003**

Carignan, R., A. Tessier and L. Rancourt. 2003. Metal deposition chronologies in boreal Shield lakes: distinguishing anthropogenic signals from diagenetic effects. *Human Ecol. Risk Assess.* 9: 767-778.

Dias, G.M. and G.C. Edwards. 2003. Differentiating natural and anthropogenic sources of metals to the environment. *Human Ecol. Risk Assess.* 9: 699-721.

Fatin-Rouge, N., A. Milon, J. Buffle, R.R. Goulet and A. Tessier. 2003. Diffusion and partitioning of solutes in agarose hydrogels: the relative influence of electrostatic and specific interactions. *J. Phys. Chem. B* 107: 12126-12137.

Gallon, C., C. Gobeil, A. Tessier and R. Carignan. 2003. Stable Pb isotopes and PAHs as indicators of lead contamination sources in a lake of the Rouyn-Noranda area. *J. Phys. IV France* 107: 505-508.

#### **2002**

Alfaro-De la Torre and A. Tessier. 2002. Cadmium deposition and mobility in the sediments of an acidic oligotrophic lake. *Geochim. Cosmochim. Acta* 66: 3549-3562.

Beaulieu, S., Z. Nejedly, J.L. Campbell, G.C. Edwards and G.M. Dias. 2002. Improvement of detection limits of PIXE by substrate signal reduction. *Nuclear Instruments & Methods In Physics Research Section B-Beam Interactions With Materials And Atoms*, 189: 289-292.

Sadiq, M., A. Lock, G.A. Spiers and D. Pearson. 2002. Controls on arsenic speciation in Kelly Lake, Sudbury, Ontario. *Water Air Soil Pollut.* 141: 299-312.

#### **2001**

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, R.J. Kemp, G.M. Dias, C.R. Fitzgerald-Hubble, E.K. Wong, L. Halfpenny-Mitchell and M.S. Gustin. 2001. Sources of variability in Hg flux measurements. *J. Geophys. Res.*, 106 (D6): 5421-5435.

#### **2000**

Alfaro-De la Torre, P.-Y. Beaulieu and A. Tessier. 2000. *In situ* measurement of trace metals in lakewater using the dialysis and DGT techniques. *Anal. Chim. Acta* 418: 53-68.

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<sup>1</sup> Names of collaborators from government or industry partners are highlighted.

### **1999**

Lamoureux, M.M., M.P. MacDermid and N. Nizam. 1999. *In situ* solid state chemical speciation of simulated and real lead-containing airborne particulate matter. *Can. J. Anal. Sci. Spectr.* 44: 1-45.

## PUBLICATIONS IN CONFERENCE PROCEEDINGS

### **2003**

Lock, A., D.A.B. Pearson, G.A. Spiers. 2003. Early diagenesis of sediment from Kelly Lake, Sudbury, Ontario- a lake contaminated by sewage effluent and high levels of copper and nickel from mining and smelting. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

## REPORTS

### **2004**

Spiers, G.A. 2004. Distribution of metals in soils of the Sudbury Smelter Footprint. Prepared for Inco Ltd and Falconbridge Ltd. 990pp. including data appendices.

## CONFERENCE PRESENTATIONS

### **2004**

Gallon, C., A. Tessier and C. Gobeil. 2004. Geochemistry of lead and historical variation of its sources in an oligotrophic acidic lake. Groupe de recherche interuniversitaire en limnologie (GRIL) 14th Annual meeting, February; Montréal, Quebec.

Laforte, L., A. Tessier and C. Gobeil. 2004. Sources et géochimie du thallium et de l'indium dans deux lacs du bouclier canadien. Groupe de recherche interuniversitaire en limnologie (GRIL) 14th Annual meeting, February; Montréal, Quebec.

Lamoureux, M., N. Warner and E. Sullivan. 2004. Chemical speciation of copper and lead in airborne particulate matter collected in the proximity of a copper smelter. 87th Canadian Chemistry Conference and Exhibition, May; London, Ontario.

Lu, J. 2004. Transformation and distribution of mercury species in the atmosphere. 7<sup>th</sup> International Conference on Mercury as a Global Pollutant, June; Ljubljana, Slovenia.

Spiers, G.A., F. Prevost, D. Pearson, C.A. Hawson and J. Richard. 2004. Environmental impacts of one century of mining - Sudbury, Ontario. EnviroAnalysis 2004, 5<sup>th</sup> Biennial International Conference on Chemical Measurement and Monitoring of the Environment; Toronto, Ontario.

Spiers, G.A. 2004. Environmental media as archives of modern industrial activities. National Symposium on Analytical Chemistry and Spectroscopy, Spectroscopy Society of Canada; Toronto, Ontario.

Zhou, H., X. Song and J.Y. Lu. 2004. Mercury associated with size-segregated airborne particulate matter. 7<sup>th</sup> International Conference on Mercury as a Global Pollutant, June; Ljubljana, Slovenia.

Zhou, H., X. Song and J.Y. Lu. 2004. Methods inter-comparison for measurements of mercury associated with airborne particulate matter. 87<sup>th</sup> Canadian Chemistry Conference and Exhibition, May; London, Ontario.

### **2003**

Baks, N., P. Nosko, G.A. Spiers and K. Winterhalder. 2003. Plant diversity, abundance and distribution on an abandoned copper-nickel roast yard near Sudbury, Canada: the impact of soil toxicity. *In*: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.

Bérubé, L., C. Gobeil and A. Tessier. 2003. Historique de la déposition atmosphérique de Pt, Pd et Rh dans des lacs du Bouclier canadien. 7e Colloque annuel du Chapitre St-Laurent, SETAC, May; Montréal, Québec.

Gallon, C., C. Gobeil, A. Tessier and R. Carignan, 2003. Geochemistry of lead and chronology of its deposition in remote Canadian Shield lakes. Aquatic Toxicity Workshop, September; Ottawa, Ontario.

Gallon, C., C. Gobeil, A. Tessier and R. Carignan. 2003. Plomb dans les lacs autour de Rouyn-Noranda: sources et chronologie de déposition. 7e Conférence Internationale des Limnologues d'Expression Française (CILEF), July; Montréal, Québec.

Gallon, C., C. Gobeil and A. Tessier. 2003. Geochemistry of lead and its stable isotopes in an oligotrophic acidic lake. Annual Conference of the Society of Environmental Toxicology and Chemistry (SETAC) ASIA/Pacific, September; Christchurch, New Zealand.

Gallon, C., C. Gobeil, A. Tessier and R. Carignan. 2003. Stable isotopes and PAHs as indicators of lead contamination sources in a lake of the Rouyn-Noranda area. XIIth International Conference on Heavy Metals in the Environment, May; Grenoble, France.

Hawson, C.A., G.A. Spiers and A.K. Cheburkin. 2003. Applications of an energy dispersive miniprobe multi-element analyser (EMMA) in an anthropogenically affected area; *In*: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.

Hickey, K. T, G.A. Spiers and C.A. Hawson. 2003. A survey of potential hyperaccumulators near Sudbury, Ontario, Canada. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Jakola, M., C. Simoneto, G.A. Spiers, D.A.B. Pearson, J. Richard and C.A. Hawson. 2003. Potential impacts of sediments and runoff from urban infrastructure on water quality in Lake Ramsey, Sudbury. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Janping, Lu, J.Y. Lu and D.C. Grégoire. 2003. Effect of rain on mercury species associated with atmospheric particulate matter. 39th IUPAC Congress 86th Conference of the Canadian Society for Chemistry, August; Ottawa, Ontario.

Janping, Lu, J. Lu and D.C. Grégoire. 2003. Inorganic mercury species associated with atmospheric aerosols (in air and in rain). XII International Conference on Heavy Metals in the Environment, May; Grenoble, France.

