Ryan S.D. Calder, ScD, PE

Curriculum vitæ

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Education

2017 **ScD** Environmental Health, Harvard T.H. Chan School of Public Health, Boston, MA

2012 **MASc** Civil Engineering, Concordia University, Montreal, Canada

2010 **BEng** Civil Engineering, Concordia University, Montreal, Canada

Academic appointments

Virginia Tech, Blacksburg, VA

Since 2020 Assistant Professor of Environmental Health and Policy, Dept. of Population Health Sciences
Assistant Professor of Health Sciences, Faculty of Health Sciences
Faculty Affiliate, Global Change Center
Faculty Affiliate, Center for Coastal Studies

Since 2022 Faculty Affiliate, Department of Civil and Environmental Engineering

Duke University, Durham, NC

Since 2020 Adjunct Assistant Professor, Dept. of Civil and Environmental Engineering
Nonresident Affiliate, Center on Risk

2017–20 Postdoctoral Associate, Dept. of Civil and Environmental Engineering

Harvard University, Cambridge, MA

2017 Postdoctoral Fellow, Harvard John A. Paulson School of Engineering and Applied Sciences

2014–17 Fellow in Environmental Science and Engineering, Harvard John A. Paulson School of Engineering and Applied Sciences

Professional positions

GHD, Montreal, Canada

2008–12 Engineer (2012), Junior Engineer (2010–2012), Engineering Technician (2008–2010)

Quebec Ministry of Environment, Sherbrooke, Canada

2007 Analyst, Environmental Hydraulics

Refereed journal papers

Articles under review posted as preprints (* = student advisee)

2025 AM Gazar, C Jackson, G Mavrommati, RB Howarth & RSD Calder. 'Cost uncertainties and ecological impacts drive tradeoffs between electrical system decarbonization pathways in New England, U.S.A.', *EngrXiv.* ➥

2025 AT Schartup, AL Soerensen, RSD Calder & L-E Heimbürger-Boavida. 'Vertical distribution of methylmercury in the central Arctic Ocean explained by in situ methylation and demethylation', *Research Square.* ➥

2024 C Krapu, ME Borsuk & RSD Calder. 'Deep autoregressive modeling for land use cover', *arXiv.* ➥

Other articles under review (* = student advisee)

2025 RSD Calder, C Summa* & R Clark. 'Trauma registry data reveal major racial disparities in injuries from motor vehicle collisions among adults in Washington, D.C. from 2019 to 2023' (Under review).

2025 EA Matthews*, YX Goh, SL Hepp, J Liao & RSD Calder. 'Hotspots of bacterial pathogen abundance and exposure risk in the contiguous United States' (Under review).

Published articles (* = student advisee)

2024 KA Bourne*, RSD Calder, S Zuidema, CY Chen & ME Borsuk. 'Local land-use decisions drive losses in river biological integrity to 2099: Using machine learning to disentangle interacting drivers of ecological change in policy forecasts' in *Meteorol Appl*, vol. 32 (1): e70024. ➥

2024 AM Gazar*, ME Borsuk & RSD Calder. 'Causal inference to scope environmental impact assessment of renewable energy projects and test competing mental models of decarbonization' in *Environ Res: Infrastruct Sustain*, vol. 4 (4): 045005. ➥

2024 RSD Calder, E Dimanchev, S Cohen & RA McManamay. 'Decision support for United States–Canada energy integration is impaired by fragmentary environmental and electricity system modeling capacity' in *Environ Res: Infrastruct Sustain*, vol. 4 (3): 03002. ➥

2024 CC Carey, RSD Calder, RJ Figueiredo, RB Gramacy, ME Lofton, ME Schreiber & RQ Thomas. 'A framework for developing a real-time lake phytoplankton forecasting system to support water quality management in the face of global change' in *Ambio*. ➥

2023 RSD Calder & AT Schartup. 'Geohealth policy benefits are mediated by interacting natural, engineered, and social processes' in *GeoHealth*, vol. 7 (9): e2023GH000858. ➥
★ Editor's highlight

