

Heather Murphy, Ph.D., P.Eng

Assistant Professor

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HIGHLIGHTS

- Over fourteen years of experience conducting interdisciplinary research related to water and environmental health in Canada, the US, Uganda, Nepal, Mali, Madagascar, and Cambodia
- Secured \$1.25 million in external funding since 2015 and currently covering 70% of my salary from externally funded grants. Funding sources include: the Bill and Melinda Gates Foundation, The US Geological Survey, The National Institutes of Health (NIH), The Philadelphia Water Department, Grand Challenges Canada and UNICEF
- Diverse interdisciplinary research background in the areas of one health as it relates to water quality, treatment, environmental/global health including: integrated disinfection strategies for the microbial protection of distribution systems, epidemiological studies to evaluate the effectiveness engineering interventions from a public health perspective, microbial risk assessment, burden of disease modeling and water and sanitation challenges in developing nations and First Nations communities in Canada.
- Recognized expert in the field of water quality and public health as demonstrated by invited talks at Emory/ CDC and Expert Panelist Water Research Foundation and CDC projects examining the burden of waterborne disease
- Selected from over 4000 applicants from around the world to participate in UNICEF's New and Emerging Talent Initiative in 2010
- Professional Engineer in Ontario, Canada
- Canadian Citizen

EDUCATION

- 2010** Doctor of Philosophy (PhD) in Environmental Engineering
University of Guelph, Guelph, Canada
- 2006** Masters of Applied Science (MASc) in Civil Engineering
Dalhousie University, Halifax, Canada
- 2004** Bachelors in Biological Engineering (BEng)
Dalhousie University, Halifax, Canada
- 2002** Certificate of Applied Science
Acadia University, Wolfville, Canada

LANGUAGES

Fluent in English and French

PROFESSIONAL EXPERIENCE

2015- Present	Assistant Professor , College of Public Health, Temple University, Philadelphia, USA
2015	NSERC Post-Doctoral Research Fellow , Department of Civil Engineering, McMaster University, Hamilton, Canada
2014-2015	Post-Doctoral Research Fellow , School of Engineering, University of Guelph, Guelph, Canada
2014	Research Consultant , Health Canada, Ottawa, Canada
2013-2014	NSERC Post-Doctoral Research Fellow to Canadian Laboratories , Public Health Agency of Canada, Guelph, Canada
2012	Consultant , H2O Innovation, Burlington, Canada
2011-2012	Water, Sanitation and Hygiene (WASH) Specialist , UNICEF, Bamako, Mali
2010-2011	WASH Officer , UNICEF, Antananarivo, Madagascar
2010	WASH Consultant , University of Guelph, Canada / Indian Institute of Technology, Chennai, India
2009	Consultant , Household Water Treatment Specialist World Bank Water and Sanitation Program (WSP), Phnom Penh, Cambodia
2006	Water Treatment Engineer , Zenon Environmental (Now part of Suez Water), Oakville, Canada
2004	Research Engineer , Janid Engineering Inc., Halifax, Canada
2002-2003	NS Power Engineering Intern (Summer 2002/2003), Nova Scotia Power Inc. Halifax, Canada

HONORS AND AWARDS

2018	Teaching Award - Department of Epidemiology and Biostatistics, Temple University
2018	Temple University Merit Award
2017	Temple University Merit Award
2015	National Science and Engineering Research Council (NSERC) of Canada Post Doctoral Fellowship (\$90,000)
2013	NSERC Post-Doctoral Visiting Fellowship to Canadian Laboratories (\$70,000)

