Tristan A. Smythe, Ph.D.

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EDUCATION

2024-PRESENT Postdoctoral Research Program, Environment and Climate Change Canada

Project: PFAS and chemical mixtures in three sentinel bird species in Southwestern Ontario: Advances in Targeted, Suspect, and Non-Targeted Screening Approaches for Environmental Monitoring. (Manager: Dr. Robert Letcher)

2017-2024 Ph.D.: Chemistry (specialization in Chemical and Environmental Toxicology), Carleton University (defended 11 Dec 2023)

Thesis: Environmental stability of the highly brominated flame retardant tetradecabromo-1,4-diphenoxybenzene: Degradation by-products and the linkage to breakdown contaminants in a Great Lakes avian model species. (Supervisor: Dr. Robert J. Letcher)
Note: Transitioned from a M.Sc. to Ph.D. in 2018.

2012-2017 B.Sc. (Hons): Chemistry (minors in microbiology, environmental science, and German language), University of Manitoba

Thesis: On the successors to polybrominated diphenyl ethers and their impacts on human thyroid homeostasis. (Supervisor: Dr. Gregg T. Tomy)

AWARDS AND SCHOLARSHIPS

University Medal for Outstanding Graduate Work – Doctoral MEDIA COVERAGE *Carleton Chemistry News, "Tristan Smythe recipient of the University Medal for Outstanding Graduate Work – Doctoral" (2024-07-02)*	-	2024
J. W. ApSimon Graduate Award, Carleton University	$2523	2020
Academic Staff Association Scholarship, Carleton University	$4000	2019-20
Student Meeting Attendance Grant, Society of Environmental Toxicology and Chemistry North America	$1000 USD	2019
Natural Sciences and Engineering Research Council Canada Graduate Scholarship – Doctoral-3, Carleton University	$105 000	2018-21
Best Oral Presentation – PhD Student, NSERC-CREATE REACT Symposium	$200	2018-19
Presidential Citation, Society of Environmental Toxicology and Chemistry North America	-	2018-19
Arnold C. Bradley Scholarship in Chemistry, Carleton University	$3000	2018
David and Rachel Epstein Scholarship, Carleton University	$1000	2018

Fluorosense Inc. Scholarship, Carleton University	$5000	2018
Natural Sciences and Engineering Research Council Canada Graduate Scholarship – Master's, Carleton University	$17 500	2017
Natural Sciences and Engineering Research Council Canada Graduate Scholarship – Master's, University of Saskatchewan (*Declined*)	$17 500	2017
1st Place, Best Student Platform (Undergraduate), Society of Environmental Toxicology and Chemistry North America	$300 USD	2017
Student Meeting Attendance Grant, Society of Environmental Toxicology and Chemistry North America	$970 USD	2017
Emmett Dunne Scholarship, Carleton University	$2000	2017
Best Speaker (Undergraduate) – Environmental Chemistry Division, Canadian Chemical Conference and Exhibition (CSC 2017)	$250	2017
Graduation with First Class Honours, University of Manitoba	-	2017
Society of Chemical Industry Merit Award, University of Manitoba	-	2017
Department of Chemistry Teaching Assistance Award, University of Manitoba	-	2016
Students' Teacher Recognition Reception (STRR) Award, University of Manitoba	-	2016

MEDIA COVERAGE
Reception Recorded and posted on umanitoba.ca: https://umanitoba.ca/about-um/provost-vice-president-academic/supports-and-resources-faculty/students-teacher#2016 *(2016-07-12)*

Student Exchange Scholarship to the Japan-Canada Academic Consortium (JACAC) Student Forum, Japan Student Services Organisation (JASSO)	¥ 80 000 JPY	2016
Undergraduate Student Travel Grant, University of Manitoba	$1200	2015-16
Peter Letkeman Scholarship in Chemistry, University of Manitoba	$1200	2015
Instrumental Analysis Award, University of Manitoba	$250	2015
Undergraduate Summer Research Award, University of Manitoba	$13 500	2014-16
Hugh J. Anderson Undergraduate Scholarship in Chemistry, University of Manitoba	$390	2014
Financial Aid & Awards Merit Scholarship, University of Manitoba	$500	2014
Reverend Joseph Hogg Scholarship, University of Manitoba	$1500	2013-15
Merit Award, University of Manitoba	$1000	2013
University of Manitoba Student's Union Scholarship	$750	2013
President's Scholarship, University of Manitoba	$4000	2012
Isabel Auld Entrance Scholarship, University of Manitoba	$20 000	2012-16
Advanced Placement National Scholar Canada	$1650	2012
Governor General's Academic Bronze Medal, River East Collegiate	-	2012