2023 RSD Calder, JL McDermid & SA Boudreau. 'Drivers of Atlantic herring decline and evidence basis for fisheries closures and rebuilding plans' in *Can J Fish Aquat Sci*, vol. 80 (4), pp. 663-675. ➥
★ Editor's choice

2022 RSD Calder, CS Robinson & ME Borsuk. 'Total social costs and benefits of long-distance hydropower transmission' in *Environ Sci Technol*, vol. 56 (24): 17510–17522. ➥

2021 T Allen, J Behr, A Bukvic, RSD Calder, [...] & JC Zinnert. 'Anticipating and adapting to the future impacts of climate change on the health, security and welfare of low elevation coastal zone communities in Southeastern USA' in *J Mar Sci Eng*, vol. 9 (11): 1196. ➥

2021 RSD Calder, C Grady, M Jeuland, CJ Kirchhoff, RL Hale & RL Muenich. 'COVID-19 reveals vulnerabilities of the food-energy-water nexus to viral pandemics' in *Environ Sci Technol Lett*, vol. 8 (8), pp. 606-615. ➥

2020 RSD Calder, A Alatorre, R Marx, V Mallampalli, SA Mason, LP Olander, M Jeuland & ME Borsuk. 'Graphical models and the challenge of evidence-based practice in development and sustainability' in *Environ Modell Softw*, vol. 130: 104734. ➥

2019 RSD Calder, C Shi, SA Mason, LP Olander & ME Borsuk. 'Forecasting ecosystem services to guide coastal wetland rehabilitation decisions' in *Ecosyst Serv*, vol. 39: 101007. ➥

2019 H Tallis, [...] RSD Calder, [...] & S Zobrist. 'Aligning evidence generation and use across health, development and environment' in *Curr Opin Env Sust*, vol. 39, pp. 81–93. ➥

2018 RSD Calder, S Bromage & EM Sunderland. 'Risk tradeoffs associated with traditional food advisories for Labrador Inuit' in *Environ Res*, vol. 168, pp. 496–506. ➥

2016 RSD Calder, AT Schartup, M Li, AP Valberg, PH Balcom & 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 & EM Sunderland. 'Freshwater discharges drive high levels of methylmercury in Arctic marine biota' in *Proc Natl Acad Sci USA*, vol. 112 (38), pp. 11789–94. ➥

2015 RSD Calder & 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 & 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 & KA Schmitt. 'The Role of detection limits in drinking water regulation' in *Environ Sci Technol*, vol. 44 (21), pp. 8008–14. ➥

Book chapters

2021 RSD Calder, AT Schartup, T Bell & EM Sunderland. 'Muskrat Falls, methylmercury, food security, and Canadian hydroelectric development' in Muskrat Falls: How a Mega Dam Became a Predatory Formation by S. Crocker & L. Moore (Eds.), St. John's, Canada: Memorial University Press, pp. 81-109. ➥

2019 RSD Calder. 'Coupled human-natural modeling for hydroelectric development: understanding the health impacts of America's renewable energy imports' in M. Valerino (Ed.). Case Studies on Energy Access Transitions in the Developing World. Durham, NC: Duke University, pp. 8–17. ➥

Policy engagement and outreach

Major policy reports

2020 RSD Calder, ME Borsuk & CS Robinson. 'Analysis of environmental and economic impacts of hydropower imports for New York City through 2050'. Report to the Quebec Ministry of International Relations and La Francophonie, Quebec City, Canada. ➥

2019 J Kagan, ME Borsuk, RSD Calder, M Creutzburg, SA Mason, LP Olander, A Plantinga & CS Robinson. 'Assessing ecosystem service benefits from military installations'. Report to the Strategic Environmental Research and Development Program, Dept. of Defense, Washington, D.C. ➥