- 2010** **A.P. Dwivedi Graduate Prize** - awarded to an outstanding student for overall scholastic achievement and the practical and social significance to the study of development issues in the Third World. (\$1000)
- 2010** One of 22 chosen out of 4,000 applicants to participate in UNICEF's New Emerging Talent Initiative (NETI) program for young professionals
- 2007** **University of Guelph Graduate Scholarship** (\$2000)
- 2007** **University of Guelph Graduate Scholarship** (\$15,000)
- 2006** **Dalhousie Faculty of Graduate Studies Scholarship** (\$2000)
- 2005** **Bruce and Dorothy Rosetti Scholarship-Dalhousie University** (\$800)
- 2004** Awarded stipend for Masters of Applied Science Program in Civil Engineering at Dalhousie University (2004-2006) (\$16,500/ year)
- 2004** **NSERC USRA Program** (\$3,500)
- 2003** **Academic Scholarship from the Petroleum Society** (\$2,000)
- 2002** **Academic Scholarship from Dalhousie University** (\$1,000)
- 2002** **Nova Scotia Power Centennial Scholarship** (\$4000)

RESEARCH GRANTS

Current

National Institutes of Health (NIH)

08/15/2018- 08/14/2019

Private Wells and Enteric Infections in Children

We were awarded funding to plan a complex randomized controlled trial looking at the impact of using a UV treatment device on reducing gastrointestinal illness in children served by private wells in PA

Role: Principal Investigator

\$258,000

Philadelphia Water Department (PWD)

07/01/2018- 06/30/2022

Development of Polymerase Chain Reaction (PCR) Capabilities at the Philadelphia Water Department's Central Laboratory for alternative human sewage markers

We were awarded funds to develop the capacity of the PWD laboratory in using human and alternative markers of microbial contamination as indicators of water quality in the Philadelphia watershed

Role: Principal Investigator

\$480,000

Bill and Melinda Gates Foundation

03/01/2018-02/29/2021

Water Pathogen Knowledge-to-Practice –Safe Sanitation- This research will empower water and sanitation safety planners in Uganda and India to use an evidence-based approach for managing health outcomes by improving access to scientific data on the efficacy of sanitation technologies and the occurrence and persistence of pathogens in human and animal waste.

Role: Site Principal Investigator (Michigan State PI- Rose)

\$1.6 million (Temple \$362,000)

Completed

Essity

01/01/2018-12/31/2018

Essity Handwashing Evaluation in Pre-K schools in Philadelphia

We are conducting an evaluation of a behavioral handwashing intervention being undertaken by Essity in Pre-K schools in the Philadelphia School District

Role: Co-Investigator

\$62,000

Corona Environmental (Prime: Philadelphia Water Department)

09/01/2017- 06/31/2018

Bacteroides: its use as a water quality indicator and a source-tracking marker

The goal of this research is to develop a site-specific molecular protocol for enumerating human specific Bacteroides from environmental waters in the Philadelphia area

Role: Principal Investigator

\$40,000

Aerosan Toilets (Prime: Grand Challenges Canada)

09/01/2017-08/31/2018

Latrine Cleaning Study in Nepal

We conducted a study to evaluate the cleaning practices of community latrines in Nepal and compare those to community latrines implemented by Aerosan Toilets and household latrines in the same regions.

Role: Principal Investigator

\$6,500

US Geological Survey

03/01/2017- 05/30/2018

Evaluating septic systems as a source of enteric pathogens in private water supply wells of Pennsylvania

This research established that septic systems can be a source of enteric pathogens in Pennsylvanian private wells; and how extreme rainfall can impact the presence of these pathogens over time.

Role: Principal Investigator

\$22,000

Temple University iGEM Institute

03/01/2017-02/28/2018

How does pipe material and disinfectant affect the diversity of microbial communities in drinking water distribution systems?

We investigated biofilm growth and microbial communities in a full scale drinking water distribution system using 16S sequencing.

Role: Principal Investigator
\$10,000

Temple University Office of Vice President for Research
09/01/2016- 08/31/2018

Big data science applications for understanding social and environmental risks for the transmission of Zika and other mosquito borne diseases in Eastern US

This goal of this project was to use big social and environmental data to 1) understand the risk of mosquito borne diseases in urban and suburban areas 2) implement an early warning system to forecast transmission risk in the East Coast of the US.