REFEREED PUBLICATIONS

In preparation:

Smythe, T. A.; Chu, S.; Choy, E.; Fernie, K.; de Solla, S. R.; Letcher, R. J. Southwestern Ontario inter-species comparisons of avian-PFAS uptake, exposure, and metabolism as determined by targeted and non-targeted screening of their eggs.

Steckley, H.; Mastin, J.; **Smythe, T. A.**; Fernie, K.; de Solla, S. R.; Saini, A.; Hewitt, L. M.; Harner, T.; Letcher, R. J.; et al. A multi-media assessment of chemical mixtures in the Sarnia and Brantford Ontario areas.

Smythe, T. A.; Letcher, R. J. In silico molecular docking and quantitative structure activity relationships for the cytochrome P450-mediated biotransformation of methoxylated polybrominated diphenoxybenzenes.

Published:

8. Chu, S.; de Solla, S. R.; **Smythe, T. A.**; Eng, M.; Lavoie, R.; Letcher, R. J. Per- and polyfluoroalkyl substance profiles revealed by targeted and non-targeted screening in European Starling eggs from sites across Canada. *Environ. Pollut.* **2025**, *376*, 126414.

7. **Smythe, T. A.**; Gauthier, L.; Letcher, R. J. Dietary and terrestrial exposure to methoxylated polybrominated diphenoxybenzene contaminants in Great Lakes Herring Gulls. *Chemosphere*. **2024**, *367*, 143649.

6. Sesin, V.; Judy, J. D.; Kaputska, L.; Opeolu, B.; Ottinger, M. A.; Bertsch, P. M.; Wang, Y.; Lazorchak, J.; **Smythe, T. A.**; Stahl, R. G. The Importance of Fostering and Funding Scientific Research and Its Relevance to Environmental Toxicology and Chemistry. *Environ. Toxicol. Chem.* **2022**, *42* (3), 581-593.

5. **Smythe, T. A.**; Su, G.; Bergman, Å.; Letcher, R. J. Metabolic transformation of environmentally-relevant brominated flame retardants in Fauna: A Review. *Environ. Int.* **2022**, *161*, 107097.

4. **Smythe, T. A.**; Mattioli, L. C.; Letcher, R. J. Distribution behaviour in body compartments and in ovo transfer of flame retardants in North American Great Lakes herring gulls. *Environ. Pollut.* **2020**, *262*, 114306.

3. **Smythe, T. A.**; Loseto, L. L.; Bignert, A.; Rosenberg, B.; Budakowski, W.; Halldorson, T.; Pleskach, K.; Tomy, G. T. Temporal Trends of Brominated and Fluorinated Contaminants in Canadian Arctic Beluga (*Delphinapterus leucas*). *Arctic Science*. **2018**, *4* (3), 388-404.

2. **Smythe, T. A.**; Butt, C. M.; Stapleton, H. M.; Pleskach, K.; Ratnayake, G.; Song, CY.; Riddell, N.; Konstantinov, A.; Tomy, G. T. Impacts of Unregulated Novel Brominated Flame Retardants on Human Liver Thyroid Deiodination and Sulfotransferation. *Environ. Sci. Technol.* **2017**, *51* (12), 7245-7253.

1. Bodnar, E.; Ferreira Nascimento, T.; Girard, L.; Komatsu, E.; Lopez, P.; Oliveira, A.; Roy, R.; **Smythe, T.**; Spearman, M.; Tayi, V.; Zogbi, Y.; Butler, M.; Perreault, H. An Integrated Approach to Analyze Eg2-hFc monoclonal antibody N-Glycosylation by MALDI-MS. *Can. J. Chem.* **2015**, *93*, 754-763.