2016 AT Schartup, RSD Calder, M Li, PH Balcom, AP Valberg, J Ewald & EM Sunderland. 'Methylmercury' in A Durkalec, T Sheldon & T Bell (Eds.), *Lake Melville: Avativut, Kanuittailinnivut: Scientific Report*, pp. 49–61. Nain, Canada: Nunatsiavut Government. ➥

Other reports, letters, and communications

2023 RSD Calder [co-signed by nine organizations and academic institutes and >650 members of the public]. 'Re: Urgent action needed on traffic violence in Washington, D.C.' Letter to the Council of the District of Columbia and several executive agencies. ➥

2015 RSD Calder, J Liddie, EM Sunderland, S Shankar, K Tian, G Touloumes & 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'. Letter to U.S. EPA Hydraulic Fracturing Review Advisory Panel. Docket ID EPA-HQ-OA-2015-0245. ➥

2011 KA Schmitt & RSD Calder. Response to Comment on 'Role of detection limits in drinking water regulations' in *Environ Sci Technol*, vol. 45 (2), p. 836. ➥

Written testimony (invited)

2023 RSD Calder. 'Re: Testimony on four bills: B25-421 ("License Suspension Reform"); B25-422 ("Automated Traffic Enforcement"); B25-425 ("Strengthening Traffic Enforcement, Education, and Responsibility ('STEER'))"; and B25-435 ("Fraudulent Vehicle Tag Enforcement")'. Letter to Councilmember Charles Allen, chairperson of Committee on Transportation and the Environment and Councilmember Brianne K. Nadeau, chairperson of the Committee on Public Works and Operations, Council of the District of Columbia. ➥

2023 RSD Calder. 'Re: Evidence basis for interventions in dangerous driving – follow-up to testimony of May 23, 2023'. Letter to Councilmember Charles Allen, chairperson of Committee on Transportation and the Environment, Council of the District of Columbia. ➥

2018 Multiple written submissions re: potential for methylmercury impacts (quantitative analysis and expert review) to the Independent Expert Advisory Committee on the Muskrat Falls hydroelectric project, Happy Valley – Goose Bay, Canada. ➥

Oral testimony and presentations (invited)

2023 'Urgent action needed on traffic violence in Washington, D.C.' Oral testimony to Traffic Enforcement Roundtable, Committee on Transportation and the Environment, Council of the District of Columbia. ➥

2020 'Analysis of environmental and economic impacts of hydropower imports for New York City through 2050'. Briefings to leadership of Hydro-Québec, the Quebec Ministry of International Relations and La Francophonie, the New York City Mayor's Office and the New York State Energy Research and Development Authority (NYSERDA).

2017–18 Multiple briefings and research presentations re: potential for methylmercury impacts to the Independent Expert Advisory Committee on the Muskrat Falls hydroelectric project, Happy Valley – Goose Bay, Canada.

Public writing

2023 RSD Calder. 'DC's traffic-safety policies have broken down. Here's how.' *Greater Greater Washington*, Washington, D.C. ➥

2019 RSD Calder. « Une mauvaise publicité pour l'hydroélectricité québécoise » ('Bad advertising for Quebec's hydropower'). *La Presse*, Montreal, Canada. ➥

2019 RSD Calder. 'Canada ignore Muskrat Falls at its own peril'. *The Telegram* (via *The Conversation*), St. John's, Canada. ➥

2011 KA Schmitt & 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. ➥

Research grants

Extramural

2025 RQ Thomas (PI), ME Schreiber (Co-I), CC Carey (Co-I) & RSD Calder (Co-I). 'RAISE: Building resilience to Earth system hazards: forecasting drinking water quality with real-time integrated catchment modeling'. Confronting Hazards, Impacts and Risks for a Resilient Planet program, National Science Foundation (grant no. 2438447). Funding through 2029 (expected). **$1,000,000**.

2023 CC Carey (PI), ME Schreiber (Co-I), RB Gramacy (Co-I), RQ Thomas (Co-I) & RSD Calder (Co-I). 'Applying rules of life to forecast emergent behavior of phytoplankton and advance water quality management'. Using the Rules of Life to Address Societal Challenges program, National Science Foundation (grant no. 2318861). Funding through 2027 (expected). **$2,076,344**.