Role: Co-Investigator
\$49,589

UNICEF

1/01/2016- 08/31/2016

Costing of WASH in Schools

The goal was to develop a costing tool that could be used to support governments and UNICEF program offices in decision making around WASH in school settings.

Role: Principal Investigator
\$20,000

TEACHING EXPERIENCE AND EDUCATIONAL ACTIVITIES

2018	Instructor- Water, Sanitation and Public Health (Graduate), Temple University
2018	Instructor- Global Environmental Health (Graduate), Temple University
2017	Instructor- Introduction to Research Methods (Undergraduate), Temple University
2016-2017	Instructor- International Health (Undergraduate), Temple University
2013- Present	Guest Lecturer- University of Guelph, Temple University, University of Pennsylvania <ul style="list-style-type: none">Invited to give Guest Lectures in the areas of water quality, health, risk assessment, global health, WASH in developing countries, burden of waterborne disease
2010-2012	Water, Sanitation, and Hygiene Specialist UNICEF - Mali & Madagascar <ul style="list-style-type: none">Developed hands on courses in water quality, basic water treatment and water quality testing for government and non-governmental organisation partnersConducted numerous training sessions in French with partners regarding water, sanitation and hygiene Instructor
2008-2009	Instructor- Resource Development International Cambodia (RDIC) <ul style="list-style-type: none">Volunteered to teach a group of Cambodian students in a two- year program at RDIC with the aim of sending them broad for graduate school (10 hrs/ week)Created a Water Quality and a Water Treatment Plant Design Course which included laboratory sessions and field experience through my PhD researchConducted numerous lectures on Experimental Design, Data Analysis, and Household Water treatment
2005-2006	Writing Tutor- Dalhousie University Writing Resource Centre, Halifax, NS, Canada <ul style="list-style-type: none">Worked as a writing tutor for undergraduate and graduate students to help them improve their writing skills through one-on-one tutoring sessions.

- Prepared presentations and conducted seminars on technical writing for science and engineering students.

2001- 2009

Teaching Assistant- University of Guelph, Dalhousie University and Acadia University

Courses:

Water and Wastewater Treatment Plant Design,

Water Quality,

Engineering Design,

Engineering Statics,

Environmental Measurements and Analysis,

Solar Energy Utilization,

Energy and the Environment

STUDENT ADVISING

(*Capstone/ student project, **Thesis supervision, ***Thesis Committee Member, # other supervision)

Present

2018- Present	Research Fellow	Innocent Tumwebaze [#]	Temple University
2018- Present	Research Fellow	Alexis Mraz [#]	Temple University
2018-Present	Research Fellow	Debbie Lee [#]	Temple University
2018-Present	Graduate- PhD	<u>Miriam Wamsley</u> ^{**}	Temple University
2018- Present	Graduate- PhD	<u>Aaron Bivins</u> ^{**}	Georgia Tech
2018- Present	Graduate -MSc	Gennaro Calendo [*]	Temple University
2018- Present	Undergrad-Honors	Tiffany Burtula [#]	Temple University
2018- Present	Graduate-MSc	Andrew Mao [*]	Drexel University
2018- Present	Undergrad	Tanya Dhingra [*]	Temple University
2018- Present	Undergrad-Honors	Keri Klinges [#]	Temple University
2017-Present	Undergrad-Honors	Aurora Trainor [#]	Temple University
2016-Present	Graduate- PhD	<u>Shannon McGinnis</u> ^{**}	Temple University