RESEARCH REPORTS

Steckley, H.; Mastin, J.; **Smythe, T.**; André, C.; Crump, D.; De Silva, A.; de Solla, S.; Dominique, M.; Fernie, K.; Galarneau, E.; Hayden, K.; Hughes, K.; Moussa, S.; O'Brien, J.; Pilote, M.; Princz, J.; Reeser, S.; Robinson, S.; Rochfort, Q.; Saini, A.; Smith, D.; Su, Y.; Taranu, Z.; Zapata-Marin, S.; Harner, T.; Hewitt, L. M.; Letcher, R. Current insights and future research opportunities within the Integrated Chemical Mixtures Project (ICMP) pilot study in Sarnia and Brantford, Ontario. **2025**. Integrated Chemical Mixtures Project (ICMP), Environment and Climate Change Canada.

Smythe, T.; Steckley, H.; de Solla, S.; Hughes, K.; Fernie, K.; O'Brien, J.; Crump, D.; Princz, J.; Robinson, S.; Smith, D.; Letcher, R. Wildlife and Landscape Science Directorate (WLSD) State-of-the-science report for the Integrated Chemical Mixtures Project (ICMP) pilot study in Sarnia and Brantford (Ontario). **2025**. Integrated Chemical Mixtures Project (ICMP), Environment and Climate Change Canada.

CONFERENCE PRESENTATIONS (first author, and presenter except where indicated)

Oral

21st Annual Workshop on Emerging HRMS and LC-MS Applications in Environmental Analysis and Food Safety (Ottawa, ON) (accepted)	2025
Canadian Chemistry Conference and Exhibition (Ottawa, ON)	2025
Society of Environmental Toxicology and Chemistry (Louisville, KY); presented by Robert J. Letcher	2023
DIOXIN 2022 (New Orleans, LA); presented by Robert J. Letcher	2022
Society of Environmental Toxicology and Chemistry SciCon4 (virtual)	2021
Society of Environmental Toxicology and Chemistry SciCon2 (virtual)	2020
Society of Environmental Toxicology and Chemistry (Toronto, ON)	2019
International Brominated Flame Retardant Symposium (Montreal, QC)	2019
Society of Environmental Toxicology and Chemistry (Sacramento, CA)	2018
Society of Environmental Toxicology and Chemistry (Minneapolis, MN)	2017
Canadian Chemistry Conference and Exhibition (Toronto, ON)	2017
Canadian Chemistry Conference and Exhibition (Halifax, NS)	2016
Western Canadian Undergraduate Chemistry Conference (Winnipeg, MB)	2016

Poster

Society of Environmental Toxicology and Chemistry (Lima, PE) (accepted, withdrawn)	2025
Society of Environmental Toxicology and Chemistry (Sacramento, CA)	2019
International Brominated Flame Retardant Symposium (Montreal, QC)	2019

NON-CONFERENCE PRESENTATIONS

Integrated Chemical Mixtures Project Flash-Talk Series (ECCC, virtual)	2025
Integrated Chemical Mixtures Project Workshop (ECCC, virtual)	2025
Ecotoxicology and Wildlife Health Division AGM (ECCC, Ottawa, ON)	2025
Ecotoxicology and Wildlife Health Division Seminar Series (ECCC, virtual)	2024
NSERC-CREATE REACT Annual Symposium (Edmonton, AB)	2019
● Awarded Best Oral Presentation, Ph.D. level	
NSERC-CREATE REACT Annual Symposium (Ottawa, ON)	2018
● Awarded Best Oral Presentation, Ph.D. level	
Japan-Canada Academic Consortium (JACAC) Student Forum (Tokyo, JP)	2016

RESEARCH EXPERIENCE

Postdoctoral Research Scientist (term), Environment and Climate Change Canada, ON — Sept 2024 – PRESENT

- Targeted and non-targeted screening (NTS) for PFAS and PFAS transformation products in three Canadian sentinel bird species (European starling, tree swallow, and herring gull) in Southwestern Ontario
- Worked closely with the Water and Atmospheric Science and Technology Directorates (WSTD & ASTD) on integrating methods and results across media for the same locations
- Systematic review of the published scientific literature for wildlife and landscape (i.e., soil) measurements of chemical contaminants in the Integrated Chemical Mixtures Project (ICMP) study areas of Sarnia and Brantford ON, including visualization with PowerBI
- Development of Orbitrap based "top-N" data-dependent acquisition (DDA) methods for NTS of multiple matrices (i.e., bird egg, bird tissues, invertebrates, passive air samplers) including retrofitting of liquid chromatography system with fluorine-free fittings and tubing
- Development of *in vitro* protein-PFAS adduct assays with orbitrap based suspect screening (adductomics)