2023-25 RSD Calder (PI), G Mavrommati & R Howarth. 'Deliberative Valuation and Integrated Modeling to Accelerate Equitable Decarbonization in New England'. Science To Achieve Results (STAR) Program, U.S. Environmental Protection Agency (grant no. 84055801). **$649,328**.

2022 ME Borsuk (PI), LP Olander, RSD Calder (co-I) & A Plantinga. 'Model-based tracking and integrated valuation of ecosystem services (MoTIVES) for military base land-use and land-management decisions'. Strategic Environmental Research and Development Program, U.S. Department of Defense (grant no. RC20-3054). Funding through 2026 (expected). **$1,999,772**.

2022-25 JM Gohlke (PI), B Zaitchik (co-I), S Swarup (co-I) & RSD Calder (co-I). 'Quantifying distributional health damages of extreme weather events'. Health and Air Quality Applications Program, NASA (grant no. 21-HAQ21-0034. **$1,075,537**.

2020 RSD Calder (co-PI) & ME Borsuk (co-PI). 'Analysis of environmental and economic impacts of hydropower imports for New York City through 2050'. Quebec Ministry of International Affairs and La Francophonie (grant no. SP1903210-2020-003). **$61,352**.

2019 R Muenich (PI), R Hale (PI), RSD Calder, B Hannibal, C Prasse, A Stillwell & B Thiede. 'Characterizing FEW system typologies across the continental U.S. for informed FEW research'. National Socio-Socio-Environmental Synthesis Center (pursuit funded through NSF grant no. DBI-1639145).

Intramural

2023 J Liao (PI), RSD Calder (co-I), L Zhang (Co-I). 'A nationwide investigation of sociodemographic disparities in the risks of exposure to soil bacterial pathogens in the United States'. Virginia Tech Institute for Society, Culture, and Environment Scholars Program. **$30,000**.

2021 N Ruktanonchai (PI), RSD Calder (PI) & O Saucedo (PI). 'Understanding food worker decisions during COVID-19 to minimize worker disease and food system disruption from future pandemics'. Virginia Tech Center for Emerging, Zoonotic and Arthropod-borne Diseases. **$19,989**.

2020 ME Borsuk (PI), SM Wilson (PI), MD Hendricks & RSD Calder. 'Building community resilience to natural-disaster-driven contaminant exposures through system-level risk analysis, management, and readiness'. United States Environmental Protection Agency (grant no. R840041, solicitation no. EPA-G2019-STAR-E1). Funding through 2023 (expected). **$799,736**.

2018 MA Jeuland (PI), ME Borsuk, K Bradbury, JM Malof, LP Olander, RSD Calder, TR Fetter & J Phillips. 'Practice Imperfect? Comparing expert and data-supported perspectives on the effect of energy access on social and economic development'. Catalyst Program, Duke University Nicholas Institute for Environmental Policy Solutions (grant no. 451-1592). **$19,840**.

Select awards and fellowships

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 to accept PGS-D award)

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)

Conference, seminar and workshop participation

Oral presentations at research conferences (* = student advisee speaker)

2024 EA Matthews*, Y-X Goh, S Hepp, J Liao & RSD Calder. 'Disparities in vulnerability to soil bacterial pathogen exposures in the contiguous United States revealed by remotely sensed and directly sampled data'. American Geophysical Union, Washington, D.C.

2024 RSD Calder. 'Identifying health trade-offs for policy-relevant geoscience and engineering research'. American Geophysical Union/American Meteorological Society Climate & Health Showcase. Online.