Completed

2018	Undergrad-Honors	Madison Peschen [#]	Temple University
2018	Undergrad-Honors	Rosy Chiyezhan [#]	Temple University
2018	Undergrad	Radhika Sinha [#]	Temple University
2018	Undergrad	Tirzah Sheppard [#]	Temple University
2018	Undergrad	Morgan Prioleau [#]	Temple University
2018	Undergrad-Honors	Dana MacFarlane [*]	Temple University
2018	Undergrad-Honors	Alexander Cagle [#]	Temple University
2018	Graduate-MPH-MES	Akudo Ejelonu [*]	University of Pennsylvania
2017	Undergrad-Honors	Madison Heaton [#]	Temple University
2017	Undergrad-Honors	Kodi Lawrence [#]	Temple University
2017	Undergrad-Honors	Jessica Serpe [#]	Temple University
2017	Undergrad	Erin Huder [#]	Temple University
2017	Graduate-MPH	Kristin Kopec [*]	Temple University
2017	Graduate-MPH	Ryan Blunt [*]	Temple University
2017	Graduate-MPH-MES	Thomas McKeon [#]	University of Pennsylvania
2017	Graduate-MSc	<u>Hillary Cuesta</u> ^{**}	Temple University
2016	Undergrad-Honors	Anu Ninan [#]	Temple University
2016	Graduate-MES	Richa Desai [#]	University of Pennsylvania
2016	Graduate-MES	Shubhneet Grover [#]	University of Pennsylvania
2016	Graduate-MBA	Vishal Kumar [*]	University of Pennsylvania -Wharton
2016	Graduate-MBA	Brian Vo [*]	University of Pennsylvania -Wharton
2016	Graduate-MBA	Shalina Wadhvani [*]	University of Pennsylvania -Wharton
2016	Graduate-MBA	Sarah Millar [*]	University of Pennsylvania -Wharton
2016	Graduate -MBA	Yeahong Min [*]	University of Pennsylvania -Wharton
2016	Graduate- MES	Shuang Song [*]	University of Pennsylvania
2016	Graduate-MPA	Shahana Joshi [*]	University of Pennsylvania

LOCAL, NATIONAL, INTERNATIONAL SERVICE & ACTIVITIES

- 2018 Invited Grant Reviewer- Hudson River Foundation
- 2018 Organizer of the Philadelphia Global Water Alliance Annual Conference held at Villanova University
- 2017 UNICEF WASH in School Global Network- Technical Working Group Co-Leader for Policy, Advocacy and Financing
- 2017 Expert Panelist (invited) to the Center for Disease Control (CDC) to participate in a Source Attribution of Food and Waterborne Pathogens in the United States
- 2016 Organizer of the Philadelphia Global Water Alliance Annual Conference held at Temple University's Fox School of Business
- 2015 Global Water Pathogen Project (GWPP)- Author<http://www.waterpathogens.org>
- 2016-Present Philadelphia Global Water Alliance- Executive Board Member, Philadelphia, PA, USA
- 2015-Present Expert Workshop Panelist (invited)- Water Research Foundation Project- Drinking Water Turbidity and Acute Gastrointestinal Illness (Project Number 4589), Drexel University, Philadelphia, PA, USA
- 2015-Present Professional Engineers of Ontario, Canada- Member
- 2015-Present Technical Reviewer -UNICEF New York, NY, USA
- 2012- Present Water First- Executive Board Member- Creemore, ON, Canada

UNIVERSITY SERVICE & COMMITTEES

- 2017- Present Temple University- Department of Epidemiology and Biostatistics Hiring Committee
- 2015- Present Temple University- Department of Epidemiology and Biostatistics PhD Admissions Committee
- 2016- Present Temple University- Department of Epidemiology and Biostatistics PhD Curriculum Committee
- 2016- present Temple University One Health Genomics Committee Member- a group of researchers seeking to build Temple's profile National reputation in Environmental Genomics Research
- 2015- Present Temple University- College of Public Health- Program Director for the Global Health Certificate
- 2015- Present Temple University -Faculty Senate Committee on the Status of Women