Lock, A., D.A.B. Pearson and G.A. Spiers. 2003. *In-situ* sediment/water interface reactions experiment examining the aerobic and anaerobic mobility of Ni, Cu, and PO<sub>4</sub> in Kelly Lake, Sudbury, Ontario. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Marshall, D., P. Nosko and G.A. Spiers. 2003. Radial growth and tree-ring chemistry of three deciduous tree species growing along a multiple-stress gradient. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Ojalammi, M., A. Cecchetto, G.A. Spiers, D.A.B. Pearson, A. Lock and C.A. Hawson. 2003. Mobilization of metals in podzolic soils of the Sudbury smelter footprint. *In: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Prévost, F., Spiers, G.A., Pearson, D.A.B. and Kaiser, P.K. 2003. Multi-dimensional ecosystem modeling in anthropogenically impacted ecosystems. *In: Spiers, G.A., Beckett, P. and Conroy H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.*

Quirion, R., A. Tessier and C. Gobeil. 2003. Historique de la déposition atmosphérique de Ag dans les sédiments de lacs du Bouclier canadien. 7e Conférence Internationale des Limnologues d'Expression Française (CILEF), July; Montréal, Québec.

Quirion, R., A. Tessier and C. Gobeil. 2003. Historique de la déposition atmosphérique de Ag dans les sédiments de lacs du Bouclier canadien. 7e Colloque annuel du Chapitre St-Laurent, SETAC, May; Montréal, Québec.

Richard, J., G.A. Spiers, A.K. Cheburkin and C.A. Hawson. 2003. Particulate chemistry and morphology in snow and snow pack within the Sudbury Smelter Footprint. *In: Spiers, G.A.,*

Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.

Spiers, G.A., D.A.B. Pearson, A.K. Cheburkin, F. Prevost and C.A. Hawson. 2003. Distribution of anthropogenic metals in soils of the Sudbury, Ontario, smelter footprint. *In*: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.

Spiers, G.A., D.A.B. Pearson, A.K. Cheburkin, F. Prevost and C.A. Hawson. 2003. Distribution of anthropogenic metals in soils of the Sudbury, Ontario, smelter footprint. 7th International Conference on the Biogeochemistry of Trace Elements (ICOBTE); Uppsala, Sweden.

Spiers, G.A., C. Hawson, A.K. Cheburkin and J. Richard. 2003. Morphology and composition of aerosolic fallout in the Sudbury smelter footprint. ICASS 2003 - 49th International Conference on Analytical Sciences and Spectroscopy; Ottawa, Ontario.

Steffen, A., W.H. Schroeder, C. Banic and G. Edwards. 2003. Mercury throughout polar sunrise 2002. 12<sup>th</sup> International Conference on Heavy Metals in the Environment, May; Grenoble, France.

Willson, D.G., G.A. Spiers and D.A.B. Pearson. 2003. Speciation and movement of arsenic in the soils of Sudbury, Ontario. *In*: Spiers, G.A., Beckett, P. and Conroy, H. (eds.) Sudbury 2003, Mining and Environment Conference Proceedings, May; Sudbury, Ontario.

## **2002**

Alfaro-De la Torre, C. and A. Tessier. 2002. Cadmium biogeochemistry in an acidic pristine lake. American Society of Limnology and Oceanography (ASLO) Meeting, June; Victoria, British Columbia.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, G. Dias, L. Halfpenny-Mitchell, R.J. Kemp and D. Wallace. 2002. Micrometeorological measurements of gaseous mercury fluxes: Theory and practice. 25th Agricultural and Forest Meteorology, 12th Joint Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Association, 4<sup>th</sup> Symposium on the Urban Environment, May 2002; Norfolk, VA, USA.

Edwards, G.C., P.E. Rasmussen, S. Ausma, S. Steffan, P. Hazlewood, W.H. Schroeder and G.M. Dias. 2002. The assessment of the evasion of mercury from a mercuriferous shale deposit using micrometeorological and dynamic chamber methods. Joint CSCE/EWRI of ASCE International Conference on Environmental Engineering, July; Niagara Falls, Ontario.

Gallon, C., A. Tessier, C. Gobeil and L. Beaudin. 2002. Isotopic detection of historical sources of lead in a Canadian Shield lake. American Society of Limnology and Oceanography (ASLO) Meeting, June; Victoria, British Columbia.

Goulet, R., A. Tessier, L. Rancourt, R. Quirion and A. Perron. 2002. Validation of the diffusion gradient in thin-films technique for assessment of metal bioavailability in surface waters. 23<sup>rd</sup> Conference of the Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

Lamoureux, M., N. Warner and J. Enright. 2002. The use of laser ablation ICP-MS and collision cell technology for the analysis of metal-containing particulate matter. 29<sup>th</sup> Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies, October; Providence, RI, USA

Lamoureux, M., N. Warner, J. Samson, J. Enright and C. Grégoire. 2002. *In situ* solid state chemical speciation of some airborne metal species associated with atmospheric particulate matter of varying size. 29<sup>th</sup> Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies, October; Providence, RI, USA.

Lu, J.Y. Mercury species in the atmosphere – method development and evaluation. 2002. 85th Annual Meeting Canadian Society of Chemistry, June; Vancouver, British Columbia.

Spiers, G.A., D.A.B. Pearson and F. Prévost. 2002. Distribution of anthropogenic metals in soils of the Sudbury smelter footprint. 5th International Nickel Conference, September; Murmansk, Russia.

Wang, F., A. Tessier and R. Carignan. 2002. Mercury speciation in anoxic waters. International Association for Great Lakes Research; Winnipeg, Manitoba.

## **2001**

Alfaro-De la Torre, C. and A. Tessier. 2001. Historical record of anthropogenic cadmium in sediments of a pristine lake. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Beaulieu, S., Z. Ngedly, J.L. Campbell, G.C. Edwards and G.M. Dias. 2001. Improvement of detection limits of PIXE by substrate signal reduction. PIXE Conference. June; Guelph, Ontario.

Beaulieu, S., G. Edwards, G.M. Dias, L.A. Halfpenny-Mitchell, Z. Nejedly and J.L. Campbell. 2001. Naturally occurring metal concentrations in remote areas. PIXE Conference. June; Guelph, Ontario.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, R.J. Kemp, G. Dias, L. Halfpenny-Mitchell, D. Wallace and A. Steffen. 2001. Measurements of gaseous elemental Hg from naturally mercuriferous soils. Workshop on the Fate, Transport, and Transformation of Hg in Aquatic and Terrestrial Environments, May; West Palm Beach, FL, USA.

Edwards, G.C., G. Dias, S. Beaulieu, L. Halfpenny-Mitchell, Z. Nejedly, J.L. Campbell, P.E. Rasmussen and W.H. Schroeder. 2001. Metal concentrations and fluxes measured in remote natural settings. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, R.J. Kemp, G. Dias, L. Halfpenny-Mitchell, D. Wallace, A. Steffen, 2001. Measurement of gaseous elemental mercury from naturally mercuriferous soils. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, R.J. Kemp, G. Dias, L. Halfpenny-Mitchell, D. Wallace and A. Steffen. 2001. Measurements of Hg flux from natural soils. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder, S. Beauchamp and L. Poissant. 2001. Biogeochemical cycling of Hg in the Canadian environment. TSRI Metals Regional Conference, November; Montreal, Quebec.

Lamoureux, M., N. Warner, K. Lantz and V. MacKinnon. 2001. Can laser ablation be an effective sample introduction device for the analysis of atmospheric particulate matter using ICP-MS? 47<sup>th</sup> International Conference on Analytical Sciences and Spectroscopy, August; Toronto, Ontario.

Lamoureux, M., N. Warner and E. Sullivan. 2001. X-ray absorption fine structure spectroscopy as a tool for metal speciation of environmental solids? 47<sup>th</sup> International Conference on Analytical Sciences and Spectroscopy, August; Toronto, Ontario.

Lamoureux, M., N. Warner, N. Nizam, T. Gordon and E. Sullivan. 2001. X-ray Absorption Fine Structure Spectroscopy: Shining new lights on Metal Speciation of Environmental Solids. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Rasmussen, P.E., G.C. Edwards and W.H. Schroeder. 2001. Natural Hg emissions: Point, area and linear sources. 6<sup>th</sup> Intern. Conference on the Biogeochemistry of Trace Elements (ICOBTE), July; Guelph, Ontario.

Schroeder, W.H., G.C. Edwards, P.E. Rasmussen, R.J. Kemp, G. Dias, D. Wallace, A. Steffen and J.Y. Lu. 2001. Mercury: Rising and falling? 6<sup>th</sup> Intern. Conf. on Mercury as a Global Pollutant, October; Minamata, JP.

Tessier, A. 2001. Diagenetic reactions of trace elements in sediments. 1<sup>st</sup> Late Summer Workshop « Interfaces in Aquatic Systems – Colloids, Biofilms, Sediment/Water/Air », October; Lake Constance, Germany.

Warner, N., J. Francis, M. Lamoureux and E. Sullivan. 2001. Chemical characterization of metal-containing airborne particulate matter, 47<sup>th</sup> International Conference on Analytical Sciences and Spectroscopy, August; Toronto, Ontario.

Warner, N. and M. Lamoureux. 2001. Chemical characterization of metal-containing airborne particulate matter, 84<sup>th</sup> Annual Meeting Canadian Society of Chemistry, May; Montreal, Quebec.

## **2000**

Alfaro-De la Torre, C. and A. Tessier. 2000. Relative contribution of diffusion to Cd deposition in an acidic oligotrophic lake. American Society of Limnology and Oceanography (ASLO) Meeting, June; Copenhagen, Denmark.

Alfaro-De la Torre, C. and A. Tessier. 2000. *In situ* measurement of trace metals in an oligotrophic lake: Comparison of results obtained by peepers and DGT. Intern. Conf. Heavy Metals in the Environment, August; Ann Arbor, MI, USA. Contribution No 1376; CD-ROM.

Dias, G., G.C. Edwards, P.E. Rasmussen, W.H. Schroeder, J. Kemp, C.F.- Hubble and L.H.- Mitchell. 2000. Developing relationships between fluxes of natural sources of mercury and environmental and biogeochemical parameters for the purpose of scaling up fluxes. Intern. Conf. Heavy Metals in the Environment, August; Ann Arbor, MI, USA.

Edwards, G.C., P.E. Rasmussen, W.H. Schroeder and G.M. Dias. 2000. Methods for measurement of metal fluxes on particulates. Intern. Conf. Heavy Metals in the Environment, August; Ann Arbor, MI, USA.

Schroeder, W.H., G.C. Edwards, P.E. Rasmussen, R.J. Kemp, G.M. Dias, L. Halfpenny-Mitchell, and C. Fitzgerald-Hubble. 2000. The significance of measuring mercury emissions from natural sources. GeoCanada 2000, May; Calgary, Alberta.

Sullivan, E., M. Lamoureux, K. Duggan, V. MacKinnon and C. Grégoire. 2000. Determination of the concentration of Cu, Ni, and Pb, in metal-containing airborne particulate matter using ultrasonic slurry sampling graphite furnace atomic spectrometry. 46<sup>th</sup> Intern. Conference on Analytical Sciences and Spectroscopy, August; Winnipeg, Manitoba.

Sullivan, E., M. Lamoureux, K. Duggan, V. MacKinnon and C. Grégoire. 2000. Chemical speciation of Cu and Ni in metal-containing airborne particulate matter using synchrotron x-ray absorption spectroscopy. 46<sup>th</sup> Intern. Conference on Analytical Sciences and Spectroscopy, August; Winnipeg, Manitoba.

Sullivan, E., M. Lamoureux, K. Duggan, T. Gordon and C. Grégoire. 2000. Chemical speciation of some metal-containing airborne particulate matter as a function of particle size. 4<sup>th</sup> Intern. Symposium on Speciation of Elements in Biological, Environmental and Toxicological Sciences, June; Whistler, British Columbia.

Sullivan, E., M. Lamoureux, K. Duggan, T. Gordon and C. Grégoire. 2000. *In situ* solid state chemical speciation of some metal pollutants associated with ground level particulate matter. 3<sup>rd</sup> Biennial Intern. Conference on Chemical Measurement and Monitoring of the Environment - EnviroAnalysis 2000, May; Ottawa, Ontario.

## **1999**

Alfaro-De la Torre, C. and A. Tessier. 1999. *In situ* measurement of trace metals in an oligotrophic lake by the DGT method. 20<sup>th</sup> Conference of the Society of Environmental Toxicology and Chemistry (SETAC), November; Philadelphia, USA.

Lamoureux, M., K. Duggan and C. Grégoire. 1999. Chemical speciation of some metals in atmospheric particulate matter. 26<sup>th</sup> Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies and 45<sup>th</sup> International Conference on Analytical Sciences and Spectroscopy, October; Vancouver, British Columbia.

Lamoureux, M. 1999. Physical and chemical characterization of atmospheric particulate matter using various spectroscopic techniques, 14<sup>th</sup> SAS Lake Arrowhead Conference, May; Lake Arrowhead, CA, USA.

## THESES

### **In Progress**

Gallon, C. (Ph.D.) Thesis: Géochimie du plomb et de ses isotopes stables dans des lacs du Bouclier canadien. INRS-ETE, Université du Québec.

Koski, P. (M.Sc.) Thesis: Nature of aerosols in a smelter impacted region. Dept. Chemistry, Laurentian University.

Laforte, L. 2004. (M.Sc.) Thesis: Sources et géochimie du thallium, de l'indium et de l'antimoine dans deux lacs du Bouclier canadien. INRS-ETE, Université du Québec.

Maki, T. (M.Sc.) Thesis: Sources of lead in environmental media in an industrial landscape. Dept. Chemistry, Laurentian University.

Marshall, D. (M.Sc.) Thesis: Natural regeneration along an impact gradient, Sudbury region. Dept. Biology, Laurentian University

Perron, A. 2004. (M.Sc.) Thesis: Sources du zinc et de HAP dans des lacs du Bouclier canadien. INRS-ETE, Université du Québec.

Quirion, R. 2004. (M.Sc.) Thesis: Déposition et mobilité de Ag dans les sédiments de lacs du Bouclier canadien. INRS-ETE, Université du Québec.

Wilson, D. (M.Sc.) Thesis: Arsenic speciation in Sudbury soils. Dept. Environ. Earth Sciences, Laurentian University.

### **2004**

Dickeson, S. 2004. (B.Sc.) Thesis. Patterns of tissue metal concentrations in graminoid species and related soils on an abandoned copper-nickel roast yard. Dept. Biology, Nipissing University.

Hoar, B. 2004. (B.Sc.) Thesis: Biological Activity along a Metal Contamination Gradient. Dept. Environ. Earth Sciences, Laurentian University.

Lammens, C. 2004. (B.Sc.) Thesis: Effects of municipal leaf and yard waste on metal movement in Sudbury Soils. Dept. Environ. Earth Sciences, Laurentian University.

### **2003**

Baks, N. 2003. (B.Sc.) Thesis: Patterns of plant colonization, zonation and diversity as influence by toxic soils of an abandoned nickel roast yard. Dept. Biology, Nipissing University.

Bilodeau, F. 2003. (M.Sc.) Thesis: Validation de la technique DET (Diffusive Equilibration in Thin films) pour mesurer des microprofils de fer et de manganèse dans les sédiments lacustres. INRS-EET, Université du Québec.

Cecchetto, A. 2003. (B.Sc.) Thesis: Metal movement in selected Sudbury soils. Dept. Environ. Earth Sciences, Laurentian University.

Jakkola, M. 2003. (B.Sc.) Thesis: Metals in parking lot sediment, Sudbury, Ontario: sources, effects and management. Dept. Environ. Earth Sciences, Laurentian University.

Ojalammi, M. 2003. (B.Sc.) Thesis: Metal movement in selected Sudbury soils. Dept. Environ. Earth Science, Laurentian University.

Samson, J. 2003. (B.Sc.) Quantitative analysis of metals associated with airborne particulate matter using laser ablation inductively coupled plasma mass spectrometry. Dept. Chemistry, Saint Mary's University.

Simmonato, C. 2003. (B.Sc.) Road deposited sediments: potential impacts on Ramsey Lake Water Quality. Dept. Environ. Earth Sciences, Laurentian University.

### **2001**

Alfaro-De la Torre, C. 2001. (PhD) Thesis: Géochimie du cadmium dans un lac oligotrophe acide. INRS-EET, Université du Québec.

Beaulieu, N.S. 2001. (M.Sc.) Thesis: Evaluation and testing of PCI/PIXE methods to measure naturally occurring metal concentrations in remote areas. School of Engineering, University of Guelph.

Kemp, R.J. 2001. (Ph.D.) Thesis: Measurement of gaseous elemental mercury emissions from natural sources. School of Engineering, University of Guelph.

Wallace, D. M. 2001. (M.Sc.) Thesis: Evaluation and refinement of a micrometeorological method for the measurement of mercury fluxes in natural settings. School of Engineering, University of Guelph.

Warner, N. 2001. (B.Sc.) Chemical characterization of metal-containing airborne particulate matter. Dept. Environmental Studies, Saint Mary's University.

### **1999**

Duggan, K. 1999. (B.Sc.) Physical and chemical characterization of atmospheric particulate matter. Dept. Chemistry, Saint Mary's University.

## MITE-RN PROCESSES DOMAIN OUTPUT 1999-2004<sup>2</sup>

### PUBLICATIONS

#### **2004**

Fasfous, I.I., T. Yapici, N.M. Hassan, C.L. Chakrabarti, M.H. Back, J. Murimboh, D.R.S. Lean and **D.C. Grégoire**. 2004. Kinetics of trace metal competition in the freshwater environment: some fundamental characteristics. *Environ. Sci. Technol.* (in press)

Ge, Y. and W.H. Hendershot. 2004. Evaluation of soil surface charge using the back-titration technique. *Soil Sci. Soc. Am. J.* 68: 82-88.

Ge, Y., D. MacDonald, S. Sauvé and W.H. Hendershot. 2004. Modeling of Cd and Pb speciation in soil solutions by WinHumicV and NICA-Donnan Models. *Environ. Model. Software.* (in press).

Gosselin, A. and L. Hare. 2004. Effect of sedimentary cadmium on the behavior of a burrowing mayfly (Ephemeroptera, *Hexagenia limbata*). *Environ. Toxicol. Chem.* 23: 383-387.

Johnson, D. and B. Hale. 2004. White birch (*Betula papyrifera* L.) foliar litter decomposition in relation to Cu atmospheric inputs at metal-contaminated and uncontaminated sites near Sudbury, ON and Rouyn-Noranda, QC. *Water Air Soil Pollut.* 127: 65-72.

MacDonald, J.D., N. Bélanger and W.H. Hendershot. 2004. Column leaching using dry soil reproduces solid-solution partitioning observed in zero-tension lysimeters: 1. Method development. *Soil Sed. Contam.* (in press).

MacDonald, J.D. and W.H. Hendershot. 2004. Column leaching using dry soil reproduces solid-solution partitioning observed in zero-tension lysimeters: 2. Trace metals. *Soil Sed. Contam.* (in press).

Martin, R.R., S. Naftel, S. Macfie, W. Skinner, F. Courchesne and V. Séguin. 2004. Time of flight secondary ion mass spectrometry studies on the distribution of metals between the soil, rhizosphere and roots of *Populus Tremuloides Minchx* growing in forest soil. *Chemosphere* 54: 1121-1125.

Rachou, J., W.H. Hendershot and S. Sauvé. 2004. Diffusive gradients in thin films (DGT) - Induced fluxes of cadmium in soils: Effects of pH. *Commun. Soil Sci. Plant Anal.* (in press).

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Sekaly, A.L.R., M. Ben Younes, J. Murimboh, C.L. Chakrabarti and M.H. Back. 2000. Comparative study of Co(II), Ni(II), Cu(II), and Zn(II) complexes in model systems containing a well-characterized fulvic acid and in freshwaters. 46th Intern. Conference on Analytical Sciences and Spectroscopy (ICASS), August; Winnipeg, Manitoba.

Wang, F., A. Tessier and L. Hare. 2000. Predicting Cd concentrations in aquatic organisms in nature. 21<sup>st</sup> Annual Meeting Society of Environmental Toxicology & Chemistry (SETAC), November; Nashville, TN.

### **1999**

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Chakrabarti, C.L., A.L.R. Sekaly, M. Ben Younes, R. Mandal, J. Murimboh, N.M. Hassan, M.S.A. Salam, V. Celo, J. Guthrie, D.C. Grégoire, M.H. Back and W.H. Schroeder. 1999. Chemical speciation: Operationally-defined species versus speciation parameters defined by physico-chemical principles. 26th Annual Conference of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), October; Vancouver, British Columbia.

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## THESES

### **In Progress**

Croisetière, L. 2004. (Ph.D.) Title: Metal accumulation by the predatory alderfly *Sialis*. INRS-ETE, Université du Québec, Québec, Québec.

Orvoine, J. 2004. (M.Sc.) Title: Competition between cadmium and hydrogen ions at biological uptake sites in a planktonic food chain. INRS-ETE, Université du Québec, Québec, Québec.

Séguin, V. 1998-in progress. (Ph.D.) Title: Fractionnement en phase solide des métaux dans la rhizosphère de sols forestiers. Département de géographie, Université de Montréal.

### **2004**

Gosselin, A. 2004. (M.Sc.) Influence of insect burrowing on metal exposure and toxicity. INRS-ETE, Université du Québec, Québec, Québec.

### **2003**

Burroughs, C.A. 2003. (B.Sc.) Title: An electrochemical exploration of metal speciation and bioavailability in freshwaters from the Rouyn-Noranda area). Dept. Chemistry, Carleton University.

Hassan, N.M. 2003. (Ph.D.) Title: Metal speciation dynamics in freshwaters: A kinetic exploration. Dept. Chemistry, Carleton University.

Jamaluddin. 2003. (M.Sc.) Title: Studies on chemical speciation of Cu(II), Pb(II), Cd(II), Zn(II) and Ni(II) in freshwaters. Dept. Chemistry, Carleton University.

Kelly, M. 2003. (M.Sc.) Title: Evaluation of capillary electrophoresis combined with a modified BCR sequential extraction for determining the distribution of Fe, Zn, Cu, Mn and Cd in airborne particulate matter. Dept. Chemistry, Carleton University.

Salam, M.S.A. 2003. (M.Sc.) Title: Determination of Cd(II), Cu(II), Zn(II), and Pb(II) speciation in aqueous solutions by electrochemical techniques. Dept. Chemistry, Carleton University.

Si, L. 2003. (M.Sc.) Title: Studies on metal speciation in surface waters from the Grand River by electrochemical techniques. Dept. Chemistry, Carleton University.

Sukola, K.R. 2003. (M.Sc.) Title: The stability and characterization of metal-sulfide species under oxic conditions. Dept. Chemistry, University of Manitoba, Winnipeg.

Voigt, A. 2003. (Ph.D.) Title: Bioavailability of trace metals to plants. Dept. Renewable resources, Macdonald College, McGill University.

## **2002**

Cloutier-Hurteau, B. 2002. (Ph.D.) Title: Activité microbienne et spéciation des métaux dans la rhizosphère de sols forestiers. Dépt. géographie, Université de Montréal.

Croteau, M.N. 2002. (Ph.D.) Title: Biology of metal accumulation by the predatory insect *Chaoborus*. INRS-ETE, Université du Québec, Québec, Québec.

Johnson, D. 2002. (Ph.D.) Title: Phytocycling of Cu, Ni, Pb and Zn in northern forest ecosystems impacted by smelter emissions. Dept. Land Resource Science, University of Guelph.

## **2001**

Gallon, C. 2001. (M.Sc.) Title: Microenvironments created by burrowing benthic animals. INRS-ETE, Université du Québec, Québec, Québec.

Mandal, R. 2001. (Ph.D.) Title: Competitive binding of metal ions by humic substances in model systems and in freshwaters. Dept. Chemistry, Carleton University.

Murimboh, J.D. 2001. (Ph.D.) Title: Speciation dynamics in the freshwater environment: Unifying concepts in metal speciation and bioavailability. Dept. Chemistry, Carleton University.

## **2000**

Salam, M.S.A. 2000. (Ph.D.) Chemical speciation and pitting corrosion of some trace metals in aqueous solutions using electrochemical methods. Dept. Chemistry, Ain Shams University, Cairo, Egypt.

Sekaly, A.L.R.. 2000. (Ph.D.) Trace metal ion binding to fulvic acids in model systems and freshwaters. Dept. Chemistry, Carleton University.

## MITE-RN IMPACTS DOMAIN OUTPUT 1999-2004<sup>3</sup>

### PUBLICATIONS

#### **2004**

Baldisserotto, B., C. Kamunde, A. Matsuo and C.M. Wood. 2004. A protective effect of dietary calcium against acute waterborne cadmium uptake in rainbow trout. *Aquat. Toxicol.* 67: 57-73.

Baldisserotto, B., C. Kamunde, A. Matsuo and C.M. Wood. 2004. Acute waterborne cadmium uptake in rainbow trout is reduced by dietary calcium carbonate. *Comp. Biochem. Physiol. C.* (in press).

**Borgmann, U.**, M. Nowierski, **L.C. Grapentine** and D.G. Dixon. 2004. Assessing the cause of impacts on benthic organisms near Rouyn-Noranda, *Quebec. Environ. Pollut.* 129: 39-48.

**Borgmann, U.**, W.P. Norwood and D.G. Dixon. 2004. Re-evaluation of metal bioaccumulation and chronic toxicity in *Hyaella azteca* using saturation curves and the biotic ligand model. *Environ. Pollut.* (in press).

Giguère A., P.G.C. Campbell, L. Hare, J. Rasmussen and D.G. McDonald. 2004. Influence of lake chemistry and fish age on Cd, Cu and Zn concentrations in various organs of indigenous yellow perch (*Perca flavescens*). *Can. J. Fish Aquat. Sci.* (in press).

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Hontela A. 2004. Toxicology of the hypothalamo-pituitary-adrenal axis – effects of toxicants on structure and function. In: *Biochemistry and molecular biology of fishes, environmental toxicology*, Vol. 6, Eds. P.W. Hochachka and T.P. Mommsen, Elsevier, St. Louis, MO, USA (in press).

Hontela A. and A. Lacroix. 2004. Chap. 17 - Heavy metals. In: *Endocrine Disruptors: Biological basis for health effects in wildlife and humans*, Eds. J. Carr and D.O. Norris, Oxford University Press, Oxford, UK (in press).

Kamunde, C., S. Niyogi and C.M. Wood. 2004. Interaction of dietary sodium chloride and waterborne copper in rainbow trout: sodium and chloride homeostasis, copper homeostasis, and chronic copper toxicity. *Can. J. Fish. Aquat. Sci.* (in press).

Kamunde, C. and C.M. Wood. 2004. Environmental chemistry, physiological homeostasis, toxicology, and environmental regulation of copper, an essential element in freshwater fish. *Aust. J. Ecotox.* (in press).

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<sup>3</sup> Names of collaborators from government or industry partners are highlighted.

Kovacs, J., G.D. Sherwood and J.B. Rasmussen. 2004. Impacts of altered benthic invertebrate communities on the feeding ecology and growth of perch (*Perca flavescens*) in metal contaminated lakes. *Can. J. Fish. Aquat. Sci.* (in press).

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Niyogi, S., P. Couture, G.G. Pyle, D.G. McDonald and C.M. Wood. 2004. Acute cadmium biotic ligand model characteristics of laboratory-reared and wild yellow perch (*Perca flavescens*) relative to rainbow trout (*Oncorhynchus mykiss*). *Can. J. Fish. Aquat. Sci.* (in press).

Niyogi, S. and C.M. Wood. 2004. Kinetic analyses of waterborne calcium and cadmium transport and their interactions in the gills of rainbow trout (*Oncorhynchus mykiss*) and yellow perch (*Perca flavescens*), two fish species differing greatly in acute cadmium sensitivity. *J. Comp. Physiol.* (in press).

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Taylor, L.N., W.J. McFarlane, G.G. Pyle, P. Couture and D.G. McDonald. 2004. Use of performance indicators in evaluating chronic metal exposure in wild yellow perch (*Perca flavescens*). *Aquat. Toxicol.* (in press).

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Chan, H.M., A.M. Scheuhammer, A. Ferran, C. Loupelle, J. Holloway and S. Weech. 2003. Impacts of mercury on freshwater fish-eating wildlife and humans. *Human Ecol. Risk Assess.* 9: 867-883.

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Levesque H., J. Dorval, G.J. Van Der Kraak, P.G.C. Campbell and A. Hontela. 2003. Hormonal, morphological and physiological responses of yellow perch (*Perca flavescens*) to chronic environmental metal exposures. *J. Toxicol. Environ. Health* 66: 657-676.

Niyogi, S. and C.M. Wood. 2003. Effects of chronic waterborne and dietary metal exposures on gill metal-binding: implications for the Biotic Ligand Model. *Human Ecol. Risk Assess.* 9: 813-846.

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Taylor, L.N., D.W. Baker, C.M. Wood and D.G. McDonald. 2002. An *in vitro* approach for modelling branchial copper binding in rainbow trout. *Comp. Biochem. Physiol.* 133C: 111-124.

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Zohouri, M.A., G.G. Pyle, C.M. Wood. 2001. Dietary Ca inhibits waterborne Cd uptake in Cd-exposed rainbow trout, *Oncorhynchus mykiss*. *Comp. Biochem. Physiol.* 130C: 347-356.

### **2000**

Laflamme, J.S., Y. Couillard, P.G.C. Campbell and A. Hontela. 2000. Interrenal metallothionein and cortisol secretion in relation to Cd, Cu, and Zn exposure in yellow perch, *Perca flavescens*, from Abitibi lakes. *Can. J. Fish. Aquat. Sci.* 57: 1692-1700.

Sherwood, G.D., J.B. Rasmussen, D.J. Rowan, J. Brodeur, A. Hontela. 2000. Bioenergetic costs of heavy metal exposure in yellow perch (*Perca flavescens*): *in situ* estimates with a radiotracer (<sup>137</sup>Cs) technique. *Can. J. Fish. Aquat. Sci.* 57: 441-450.

## **REPORTS**

### **2000**

**Borgmann, U.**, D.G. Dixon and W.P. Norwood, 2000. Metal bioavailability and toxicity in sediments from lakes near Rouyn-Noranda and identification of the cause of toxicity. NWRI Contribution No. 00-066.

## **CONFERENCE PRESENTATIONS**

### **2004**

Bakhtiari M., G.C. Pyle and P. Couture. 2004. Physiological changes during metal depuration in wild yellow perch (*Perca flavescens*). 14th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC – Europe), April; Prague, Czech Republic.

Campbell, P.G.C., A. Giguère, E. Bonneris and L. Hare. 2004. Cadmium-handling strategies in two chronically exposed indigenous freshwater organisms – the yellow perch (*Perca flavescens*) and the floater mollusc (*Pyganodon grandis*). 14th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC – Europe), April; Prague, Czech Republic.

Couture, P., J.W. Rajotte and G. Pyle. 2004. Effects of diet, size and season on tissue metal accumulation and condition indicators in wild yellow perch (*Perca flavescens*) from polymetallic gradients. 14th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC – Europe), April; Prague, Czech Republic.

Hontela A., A. Lacroix, A. Gravel, M.C. Tardif, B. Goulet, P.G.C. Campbell and J. Dorval. 2004. Across-species comparison of sensitivity to adrenotoxic chemicals in fish and amphibians. 14th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC – Europe), April; Prague, Czech Republic.

Kent, R., S. Niyogi and C.M. Wood. 2004. A biotic ligand model approach to acute cadmium toxicity in rainbow trout. 13<sup>th</sup> Annual Fish Physiology & Biochemistry Workshop, February; Keene, Ontario.

Niyogi, S. and C.M. Wood. 2004. Can the acute Biotic Ligand Model approach for Cd, developed in a model sensitive salmonids, be extended to a resistant percid? 14th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC – Europe), April; Prague, Czech Republic.

### **2003**

Campbell, P.G.C., A. Giguère, E. Bonneris and Y. Couillard. 2003. Metal accumulation and detoxification in aquatic organisms. 39th IUPAC Congress and 86th Conference of the Canadian Society for Chemistry, August; Ottawa, Ontario.

Couture, P. and J.W. Rajotte. 2003. Factors influencing aerobic and anaerobic capacities in yellow perch from metal-contaminated environments. 133<sup>rd</sup> Annual Meeting of the American Fisheries Society, August; Québec, Québec.

Couture, P., G.G. Pyle and J.W. Rajotte. 2003. Indicators of chronic metal stress in wild yellow perch from metal-contaminated environments. Sudbury 2003, Mining and Environment Conference, May; Sudbury, Ontario.

Couture, P., G.G. Pyle and J.W. Rajotte. 2003. Natural and pollution-induced variability of tissue metabolic capacities in wild percids. 42<sup>th</sup> Annual Meeting of the Canadian Society of Zoologists, Wilfrid Laurier University, May; Waterloo, Ontario.

Giguère, A., E. Bonneris, P.G.C. Campbell and L. Hare. 2003. Metal detoxification strategies and antioxidant defenses in a bivalve and a fish exposed to Cd, Cu, Zn and Ni in the field. 24th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Austin, TX, USA.

Giguère A., P.G.C. Campbell, L. Hare, C. Cossu-Leguille, P. Couture, D. G. McDonald and J.B. Rasmussen. 2003. Metal detoxification and antioxidant defences in indigenous yellow perch exposed to Cd, Cu, Zn and Ni. 30th Aquatic Toxicity Workshop, September; Ottawa, Ontario.

Kraemer L. and P.G.C. Campbell. 2003. Cadmium accumulation and subcellular partitioning in transplanted juvenile yellow perch (*Perca flavescens*). 42<sup>th</sup> Annual Meeting of the Canadian Society of Zoologists, Wilfrid Laurier University, May; Waterloo, Ontario.

Kraemer L., P.G.C. Campbell and L. Hare. 2003. Cadmium accumulation and subcellular partitioning in yellow perch (*Perca flavescens*). 24th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Austin, TX, USA. (Best student oral presentation award)

Kraemer L., P.G.C. Campbell and L. Hare. 2003. Cadmium dynamics in yellow perch (*Perca flavescens*) following transplantation to a metal-contaminated lake. 30th Aquatic Toxicity Workshop, September; Ottawa, Ontario.

Norwood, W.P., D.G. Dixon and U. Borgmann. 2003. Bioaccumulation of metals by *Hyaella azteca*: Which models best describe accumulation? 30th Aquatic Toxicity Workshop, September; Ottawa, Ontario.

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## **2002**

Baldisserotto, B., C. Kamunde, A. Matuso and C.M. Wood. 2002. Effect of calcium in the diet on cadmium and calcium uptake kinetics. 23rd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

Gravel A., P.G.C. Campbell and A. Hontela. 2002. Disruption of the hypothalamo-pituitary-interrenal axis in 1+ and YOY yellow perch exposed to metals. 41<sup>st</sup> Annual Meeting Canadian Society of Zoologists, May; Lethbridge, Alberta.

Grosell, M., P.J. Walsh and C.M. Wood. 2002. Mechanisms of copper uptake across fish gills. 3<sup>rd</sup> Intern. Meeting on Copper Homeostasis and its Disorders: Molecular and Cellular Aspects, October; Ischia, Italy.

Ho, C.G., K.A. Sloman, C.M. Wood and D.G. McDonald. 2002. What you think should happen doesn't: the cadmium mystery. 11<sup>th</sup> Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

Ho, C.G., K.A. Sloman, C.M. Wood and D.G. McDonald. 2002. Modification of waterborne Cd toxicity of rainbow trout through ration quantity. 41<sup>st</sup> Annual Meeting of the Canadian Society of Zoologists, May; Lethbridge, Alberta.

Hontela A. and A. Lacroix. 2002. Effects of metals and pesticides on the signalling pathways leading to cortisol in teleost fish. 41<sup>st</sup> Annual Meeting, Canadian Society of Zoologists, May; Lethbridge, Alberta.

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Kamunde, C. and C.M. Wood. 2002. Dietary versus waterborne exposure in rainbow trout: uptake and turnover during acclimation to waterborne copper. 23rd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

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Lacroix A. and A. Hontela. 2002. Toxicity of Cd in steroidogenic adrenal cells of yellow perch and rainbow trout - *in vitro* model for assessing differences in sensitivity. Society Experimental Biology, April; Swansea, UK.

Matsuo, A., R.C. Playle, A.L. Val and C.M. Wood. 2002. Kinetics of Na<sup>+</sup> uptake in rainbow trout exposed to copper and dissolved organic matter. 23rd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

Niyogi, S., C. Kamunde, D.G. McDonald and C.M. Wood. 2002. Interaction between sublethal waterborne Cu and feeding pattern in fish: physiological implications. 23rd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

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Nowierski, M., J. Schroeder, W.P. Norwood, D.G. Dixon and U. Borgmann. 2002. Predicting metal and metal mixture effects in Aquatic Biota. Platform, 7<sup>th</sup> Annual Laurentian Chapter of SETAC meeting, May; Guelph, Ontario.

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Schroeder, J., U. Borgmann and D.G. Dixon. 2002. Modelling Toxicity of Nickel to *Hyalella azteca* using a Biotic Ligand Model Approach. 23rd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Salt Lake City, UT, USA.

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Wood, C.M., C. Kamunde, J. McGeer, M. Grosell and D.G. McDonald. 2002. Copper toxicity and homeostasis in freshwater fish. 3<sup>rd</sup> International Meeting on Copper Homeostasis and its Disorders: Molecular and Cellular Aspects, October; Ischia, Italy.

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## **2001**

Giguère, A., P.G.C. Campbell, L. Hare, A. Hontela and J.B. Rasmussen. 2001. Partitioning of metals (Cd, Cu, Ni, Pb, Zn) among various tissues in indigenous yellow perch (*Perca flavescens*) collected along a polymetallic environmental gradient. 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

Giguère, A., P.G.C. Campbell, T. Jenniard Du Dot and L. Hare. 2001. Metal partitioning at the organ and subcellular levels in indigenous yellow perch. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Gravel, A., P.G.C. Campbell and A. Hontela. 2001. Sensitivity of the hypothalamo-pituitary-interrenal axis of young yellow perch, *Perca flavescens*, to cadmium. 40<sup>th</sup> Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Gravel, A., P.G.C. Campbell and A. Hontela. 2001. Sensitivity of the hypothalamo-hypophyso-interrenal axis to Cd: comparison of young and adult yellow perch, *Perca flavescens*. 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

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Ho, C.G., C.M. Wood and D.G. McDonald. 2001. The interaction of ration and waterborne cadmium exposure in rainbow trout (*Oncorhynchus mykiss*). 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Kamunde C., C. Clayton and C.M. Wood. 2001. Copper homeostasis in fish: interactions between dietary and waterborne uptake. 10<sup>th</sup> Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

Kamunde C., G. Pyle, C. Clayton, D.G. McDonald and C.M. Wood. 2001. Ionoregulatory responses of rainbow trout (*Oncorhynchus mykiss*) during dietary salt intake and waterborne Cu exposure. Annual Meeting Society for Experimental Biology, April; Canterbury, UK.

Kamunde C., C. Clayton and C.M. Wood. 2001. Interactions between dietary and waterborne copper in fish: effects of waterborne Cu acclimation. 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Kamunde C., C. Clayton, G. Pyle G., D.G. McDonald and C.M. Wood. 2001. Effect of dietary quality on copper uptake in rainbow trout. 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

Kamunde C.N., G. Pyle, D.G. McDonald and C.M. Wood. 2001. Assessment of the modifying role of diet-variables on toxicity of dietary and waterborne Cu in fish. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Lacroix, A. and A. Hontela. 2001. Role of calcium channels in Cd-induced disruption of cortisol secretion in teleost adrenocortical cells. 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Leblond, V., J.P. Chang and A. Hontela. 2001. Purification of cortisol-secreting cells from rainbow trout (*Oncorhynchus mykiss*) and effects of exposure to metals. 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Levesque H.M., J. Dorval, G. Van Der Kraak, P.G.C. Campbell and A. Hontela. 2001. Hormonal, morphological and physiological responses of yellow perch (*Perca flavescens*) to chronic environmental metal exposures. 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

Levesque, H.M., T. Moon, P.G.C. Campbell and A. Hontela. 2001. Seasonal variation in carbohydrate and lipid metabolism of cortisol-impaired metal-exposed yellow perch (*Perca flavescens*). 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

McDonald D.G. 2001. Metal homeostasis and toxicity in freshwater fish. In: Living with Metals. Biological insights from studying the interactions between metals and life. 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

McGeer, J.C., L.N. Taylor, D.G. McDonald and C.M. Wood. 2001. The application of biotic ligand modeling approaches for the chronic effects of waterborne metals. 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

McGeer, J.C., L.N. Taylor, L. Hollis, D. Alsop, D.G. McDonald and C.M. Wood. 2001. Biotic Ligand Modeling for the chronic effects of waterborne metals. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Niyogi, S., G. Pyle, L. Taylor, P. Couture, C.M. Wood and D.G. McDonald. 2001. A comparative study on the tolerance and accumulation to acute Cd exposure in yellow perch, *Perca flavescens*, collected from four lakes in the vicinity of Sudbury, Ontario. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Norwood, W.P., D.G. Dixon and U. Borgmann. 2001. Bioaccumulation and chronic toxicity (critical body concentrations) of metals in *Hyalella azteca*. An ecological risk assessment tool. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Norwood, W.P., D.G. Dixon and U. Borgmann. 2001. Determination of bioaccumulation and chronic toxicity (critical body concentrations) of As, Co, Cr and Mn in *Hyalella azteca* together with a summary of seven other metals. 28th Aquatic Toxicity Workshop, September; Winnipeg, Manitoba.

Nowierski, M., D.G. Dixon and U. Borgmann. 2001. Effects of water source on metal bioavailability and toxicity from field collected sediments. 28th Aquatic Toxicity Workshop, September; Winnipeg, Manitoba.

Schroeder, J., U. Borgmann and D.G. Dixon. 2001. Creating a model to predict metal toxicity to Invertebrates. 28th Aquatic Toxicity Workshop, September; Winnipeg, Manitoba.

Schroeder, J., U. Borgmann and D.G. Dixon. 2001. Acclimation of *Hyaella azteca* to different media prior to short-term nickel exposure. Effects on toxicity. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Schroeder, J., U. Borgmann and D.G. Dixon. 2001. Nickel accumulation by *Hyaella azteca* in different media after 7-day exposures: Estimation of binding constants. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Taylor, L.N., V.L. Lougheed, C.M. Wood and D.G. McDonald. 2001. Individual variation and copper toxicity in juvenile rainbow trout (*Oncorhynchus mykiss*). 10th Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

Taylor, L.N., V.L. Lougheed, C.M. Wood and D.G. McDonald. 2001. Using individual variation as a tool in determining the toxic effects of waterborne copper on rainbow trout (*Oncorhynchus mykiss*). 40th Annual Meeting Canadian Society of Zoologists, May; Sudbury, Ontario.

Taylor, L.N., C.M. Wood and D.G. McDonald. 2001. Can the gill copper binding explain the differences in copper toxicity between two disparate species, yellow perch (*Perca flavescens*) and rainbow trout (*Oncorhynchus mykiss*)? 6th Internat. Conference Biogeochemistry Trace Elements (ICOBTE), July; Guelph, Ontario.

Taylor, L.N., C.M. Wood and D.G. McDonald. 2001. An *in vitro* gill binding method for assessing copper toxicity. 22nd Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Baltimore, MD, USA.

Wood, C.M. 2001. Copper metabolism and homeostasis: the fish as a model system. International Copper Association Symposium, Copper and Human Health, April; Santa Fe, NM, USA.

## **2000**

Fortin, C., B. Vigneault, Y. Couillard and P.G.C. Campbell. 2000. Dosage du cadmium, cuivre et zinc libre ( $M^{2+}$ ) dans la colonne d'eau par échange ionique et dialyse *in situ* : un survol des lacs de Rouyn-Noranda. 4e Colloque Chapitre St-Laurent (SETAC), June; Québec, Québec.

Giguère, A., J.S. Laflamme, Y. Couillard, P.G.C. Campbell and A. Hontela. 2000. Accumulation and subcellular partitioning of metals (Cd, Cu, Zn) in indigenous aquatic organisms sampled along an environmental metal gradient. 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Holloway, J.C., H.M. Chan and A.M. Scheuhammer. 2000. Immune function in birds exposed to dietary methylmercury. 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Hontela, A. 2000. Impaired adrenal steroidogenesis in fish chronically exposed to environmental xenobiotics. International Congress of Fish Biology, July; Aberdeen, Scotland.

Hontela, A., V. Leblond, P.G.C. Campbell, G.D. Sherwood and J. Rasmussen. 2000. Effets des métaux sur la stéroïdogénèse adrénale et la fonction physiologique chez les poissons. 4<sup>e</sup> Colloque Chapitre St-Laurent (SETAC), June; Québec, Québec.

Kamunde, C.N. and C.M. Wood. 2000. Dietary and waterborne copper exposure in fish: interactions and implications for the biotic ligand model and risk assessment. 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Kamunde, C.N. and C.M. Wood. 2000. Physiological responses of rainbow trout to sublethal dietary copper exposure. 39th Annual Meeting Canadian Society of Zoologists, May; St. Andrews, New Brunswick.

Kovesces J. and J.B. Rasmussen. 2000. The impacts of metals on lake invertebrate communities along a metal pollution gradient. 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Levesque H., P.G.C. Campbell, T.W. Moon and A. Hontela. 2000. Seasonal variation in metabolic enzymes of cortisol-impaired yellow perch (*Perca flavescens*) exposed to an environmental metal gradient. 39<sup>th</sup> Annual Meeting Canadian Society of Zoologists, May; St. Andrews, New Brunswick.

Levesque, H., A. Hontela and T.W. Moon. 2000. Variation saisonnière du statut et des enzymes métaboliques chez la perchaude (*Perca flavescens*) exposée aux métaux lourds dans la région minière d'Abitibi. 4e Colloque Chapitre St-Laurent (SETAC), June; Québec, Québec.

Levesque H., T.W. Moon, G.J. Van Der Kraak, P.G.C. Campbell and A. Hontela. 2000. Seasonal variation of intermediary metabolism and hormonal status of adult yellow perch (*Perca flavescens*) chronically exposed to metals. 27th Aquatic Toxicity Workshop, October; St. John's, Newfoundland.

McDonald, D.G. 2000. Metal uptake by gills and gut of fish. 4th Intern. Symposium on Speciation of Elements in Biological, Environmental and Toxicological Sciences. June; Whistler, British Columbia.

Pyle, G.G., C.M. Wood and D.G. McDonald. 2000. Acute copper accumulation by rainbow trout and yellow perch: Implications for biotic ligand modelling. 9th Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

Pyle, G.G., C.M. Wood and D.G. McDonald. 2000. Comparing copper uptake, distribution, and toxicity between a sensitive (*Oncorhynchus mykiss*) and tolerant (*Perca flavescens*) freshwater fish species. 39th Annual Meeting Canadian Society of Zoologists, May; St. Andrews, New Brunswick.

Schroeder, J., U. Borgmann and D.G. Dixon. 2000. Creating a model for predicting metal toxicity to invertebrates. 27th Aquatic Toxicity Workshop, October; St. John's, Newfoundland.

Sherwood G.D., J.B. Rasmussen and A. Hontela. 2000. Elevated activity costs due to metal exposure in wild-living fish: insights from metabolic enzymes. 39th Annual Meeting Canadian Society of Zoologists, May; St. Andrews, New Brunswick.

Sherwood G.D., J. Kovacs, A. Hontela and J.B. Rasmussen. 2000. Simplified prey communities lead to energetic bottlenecks for yellow perch inhabiting metal-contaminated lakes. 27th Aquatic Toxicity Workshop, October; St. John's, Newfoundland (Best student oral presentation award).

Taylor, L.N., C.M. Wood and D.G. McDonald. 2000. Testing the biotic ligand model for copper using yellow perch (*Perca flavescens*) and rainbow trout (*Oncorhynchus mykiss*). 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Taylor, L.N., C.M. Wood and D.G. McDonald. 2000. Gill copper binding in yellow perch and rainbow trout. 9th Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

Weech, S.A. and A.M. Scheuhammer. 2000. DNA strand breakage in liver and blood of ring doves from chronic dietary exposure to methylmercury and selenium. 21st Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Nashville, TN, USA.

Wood, C.M. 2000. Ecotoxicología y homeostasis de cobre en peces dulceacuicolas: importancia de investigación básica en regulación de metales en ambientes acuáticos. XLIII Reunión Anual de la Sociedad de Biología de Chile, November; Pucon, Chile.

Wood, C.M. 2000. An integrated research program for studying the homeostasis, essentiality, and chronic toxicity of copper. Workshop on the Molecular Biology of Copper, International Copper Association, July; Washington, DC, USA.

Wood, C.M. 2000. Dietary toxicity of metals in freshwater fish. US EPA Workshop on Dietary Metal Toxicity, March; Duluth, Wisconsin, USA.

Wood, C.M. 2000. Copper homeostasis and toxicology – can extrapolation between mammals and fish help us? U.S. EPA Workshop on Species Extrapolation in Toxicology. October; Duluth, Wisconsin.

Wood, C.M., D.G. McDonald and J.C. McGeer, J.C. 2000. Copper homeostasis and toxicity in fish: interactions between waterborne and dietary exposure routes. Annual Symposium of the International Copper Association, April; Montebello, Québec.

## **1999**

Sherwood G.D., A. Hontela and J.B. Rasmussen. 1999. Partitioning the metabolic costs of heavy metals in wild fish using an enzymatic marker technique: addressing the «sick fish - sick community» question. 38th Annual Meeting Canadian Society of Zoologists, May; Ottawa, Ontario.

Taylor, L.N., J.C. McGeer, C.M. Wood and D.G. McDonald. 1999. Recent developments in the biotic ligand model for copper: an evaluation of the effects of pH, hardness and duration of exposure. 20th Annual Meeting Society of Environmental Toxicology and Chemistry (SETAC), November; Philadelphia, PA, USA.

Taylor, L.N., W.J. McFarlane, C.M. Wood and D.G. McDonald, D.G. 1999. Heavy metal exposure in yellow perch from the Sudbury Region. 8th Annual Fish Physiology and Biochemistry Workshop, February; Keene, Ontario.

## THESES

### **In Progress**

Bakhtiari, M. 2004. (M.Sc.) Title: Physiological changes and metal depuration in wild yellow perch (*Perca flavescens*) collected from clean and metal-contaminated environments under similar laboratory conditions. Dept. Biology, Laurentian University.

Gagnon, A. 2004. (M.Sc.) Title: Effets du cuivre sur la physiologie de la perchaude, *Perca flavescens*, et de la truite arc en ciel, *Oncorhynchus mykiss*: études *in vitro* et *in vivo*. Dépt. Sciences biologiques, Université du Québec à Montréal.

Kraemer, L. 2005. (Ph.D.) Title: Dynamics of metal uptake and depuration in yellow perch, *Perca flavescens*. INRS-ETE, Université du Québec.

Norwood, W.P. 2005. (Ph.D.) Title: Metal mixture toxicity to *Hyaella azteca*: relationships to body concentrations. Dept. of Biology, University of Waterloo.

Schroeder, J. 2005. (Ph.D.) Title: Development of a model to predict metal toxicity to *Hyaella azteca*. Dept. of Biology, University of Waterloo.

## **2004**

Ferran, A. 2004. (M.Sc.) Title: Mercury and selenium speciation and toxicity in common loons. Dept. Natural Resources Sciences, Macdonald College, McGill University.

Giguère A. 2004. (Ph.D.) Title: Accumulation et répartition subcellulaire des métaux (Cd, Cu, Ni, Zn) chez deux organismes aquatiques exposés à un gradient métallique en milieu naturel: liens avec des indicateurs de stress oxydant. INRS-ETE, Université du Québec.

Kent, R. 2004. (B.Sc.) Title: Effects of water chemistry and dietary calcium on gill-cadmium binding in rainbow trout: implications for acute cadmium BLM. Dept. Biology, McMaster University.

Lacroix, A. 2004. (Ph.D.) Title: Étude *in vitro* des mécanismes d'action du cadmium sur la stéroïdogénèse du cortisol chez les poissons. Dépt. des Sciences biologiques, Université du Québec à Montréal.

Matsuo, A. 2004. (Ph.D.) Title: Ecophysiological and ecotoxicological aspects in fish from the Rio Negro, Amazon, with an emphasis on ion regulation and the importance of humic material. Amazonas University, Manaus, Brazil.

### **2003**

Busby, P. 2003. (B.Sc.) Title: Variability of age, gender, and season on fish condition in wild yellow perch (*Perca flavescens*). Populations along a metal contamination gradient. Dept. Biology, Laurentian University.

Iles, A. 2003. (M.Sc.) Title: Indirect effects of metal-contamination on energetics of yellow perch (*Perca flavescens*) in Sudbury area lakes, resulting from food web simplification. Dept. Biology, McGill University.

Nowierski, M. 2003. (M.Sc.) Title: Sediment metal bioavailability and toxicity to the freshwater amphipod, *Hyalella azteca*. Dept. Biology, University of Waterloo.

Stewart, R. 2003. (B.Sc.) Ontogenetic changes in dietary and tissue metal concentration in wild yellow perch (*Perca flavescens*) from a metal contamination gradient. Dept. Biology, Laurentian University.

Weech, S. 2003. (Ph.D.) Title: Mercury in fish and fish-eating birds, with special reference to the Pinchi Lake region of British Columbia, Canada. Dept. Animal Science, University of British Columbia.

### **2002**

Gravel, A. 2002. (M.Sc.) Title: Sensibilité de l'axe hypothalamo-hypophysaire-interrénal des jeunes stades de poissons à une exposition *in vivo* et *in vitro* au cadmium. Dépt. Sciences biologiques, Université du Québec à Montréal.

Kamunde, C. 2002. (Ph.D.) Title: Copper metabolism in freshwater fish. Dept. Biology, McMaster University.

Kovecses, J. 2002. (M.Sc.) Title: Impacts of heavy metals on lake food webs: changes to the littoral benthic invertebrate communities and the consequences for yellow perch (*Perca flavescens*). Dept. Biology, McGill University.

Sherwood, G.D. 2002. (Ph.D.) Title: Fish energetics in polluted ecosystems. Dept. Biology, McGill University.

Taylor, L.N. 2002. (Ph.D.) Title: Indicators of copper toxicity in freshwater fish. Dept. Biology, McMaster University.

### **2001**

Holloway, J. 2001. (M.Sc.) Title: Investigation of white blood cell phagocytosis as a potential bio-marker of mercury immunotoxicity in birds. Dept. Natural Resource Sciences, Macdonald College, McGill University.

Levesque, H. 2001. (M.Sc.) Title: Effets des métaux traces sur le statut métabolique et hormonal de la perchaude (*Perca flavescens*). Dépt. Sciences biologiques, Université du Québec à Montréal.

### **2000**

Zohouri, A. 2000. (B.Sc.) Title: The influence of dietary calcium supplementation on the responses to waterborne cadmium in the rainbow trout (*Oncorhynchus mykiss*). Dept. Biology, McMaster University.

### **1999**

Laflamme, J.-S. 1999. (M.Sc.) Title: Réponse physiologique au stress et les mécanismes de détoxification cellulaire chez les poissons exposés aux métaux. Dépt. Sciences biologiques, Université du Québec à Montréal.