2023 RSD Calder & AT Schartup. 'Policy advice in geohealth must reflect natural, engineered, and social processes to avoid unintended consequences and enhance environmental justice'. (Invited.) American Geophysical Union, San Francisco, CA. ➥

2022 ME Borsuk, RSD Calder, M Creutzburg, JS Kagan, SA Mason, LP Olander, A Plantinga & CS Robinson. 'Integrated mechanistic and economic modeling of ecosystem services to inform land-use decisions under uncertainty'. A Community on Ecosystem Services (ACES), Washington, DC. ➥

2021 RSD Calder, C Grady, M Jeuland, CJ Kirchhoff, RL Hale, S Rodgers & RL Muenich. 'Increasing resiliency of integrated food-energy-water systems to viral pandemics: lessons from COVID-19'. American Geophysical Union, New Orleans, LA. ➥

2019 RSD Calder, K Bradbury, JM Malof, LP Olander, M Jeuland & ME Borsuk. 'Integrated modeling of food-energy-water systems: challenges and opportunities of quantitative graphical networks'. Food-Energy-Water Nexus, American Institute of Chemical Engineers, New York, NY. ➥

2019 J Kagan, ME Borsuk (co-presenter), RSD Calder, M Creutzburg, SA Mason, LP Olander & A Plantinga. 'Assessing ecosystem service benefits from military installations'. Strategic Environmental Research and Development Program Symposium, Washington, D.C. ➥

2018 C Shi, RSD Calder, SA Mason, LP Olander & ME Borsuk. 'Forecasting ecosystem services to guide coastal wetland rehabilitation decisions'. International Congress on Environmental Modelling and Software, Fort Collins, CO. ➥

2018 RSD Calder, AT Schartup, M Li, AP Valberg, PH Balcom, S Bromage & EM Sunderland. 'Forecasting human health impacts of reservoir creation and food consumption advisories: an integrated model to guide hydroelectric development'. Association for the Sciences of Limnology and Oceanography, Victoria, Canada. ➥

2016 RSD Calder, AT Schartup, M Li, AP Valberg, PH Balcom & 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 & KA Schmitt, 'Decision model for management of sewage plumes in a tidal environment'. *Society for Risk Analysis*, Charleston, SC.

2011 RSD Calder & KA Schmitt, 'Probabilistic risk assessment for management of sewage plumes in a tidal environment'. *Canadian Association on Water Quality*, Quebec City, Canada.

Oral presentations at research workshops

2023 RSD Calder, JL McDermid & SA Boudreau. 'Improving herring management via integrated modeling'. Gulf Science Seminar, Fisheries and Oceans Canada, Moncton, Canada and online.

2019 ME Borsuk, K Bourne, RSD Calder, CY Chen, RB Howarth (co-presenter), G Mavrommati, SH Rogers & S Zuidema. 'Deliberative valuation of watershed ecosystem services'. Water Quality Benefits Research Meeting, U.S. EPA, Ithaca, NY.

2017 ME Borsuk, RSD Calder, C Shi, SA Mason & LP Olander (co-presenter). 'Ecosystem services conceptual models'. San Francisco Bay National Estuarine Research Reserve, Tiburon, CA.

Oral presentations at departmental seminars

2025 Research seminar, San Francisco Estuary Institute, San Francisco, CA.

2024 Research seminar, Department of Environmental Studies, Dartmouth College, Hanover, NH.

2024 Flash talks, Global Change Center, Virginia Tech, Blacksburg, VA.

2024 Seminar Series, Biomedical and Veterinary Sciences Program, Virginia Tech, Blacksburg, VA.

2023 Seminar series, Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA.

2022 Flash talks, Ecological Forecasting Project, Virginia Tech, Blacksburg, VA.

2022 Environmental Engineering Seminar Series, Arizona State University, Tempe, AZ.

2019 Jones Seminar Series, Thayer School of Engineering, Dartmouth College, Hanover, NH. ➥

2017 Seminar series, Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, PA.

Poster presentations at research conferences (* = student advisee presenter)

2024 EA Matthews*, L Abowd, ME Borsuk, C Krapu, T Mangin, SA Mason, LP Olander, A Plantinga, K Warnell & RSD Calder. 'Modeling forest dynamics to characterize delivery of ecosystem services on military installations across the United States' at American Geophysical Union annual meeting, Washington, D.C.➥

2024 RSD Calder, S Timilsina, JM Gohlke, S Swarup & B Zaitchik. 'Resolving competing trends in vulnerability and coastal hazard frequency: implications for mortality forecasts'. American Geophysical Union, Washington, D.C. ➥

2024 MA Chowdhury*, CC Carey, RJ Figueiredo, RB Gramacy, K Hoffman, ME Lofton, RQ Thomas, ME Schreiber & RSD Calder. 'Identifying barriers and bridging gaps between researchers and decision makers in water quality modeling'. American Geophysical Union, Washington, D.C.➥

2024 MA Chowdhury*, ME Borsuk, CS Robinson, C Krapu & RSD Calder. 'Forecasting the impact of climate change on pathogen exposures from concentrated animal feeding operations' at American Geophysical Union annual meeting, Washington, D.C.➥

2024 AM Gazar*, RSD Calder, RB Howarth, CA Jackson, G Mavrommati. 'Integrating health, economic, and environmental trade-offs into decarbonization decision-making in New England using enhanced capacity expansion modeling' at American Society of Mechanical Engineers 18th International Conference on Energy Sustainability, Anaheim, CA. ➥

★ Outstanding poster award

2024 AM Gazar*, RSD Calder, RB Howarth, CA Jackson, G Mavrommati. 'Canadian hydroelectricity imports to the U.S.; modeling of hourly carbon emissions reduction in New England' at Doctoral Student Participatory Workshop on Climate & Energy Decision Making, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA.

2023 RSD Calder, ME Borsuk, AM Gazar, RB Howarth, C Jackson, G Mavrommati. 'Canadian hydropower and the U.S. energy transition: controversies, opportunities, and strategic research directions'. American Geophysical Union, San Francisco, CA. ➥

2022 AM Gazar* & RSD Calder. 'Causal inference to scope environmental impact assessment in multisector systems: the case of trans-border hydropower exports'. American Geophysical Union, Chicago, IL. ➥

2021 RSD Calder, CS Robinson & ME Borsuk. 'Decarbonization via long-distance transmission of hydropower is cost-effective'. American Geophysical Union, New Orleans, LA. ➥

2017 RSD Calder, S Bromage & 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.

Other panel and workshop participation

2025 'Health and Environmental Policy: Local to National'. +Policy Network, Virginia Tech, Blacksburg, VA. (Organizer and panelist.)

2022 'Muskrat Falls: How a Megadam became a Predatory Formation'. Author roundtable organized by Memorial University of Newfoundland, held online.

2019 'Building Effective Strategies for Co-production of Sustainability Science'. NAS Keck Futures Initiative, organized by the University of Minnesota, held in Durham, NC. (Invited participation.)

2018 'Long Run Sustainability of US Agriculture'. organized by Purdue University, held in Washington, D.C.

2018 'Data to Motivate Synthesis'. National Socio-Environmental Synthesis Center, Annapolis, MD. (Invited participation.)

2017 Bridge Collaborative Launch, The Nature Conservancy, London, UK. (Invited participation.)

2013 'ComSciCon' (Communication of Science Conference), Harvard University/Massachusetts Institute of Technology, Cambridge, MA.

Teaching experience

Virginia Tech, Blacksburg, VA

Introduction to Environmental Health (undergraduate, in-person): instructor (2024)

Environmental Health (graduate-level, in-person and online): instructor (annually since 2021)

Epidemiology and Quantitative Methods in Public Health Lab (graduate-level, in-person): instructor (2022-23)

Duke University, Durham NC

DeCIPHER – Decisions on Complex Interdisciplinary Problems of Health and Environmental Risk (undergraduate/graduate Bass Connections class): curriculum development and select lectures (2017-19)

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

Water Pollution (graduate-level): primary instructor (2017); teaching assistant (2014); guest lecturer (2018)

Introduction to Environmental Health (graduate-level): teaching assistant (2013–14)

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 (2009–10)

Service and outreach

Regulatory review

2022 Ad-hoc reviewer, Scientific Advisory Committee on Chemicals, U.S. Environmental Protection Agency

Extramural grant review

2025 NASA Health and Air Quality Program

Intramural grant and award review, Virginia Tech, Blacksburg, VA

2025 Judge, Student Platform Presentations, Interfaces of Global Change Graduate Research Symposium

2025 Rural Environmental Health NIH T32 Admissions Committee

2025 Reviewer, Internal Research Competition, Virginia-Maryland College of Veterinary Medicine

2022 Interfaces of Global Change Admissions Committee, Global Change Center

2022 Destination Area 2.0 Review Committee, Virginia Tech Provost's Office

2020–21 Judge, One Health Case Competition

Institutional committees at Virginia Tech, Blacksburg, VA

Since 2024 Research Committee, Virginia-Maryland College of Veterinary Medicine

2020–24 Chair and departmental representative, Library and Instructional Technology Committee, Virginia-Maryland College of Veterinary Medicine

2020–24 University Library Committee (College representative), Virginia Tech

2020–22 Public Interest Technology University Network (College representative), Virginia Tech

2020–21 National Security Institute Planning Committee (College representative), Virginia Tech

Other engagement and volunteer work

Since 2021 Faculty advisor, Virginia Scientist-Community Interface (V-SCI)

2018 Physics and mathematics judge, North Carolina Science and Engineering Fair

2013 Harvard College Global Health Review: graduate mentor

Journal reviews

Energy systems

Renewable and Sustainable Energy Reviews (Elsevier)

Environmental science and engineering

Ecological Economics (Elsevier); Ecosystem Services (Elsevier); Environment, Development and Sustainability (Springer); Environmental Modelling & Software (Elsevier); Environmental Research (Elsevier); Environmental Research Communications (IOP Science); Environmental Research: Infrastructure and Sustainability (IOP Science); Environmental Science and Pollution Research (Springer); Environmental Science & Technology (American Chemical Society); Environmental Science & Technology Letters (American Chemical Society); Frontiers in Ecology and the Environment (Wiley); Nature Communications (Nature Portfolio), PLOS Water (PLOS); Science of the Total Environment (Elsevier); Sustainability (MDPI); Sustainable Production and Consumption (Elsevier); Water (MDPI); Water Research (Elsevier)

Environmental policy

Environmental Science and Policy (Elsevier); Integrated Environmental Assessment and Management (Wiley); International Journal of Environmental Research and Public Health (MDPI); Journal of Environmental Management (Elsevier); Journal of Planning Education and Research (Sage)

Public health

Journal of Exposure Science & Environmental Epidemiology (Springer); Public Health Nutrition (Cambridge University Press); Risk Analysis (Wiley)

Conference proceedings reviews and committee service

Hawaii International Conference on System Sciences (University of Hawaii at Manoa, reviewer), IEEE International Symposium on Technology and Society (‘21, University of Windsor, Canada, technical committee member)

Research mentorship and supervision

Virginia Tech, Blacksburg VA

2024– Kathleen Hoffman, PhD (Biological Sciences) ’29: committee member

2024– Md Mahabub Chowdhury, PhD (Biomedical and Veterinary Sciences) ’29: primary advisor

2023– Emily Matthews, PhD (Civil and Environmental Engineering) ’28: primary advisor

2021–22 Ali Nakhli: postdoctoral mentor

2021– Amir M Gazar, PhD '26 (Biomedical and Veterinary Sciences): primary advisor

2021– Tolulope Adesoji, PhD '26 (Environmental Design and Planning): committee member

2021–22 Jarek Campbell, MS '22 (Geography): committee member

The George Washington University, Washington, D.C.

2024– Ali Aslam, DrPH '26 (Environmental Health): committee member

2023–24 Claire Summa, MPH '24

UMass Boston, Boston, MA

2024– Chloe Jackson, PhD '29 (Environmental Science): committee member

Duke University, Durham NC

2017–22 Kimberly Bourne, PhD '22 (Civil and Environmental Engineering): supervision of thesis chapter & committee member

2017–19 Andrea Alatorre, MEM '19: supervision of research assistantship

2017–19 Rebecca Marx, MEM '19: supervision of research assistantship

2017–18 Congjie Shi, MS '18: supervision of research assistantship

Harvard College, Cambridge MA

2015–16 Harry Stone, SB '16: primary supervision of senior thesis

2013–14 Angela Jiang, SB '17: primary supervision of research assistantship

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

2015 Madeleine Bartzak, MPH '16: primary supervision of master's thesis

MPH advising, Virginia Tech, Blacksburg, VA (* = practicum supervised)

2025– Dong Quan, MPH '26: faculty advisor

2025– Grace Ellett, MPH '26: faculty advisor

2023–25 Sadie Stott, MPH '25: faculty advisor*

2023–25 Andrew Schroff, MPH '25: faculty advisor*

2023–24 Annie Leap, MPH '24: faculty advisor*

2022–24 Mousa Alhafi, MPH '24: faculty advisor*

2022 Kari Furrow, MPH '22 Kevin Laoh, MPH '22 & Meaghan Chesley, MPH '22: Integrative Learning Experience supervisor

2021–22 Jake Fultz, MPH '23: faculty advisor

2021–22 Samuel Rodgers, MPH '23: faculty advisor

BSPH practicum supervision, Virginia Tech, Blacksburg, VA

2025 Tonya Tran, BSPH '25

2025 Catie Wasenko, BSPH '25

2025 Domenico Picciano, BSPH '25

2025 Raghad Alshami, BSPH '25

2022 Amanda Coleman, BSPH '22

Media interviews and coverage of work

Radio interviews

2016–21 CBC Radio One: Multiple appearances on programs in Newfoundland & Labrador, British Columbia and Northern Canada markets

2015 Radio-Canada Première : Le 6-à-9, Jul. 2.

Television appearance

2016 CBC TV Newfoundland & Labrador. Here and Now, Nov. 9.

Print and online publications (select)

2023 T Vargas, 'Letting bad drivers stay on the road is costing D.C. more than money'. *Washington Post*, May 10. ➥

2023 M Cogan, 'A fatal crash shows us everything that's wrong with traffic enforcement'. *Vox*, Sep. 21 ➥

2023 M Wilson, 'How a $6B transmission project made it in New York'. *E&E News*, Mar. 1. ➥

2020 T Roberts, 'Researcher raises Muskrat methylmercury alarm, but Nalcor contractor says levels safe'. *CBC News*, Nov. 24. ➥

2019 B White, 'Weighing the methylmercury risk: What researchers say about country food'. *CBC News*, Jul. 26. ➥

2019 S Cox, 'Mercury rising: how the Muskrat Falls dam threatens Inuit way of life'. *The Narwhal*, May 22. ➥

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. ➥

Skills

Computer languages and software

Expert: Analytica, R, MATLAB, MS Excel. *Advanced*: Stata, ArcGIS, QGIS; *Intermediate*: C++, Fortran, HTML, MPI, NetCDF, Python

Languages

Native fluency (written, read, spoken): English and French. *Conversational*: German, Czech

Professional memberships and licenses

Professional engineering licensure

Nevada Board of Professional Engineers and Land Surveyors, Reno, NV

Since 2020 Professional Engineer, Nevada, USA (license no. 02796)

Ordre des ingénieurs du Québec, Montreal, Canada

Since 2012 Professional Engineer, Quebec, Canada (license no. 5017602)

Engineers Canada, Ottawa, Canada

Since 2020 International Professional Engineer, Canada (license no. MR-00336)

Since 2020 APEC Engineer (license no. MR-00336)

Professional associations

Scholars Strategy Network, Cambridge, MA (NC and VA chapters, member since 2019); American Geophysical Union (member since 2021).

Personal

Nationality: Canada, United States