PEER REVIEW ACTIVITIES

Invited Manuscript Review

Water Research

PLOS ONE

American Journal of Tropical Medicine and Hygiene

Environmental Science and Technology

Science of the Total Environment
Bulletin of the World Health Organization (WHO)
Epidemiology and Infection
Journal of American Water Works Association
Water
Journal of Water Resources Management
Zoonoses and Public Health
Hydrogeology Journal
BMC Public Health
BMC Microbiology
Global Public Health
Journal of Global Health
International Journal of Environmental Research and Public Health
Journal of Environmental Research and Public Health
International Journal of Hygiene and Environmental Health
Journal of Water Supply: Research and Technology – AQUA
Journal of Water and Health

PUBLICATIONS

(students/ research fellows underlined)

Under Preparation:

34. **Murphy HM**, Wu J, Blunt R, Cagle A, Denno D, Spencer S, Stokdyk J, Firnstahl A, Borchardt MA. 2019. Are septic systems the source of enteric pathogens in private wells in rural PA? *To be submitted to Groundwater in March 2019*

33. Tumwebaze J, Rose J, Hofstra N, Verbyla M, Okaali D, Musaazi I, **Murphy HM**. 2019. Translating pathogen knowledge to practice for safe sanitation- Priorities from stakeholders -*To be Submitted in February 2019*

Under Review:

32. Dingman D, Wu J, **Murphy HM**. 2019. School-based, black-light handwashing intervention can improve, handwashing behavior, quality and knowledge among pre-school aged children- *Submitted February 2019 to Evaluation and Program Plannin.g*

31. Rose JB, Hofstra N, **Murphy HM**, Verbyla M. 2019. "What is Safe Sanitation?" Submitted January 2019 to the *Journal of Environmental Engineering*.

30. Macfarlane D, Nelson F, **Murphy HM**. 2019. Using measures of water quality to narrow down the postmortem submersion interval (PMSI) in water, *Submitted Nov. 2018 to the Journal of Forensic Science*.

29. Cuesta H, Coffman D, Branas C, **Murphy HM**. 2019. Identifying pathways to disease using data mining: understanding the combined individual- and neighborhood-level health

indicators of diabetes mellitus and asthma among high risk Philadelphians. *Submitted Nov. 2018 to **Heath and Place***.

28. Wiese, D., Escalante, A., Henry, K., **Murphy, HM**, Gutierrez-Velez, V. H.. 2019. Mining social and environmental data to understand and forecast annual *Aedes albopictus* occurrence in South-Eastern Pennsylvania. *Revisions submitted Dec 31, 2018 to **PLOS One***.

Refereed Contributions:

27. McGinnis S, Marini D, Amatya P, **Murphy HM**. 2019. Bacterial contamination on latrine surfaces in community and household latrines in Kathmandu, Nepal. ***Journal of Environmental Research and Public Health***, 16(2), 257.

26. Schang C, Lintern A, Cook P, Rooney G, Coleman R, **Murphy HM**, Deletic A, McCarthy D. 2018. *E.coli* survival and transfer in estuarine bed sediments. ***River Research and Applications***, 34 (6), 606-614.

25. McGinnis S., Spencer, S., Firnstahl, A., Stokdyk, J., Borchardt, M., McCarthy, D., **Murphy HM**. 2018. Human Bacteroides and total coliforms as indicators of recent combined sewer overflows and rain events in urban creeks. ***Science of the Total Environment***, 630:967-976.

24. **Murphy HM**, Meng Z, Deletic A, McCarthy DT. 2017. Current Stormwater Harvesting Guidelines Are Inadequate for Mitigating Risk from *Campylobacter* During Nonpotable Reuse Activities, ***Environmental Science and Technology***, 51(21):12498-12507.

23. **Murphy, H**. 2017. Persistence of Pathogens in Sewage and Other Water Types. In: J.B. Rose and B. Jiménez-Cisneros, (eds) *Global Water Pathogens Project*, [http:// www.waterpathogens.org](http://www.waterpathogens.org) (M. Yates (eds) Part 4 Management of Risk from Excreta and Wastewater) <http://www.waterpathogens.org/book/persistence-in-sewage>. Michigan State University, E. Lansing, MI, UNESCO.

22. McGinnis, S., McKeon T, Desai R, Eilonu A, Laskowski S, **Murphy HM**. 2017. A systematic review of costing and financing of WASH in Schools. ***International Journal of Environmental Research & Public Health***, 14(4), 442; doi:10.3390/ijerph14040442.

21. **Murphy HM**, Hynds PD, Prioleau M, Borchardt M. 2017. Review: Epidemiological evidence of groundwater contribution to global enteric disease, 1948–2015, 25(4):981-1001. ***Journal of Hydrogeology***.

20. **Murphy HM**, Bhatti M, Harvey R, McBean E. 2016. Using decision trees to predict drinking water advisories and understand vulnerabilities in small water systems. ***Journal AWWA***, 108(2): E109-E118.

19. **Murphy HM**, Thomas KM, Medeiros DT, McFadyen S, Pintar KDM. 2016. Estimating the number of cases of endemic acute gastrointestinal illnesses (AGI) associated with Canadian

municipal drinking water systems using data from household drinking water intervention trials *Epidemiology and Infection*. 144(7):1371-85.

18. **Murphy HM**, Thomas KM, Schmidt P, Medeiros DT, McFadyen S, Pintar KDM. 2016. Estimates of acute gastrointestinal illness due to Giardia, Cryptosporidium, Campylobacter, E. coli O157 and norovirus associated with private wells and small water systems in Canada. *Epidemiology and Infection*, 144(7): 1355-70.
17. **Murphy HM**, Corston-Pine E, Post Y, McBean E. 2015. Insights and Opportunities: Challenges of Canadian First Nations Drinking Water Operators. *The International Indigenous Policy Journal*, 6(3).
16. Harvey R, **Murphy HM**, McBean E, Gharabaghi, B. 2015. Using Data Mining to Understand Drinking Water Advisories in Small Water Systems: A Case Study of Ontario First Nations Drinking Water Supplies. *Water Resources Management*, 29(14): 5129-5139.
15. Thomas K, McBean E, **Murphy HM**. 2015. Comparing the microbial risks associated with household drinking water supplies used in peri-urban communities of Phnom Penh, Cambodia. *Journal of Water and Health*, 13(1): 243-258.
14. Karakochuk CD, **Murphy HM**, Whitfield KC, Barr SI, Vercauteren SM, Talukder A, Porter K, Kroeun H, Eath M, McLean J, Green TJ. 2015. Elevated levels of iron in groundwater in Prey Veng province in Cambodia: a possible factor contributing to high iron stores in women. *Journal of Water and Health*, 13(2): 575-586.
13. Hynds P, **Murphy HM**, Kelly I, Fallon U. 2014. Groundwater protection, risk awareness, knowledge transfer and public health: The role of "future custodians". *Water Resources Management*, 28(14): 5199-5215.
12. **Murphy HM**, Thomas KM, Pintar KDM. 2014. A systematic review of waterborne disease burden methodologies for developed countries. *Journal of Water and Health*, 12(4): 634- 655.
11. Hynds P, Misstear B D, Gill LW, **Murphy HM**. 2014. Groundwater source contamination mechanisms: Physicochemical profile clustering, risk factor analysis and multivariate modelling, *Journal of Contaminant Hydrology*, 159, 47-56
10. Thomas K, McBean E, **Murphy HM**. 2013. Drinking Water Quality for Peri-Urban Residents in Phnom Penh, Cambodia. *The Journal of Water, Sanitation and Hygiene for Development –In Press*. <http://www.iwaponline.com/washdev/up/washdev2013126.htm>
9. Liang K, Sobsey M, Stauber C, **Murphy HM** *Improving household drinking water quality- Use of Biosand water filters in Cambodia*. 2010. Water and Sanitation Program (WSP) Field Note. Phnom Penh, Cambodia: The World Bank. http://documents.worldbank.org/curated/en/749541468229471035/pdf/593360WPOWSP1b10B_ox358367B01PUBLIC1.pdf

8. **Murphy HM**, Sampson M, Farahbakhsh K, McBean E. 2010. Microbial and chemical assessment of ceramic and BioSand water filters in rural Cambodia. *Water Science and Technology: Water Supply*, 10 (3): 286- 295.
7. **Murphy HM**, Farahbakhsh K. and McBean E. 2010. Nitrification, denitrification and ammonification in point-of-use BioSand filters in rural Cambodia. *Journal of Water and Health*, 8 (4): 803-817.
6. **Murphy HM**, Farahbakhsh K. and McBean E. 2010. A critical evaluation of two point- of-use water treatment technologies: Can they provide water that meets WHO drinking water guidelines? *Journal of Water and Health*, 8 (4): 611- 630.
5. **Murphy HM**, McBean E, and Farahbakhsh K and Sampson, M. 2009. Influence of Household Practices on the Performance of Clay Pot Water Filters in Rural Cambodia. *Desalination*, 248(1-3): 562–569.
4. **Murphy HM**, McBean E, and Farahbakhsh K. 2009. Appropriate Technology- A comprehensive approach for water and sanitation in the developing world. *Technology in Society*, 31: 158-167.
3. **Murphy HM**, Payne SJ, and Gagnon, GA. 2008. Sequential UV and Chlorine-Based Disinfection to Mitigate *Escherichia coli* in Drinking Water Biofilms. *Water Research*, 42(8- 9): 2083-2092.
2. Gagnon GA, **Murphy HM**, Rand JL, Payne SJ, Springthorpe S, Matias F, Nokbeh R and Sattar SA. 2007. Coliforms in Distribution Systems: Integrated Disinfection and Antimicrobial Resistance. AwwARF Publication, Denver, CO.
1. Gagnon GA, Volk CJ, Chauret C, **Murphy HM**, O’Leary KC and Andrews RC. 2006. Changes in microbiological quality in model distribution systems after switching from chlorine or chloramines to chlorine dioxide. *Journal of Water Supply: Research and Technology- AQUA*, 55(5): 301-311.

Selected non- refereed contributions:

Murphy HM, Corston-Pine E, McBean E. 2015. Insights and Opportunities: Challenges of Canadian First Nations Drinking Water Operators. *Water Canada*, January-February Issue: 20-21.

Murphy HM. 2014 "Systematic Review: The risk of *Naegleria fowleri* in Canadian drinking and recreational waters", Health Canada.

Murphy HM, Thomas KM, Pintar KDM. 2013. Developing a waterborne disease burden estimate for the Canadian population. *In: IWA Health Related Microbiology Symposium 2013 Proceedings*, Florianopolis, Brazil, September 15-20, 2013.

Murphy HM, McBean E, and Farahbakhsh K. 2009. Microbial and Chemical Performance of Ceramic and BioSand Water Filters in Rural Cambodia. *In: Water Quality and technology Conference 2009 Proceedings*, Seattle, Washington, USA, November 15-19, 2009.

Murphy HM, Sampson M, Farahbakhsh K. and McBean E. 2010. Integrated microbial and chemical assessment of ceramic and BioSand water filters in rural Cambodia. *In: IWA Health Related Microbiology Symposium 2009 Proceedings*, Naxos, Greece, May 31- June 1, 2009.

Murphy HM, Rand JL, Payne SJ and Gagnon GA. 2007. Synergistic Effects of UV Irradiation in Combination with Chlorine and Chlorine Dioxide: Bench- and Lab-Scale Evaluations. *In: Water and Environment Federation (WEF) Disinfection 2007 Conference Proceedings*, Pittsburgh, PA, USA, February 4-7, 2007.

Rand J, **Murphy HM**, Payne S J, Gagnon G A and Krentz C A. 2006. *Integrated disinfection strategy optimization-optimisation des stratégies intégrées de désinfection*. Canadian Water Network Conference. Montreal, QC.

Gagnon G A, