

Ryan S.D. Calder

Curriculum vitae

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EDUCATION

- 2017 **ScD** **Environmental Health, Harvard T.H. Chan School of Public Health**
Dissertation: 'Hydroelectric Development and Indigenous Health in the Canadian North'. Advisor: Elsie M. Sunderland.
- 2012 **MASc** **Civil Engineering, Concordia University, Canada**
Thesis: "Water Quality Modeling, Risk Analysis and Decision-Making: an Integrated Study". Advisors: Samuel S. Li and Ketra A. Schmitt.
- 2010 **BEng** **Civil Engineering with distinction, Concordia University, Canada**

PROFESSIONAL POSITIONS

Duke University, Durham NC

- 2017 Postdoctoral associate, Department of Civil and Environmental Engineering, Pratt School of Engineering. Mentor: Mark E. Borsuk.

Harvard University, Cambridge MA

- 2017 Postdoctoral fellow, Harvard John A. Paulson School of Engineering and Applied Sciences. Mentor: Elsie M. Sunderland.

GHD, Montreal, Canada

- 2012 Engineer, environmental hydraulics (full-time).
2010-12 Junior engineer (full-time).
2008-10 Engineering technician (part-time).

Quebec Ministry of Environment, Sherbrooke, Canada

- 2007 Analyst, environmental hydraulics and municipal (full-time).

PEER-REVIEWED PUBLICATIONS

In preparation or under review

RSD Calder, AT Schartup and EM Sunderland. 'Effects of hydroelectric development and climate change on methylmercury levels in subarctic food webs' in preparation for *Environ Sci Technol*.

RSD Calder, S Bromage and EM Sunderland. 'Countervailing health risks of food consumption advisories for Labrador Inuit', *Environ Health Persp* (under review).

Published or accepted

- 2016 RSD Calder, AT Schartup, M Li, AP Valberg, PH Balcom and EM Sunderland. 'Future impacts of hydroelectric power development on methylmercury exposures of Canadian indigenous communities' in *Environ Sci Technol*, Vol. 50 (23), pp. 13115-22.

- 2015 AT Schartup, PH Balcom, AL Soerensen, KJ Gosnell, RSD Calder, RP Mason and EM Sunderland. 'Freshwater discharges drive high levels of methylmercury in Arctic marine biota' in *Proc Natl Acad Sci*, Vol. 112 (38), pp. 11789-94.
- 2015 RSD Calder and KA Schmitt. 'Decentralised drinking water regulation: risks, benefits and the hunt for equality in the Canadian context' in *Int J Water*, Vol. 9 (2), pp. 178–93.
- 2013 RSD Calder, L Yerushalmi and SS Li. 'Computational fluid dynamics model of a BioCAST multi-environment air-lift bioreactor' in *J Environ Eng*, Vol. 139 (6), pp. 849-63.
- 2010 RSD Calder and KA Schmitt. 'The Role of detection limits in drinking water regulation' in *Environ Sci Technol*, Vol. 44 (21), pp. 8008-14.

SELECT AWARDS AND SCHOLARSHIPS

- 2014-16 Canada Graduate Scholarship (CGS-D), Natural Sciences and Engineering Research Council of Canada (declined and accepted PGS-D for tenure outside Canada).
- 2014 Postgraduate Scholarship (B1), Fonds de recherche du Québec – nature et technologies (ranked first in earth, atmosphere and water sciences; declined).
- 2012-14 Horace W. Goldsmith Fellowship, Harvard University.
- 2011-12 Power Corporation of Canada Graduate Fellowship, Concordia University.
- 2011 Student Merit Award, Society for Risk Analysis Ecological Risk Assessment Specialty Group (sole winner).
- 2010-12 Graduate Scholarship, Fondation Universitaire Pierre Arbour.
- 2009 Steve Bonk Scholarship, Canadian Water & Wastewater Association (sole winner, national).

POLICY REPORTS

- 2016 AT Schartup, RSD Calder, M Li, PH Balcom, AP Valberg, J Ewald and EM Sunderland. 'Methylmercury' in A Durkalec, T Sheldon and T Bell (Eds.), Lake Melville: Avativut, Kanuittailinnivut. Scientific Report, pp. 49–61. Nain, Canada: Nunatsiavut Government.
- 2011 KA Schmitt and RSD Calder. 'Keeping drinking water safe and economically sustainable: understanding the drivers of regulatory change to create anticipatory drinking water policy' in *Engineering Dimensions*, Jan/Feb 2011, pp. 27–30.

LETTERS

- 2015 RSD Calder; J Liddie; EM Sunderland; S Shankar; K Tian; G Touloumes and C Wagner. Re: US EPA Science Advisory Board review of the Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources. Hydraulic Fracturing Review Advisory Panel. Docket ID EPA-HQ-OA-2015-0245.
- 2011 KA Schmitt and RSD Calder. Response to Comment on 'Role of detection limits in drinking water regulations' in *Environ Sci Technol*, Vol. 45 (2), p. 836.

INVITED AND CAMPUS TALKS

- 2017 'Forecasting human health risks of hydroelectric development', Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, PA.

- 2011 'Drinking water: studies in risk, technology and society', Centre for Engineering in Society, Concordia University, Canada.

CONFERENCE PARTICIPATION

Oral presentations

- 2016 RSD Calder, AT Schartup, M Li, AP Valberg, PH Balcom and EM Sunderland. 'Future impacts of hydroelectric power development on methylmercury exposures of Canadian indigenous communities', *Society of Environmental Toxicology and Chemistry*, Orlando FL.
- 2011 RSD Calder and KA Schmitt, 'Decision model for management of sewage plumes in a tidal environment', *Society for Risk Analysis*, Charleston SC.
- 2011 RSD Calder and KA Schmitt, 'Probabilistic risk assessment for management of sewage plumes in a tidal environment', *Canadian Association on Water Quality*, Quebec City, Canada.

Poster presentation

- 2017 RSD Calder, S. Bromage and EM Sunderland. 'Quantifying the health impacts of dietary fish consumption advisories for methylmercury among Inuit in Labrador', *International Conference on Mercury as a Global Pollutant*, Providence RI.

TEACHING EXPERIENCE

Harvard T.H. Chan School of Public Health, Boston MA

Water Pollution (graduate-level). Primary instructor (2017) and teaching assistant (2014).

Introduction to Environmental Health (graduate-level). Teaching assistant (2013, 2014).

Concordia University, Montreal, Canada

Risk Analysis for Information Systems Engineering (graduate-level). Teaching assistant (2011).

Mechanics of Materials (undergraduate). Teaching assistant (2010).

Departmental tutor on duty for core undergraduate civil engineering curriculum (2009, 2010).

SERVICE AND OUTREACH

Mentorship

Harvard College, Cambridge MA

2015–16 Harry Stone, S.B. 2016: primary supervision of senior thesis.

2013–14 Angela Jiang, S.B. 2017: primary supervision of research assistantship.

2013 Harvard College Global Health Review: graduate mentor.

Harvard T.H. Chan School of Public Health, Boston MA

2015 Madeleine Bartzak, MPH 2016: primary supervision of master's thesis.

Journal reviews

Environmental Science and Pollution Research (Springer).

SELECT MEDIA COVERAGE

Newspapers and magazines

- 2016 I Austen, 'Canada's Big Dams Produce Clean Energy, and High Levels of Mercury', *New York Times*, Nov. 10.
- 2016 J Sokol, 'How Dams Risk Poisoning Indigenous Diets', *The Atlantic*, Nov. 9.
- 2016 M Boone, 'Not Just Muskrat Falls: Harvard Study Identifies Higher Health Risk in 11 Other Hydro Projects', *CBC News*, Nov. 9.
- 2010 R Renner, 'Debunking the Detection Limit Myth', *Chemical & Engineering News*, Oct. 14.

Radio and television interviews

- 2016 CBC Radio One British Columbia. Daybreak North, Nov. 15.
- 2016 CBC Radio One North. *A New Day*, Nov. 11.
- 2016 CBC Radio One Newfoundland & Labrador. *Labrador Morning*, Nov. 10.
- 2016 CBC TV Newfoundland & Labrador. *Here and Now*, Nov. 9.
- 2015 Radio-Canada Première : Le 6-à-9, Jul. 2.

INDEPENDENT CONSULTING

- 2017 Charles River Analytics for the United States Army. Development of fate and transport model for unexploded munitions in unsaturated soils.

SKILLS

Computer languages and software

Expert: R, MATLAB, MS Excel.

Advanced: Fortran, C++, Stata.

Intermediate: HTML, ArcGIS, QGIS, MPI, NetCDF, Analytica.

Languages

English and French: native fluency (written, read, spoken) with professional translation experience.

German and Czech: conversational/intermediate.

PERSONAL

Citizenship: Canada.

Work authorization: Canada, United States, United Kingdom.