Ph.D. Candidate, Carleton University, ON — Sept 2017 – Dec 2023

- Laboratory and statistical analyses of brominated flame retardants (BFRs) and novel methoxylated polybrominated diphenoxybenzene (MeO-PB-DiPhOBz) transformation products in Laurentian Great Lakes herring gulls and their eggs, and other matrices related to terrestrial and/or dietary exposure (i.e., soil, earthworms, regurgitant)
- Extensive use of gas chromatography coupled mass spectrometry, gel permeation chromatography, accelerated solvent extraction, and solid phase extraction
- *In silico* molecular docking and quantitative structure activity relationships (QSARs) were used to assess relative binding affinities and conformations of MeO-PB-DiPhOBzs with multiple cytochrome P450s

Chemistry Technician, Federal Student Work Experience Program — June 2017 – Aug 2017
Dr. Lisa Loseto, Fisheries and Oceans Canada, MB

- Data collation of 30 years of contaminant concentration and morphology data of beluga whale liver and/or blubber samples collected as part of the Northern Contaminants Program (NCP)
- Statistical multivariate analysis by contaminant class (i.e., per- and polyfluoroalkyl substances, polybrominated diphenyl ethers, and hexabromocyclododecanes)
- 1st author journal article published in the 2018 *Arctic Science* Beluga special issue

B.Sc. (Hons) Student — May 2015 - 2017
Dr. Gregg T. Tomy, University of Manitoba, MB

- Adaptation and development of human liver microsomal and cytosolic stability assays for deiodinase and sulfotransferase inhibition of T4 biotransformation by novel brominated flame retardants
- Awarded undergraduate student research awards in 2015 and 2016
- 1st author journal article published in *Environmental Science & Technology*

Undergraduate Summer Research Assistant May 2014 – Aug 2014
Dr. Hélène Perreault, University of Manitoba, MB

- Research on developing alternative tandem mass tags for mass spectrometric glycoprotein analyses
- Laboratory sample preparation (i.e., tryptic digests, liquid chromatography, solid phase extraction, and dialysis) and analysis of monoclonal antibodies via matrix assisted laser desorption/ionization (MALDI) tandem mass spectrometry for *N*-glycan characterization
- Included as a co-author (alphabetical order after first author) on a journal article published in the *Canadian Journal of Chemistry*

ACADEMIC SERVICE

Session Co-Chair, SETAC North America 46th Annual Meeting, Portland, OR 2025

- Session Title: Environmental Fate: Elucidating the Mechanisms & Kinetics of Chemical Transformation Products

Organizing committee member, 21st Annual Workshop on Emerging HRMS and LC-MS Applications in Environmental Analysis and Food Safety, Ottawa, ON 2025

Co-Chair, Chemistry Interest Group, SETAC North America 2025-27

- Rotating Chairperson (1 year each as incoming chair, chair, and outgoing chair)

Organizing subcommittee member, Early Career Development Workshop, SETAC North America SciCon4 (virtual) 2021

Steering committee member, Chemistry Interest Group, SETAC North America 2018-present

Subcommittee chair, Early Career Committee* Dependent Care Grant development, SETAC North America 2018-19

- Lead the initiative to implement a Dependent Care Grant (DCG) for the annual SETAC North America meeting to financially support those attendees with dependent care support obligations (e.g., childcare); the DCG was first offered in 2019 for SETAC Toronto
  *Now called the Careers Committee

Co-Chair, Early Career Committee, SETAC North America 2018-21

- Rotating chairperson (1 year each as incoming chair, chair, and outgoing chair)

Organizing subcommittee chair, Early Career Networking Social, SETAC North America Annual Meeting, various locations 2018-20

Committee member, Early Career Committee, SETAC North America 2017-21

Senator, Science Students' Association, University of Manitoba 2016-17

Co-Chair, Western Canadian Undergraduate Chemistry Conference (WCUCC), University of Manitoba 2016

Organizing committee head, Western Canadian Undergraduate Chemistry Conference (WCUCC), University of Manitoba 2015-16

Vice-president external, Undergraduate Chemistry Society, University of Manitoba 2015-16

Tutor, Chemistry Help Centre, University of Manitoba 2013-16

SCIENCE OUTREACH AND COMMUNICATION

Articles:

Smythe, T.; edited by King, M.; Schreckenbach, S. Barriers and Leaky Pipelines: Dependent Care Roles for Researchers, the Impact of the COVID-19 Pandemic, and SETAC's Role in the Post-Pandemic World. *The SETAC Globe*. **2021**, *22* (8). https://www.setac.org/resource/barriers-and-leaky-pipelines.html.

Volunteering:

Non-technical volunteer leader, Chemistry Magic Show, Carleton University 2020
Technical-demonstrator, Chemistry Magic Show, Carleton University 2017-19
Co-presenter, Chemistry Magic Show, University of Manitoba 2014-16

JOURNALS REFEREED

Archives of Environmental Contamination (3)	Environmental Pollution
Aquatic Toxicology	Environmental Research
Chemosphere	Exposure and Health
Environmental Geochemistry and Health	Science of the Total Environment

PROFESSIONAL SOCIETIES

Society of Environmental Toxicology and Chemistry
Chemical Institute of Canada

TRAINING AND MENTORSHIP

I mentored in a research context 6 individuals:

Julianna Colafrancheschi, McMaster University, graduate (Ph.D. project) 2025-present
Geneviève Haché, Carleton University, graduate (M.Sc. project) 2025
Sofia Herczegh, Carleton University, graduate (M.Sc. project) 2019-22
Adelle Strobel, Carleton University, graduate (M.Sc. project) 2017-18
Chae Yoon (Amy) Song, McGill University, undergraduate (lab assistant) 2016
Geemitha Ratnayake, Fort Richmond Collegiate, high school (lab assistant) 2016

TEACHING EXPERIENCE

Carleton University:

Teaching Assistant, Drugs and the Human Body (CHEM 1004) Fall 2023, Summer 2020-22

- Introductory course on the fundamentals of pharmacology, taught in a manner not requiring undergraduate chemistry or biology prerequisites
- Held regular office hours as well as developed and facilitated materials for 2+ hour midterm review sessions (twice each semester)
- Also developed and facilitated 3-hour high school chemistry review sessions for Summer 2020 and 2021 semesters

Online Lab. Coordinator, Chemistry for Engineering Students (CHEM 1101) Fall 2021

- Supervised 14 teaching assistants and managed the online learning platform (Brightspace) for virtual labs and assignments, and assisted students with the platform and content

Teaching Assistant, Chemistry for Engineering Students (CHEM 1101) — Fall 2017/19, Winter 2018/2020

- Supervised 1-2 groups of 10-15 undergraduates with weekly lab experiments per semester; duties involved training on the fundamentals of laboratory techniques and the scientific method, safety training and reinforcement, supplementary instruction on chemistry concepts, and providing feedback on lab reports

Teaching Assistant, Analytical Chemistry (CHEM 2302) — Fall 2017

- Supervised 2 groups of 2-3 undergraduates in weekly lab experiments per semester; duties involved instruction on instrumental techniques (e.g., anodic stripping voltammetry), supplementary instruction on analytical / instrumental concepts, and providing feedback on lab reports

University of Manitoba:

Teaching Assistant, Instrumental Analysis (CHEM 3590) — Fall 2015-16

- Received the Department of Chemistry Teaching Assistance Award (2016)
- Supervised 10-12 undergraduates across six experimental stations; duties involved instruction on instrument use (e.g., ICP-OES, LC-UV/Vis, LC-MS, GC-MS, GC-FID), instrumental troubleshooting during lab periods, supplementary instruction on instrumental theory and practice, and providing feedback on lab reports

Teaching Assistant, Introduction to Physical Chemistry (CHEM 1310) — Fall 2014

- Supervised 2 groups of 10-15 undergraduates with weekly lab experiments per semester; duties involved training on the fundamentals of laboratory techniques and the scientific method, safety training and reinforcement, supplementary instruction on chemistry concepts, and providing feedback on lab reports

Grading experience:

Holiday support marker, EBUS Academy (Gr 9-12) — Dec 2022-25

Grader, Organic Chemistry I/II (CHEM 2203/4), Carleton University — Fall 2022, Winter 2022-23

Grader, Chemistry for Engineering Students (CHEM 1101), Carleton University — Fall 2022, Winter 2021-23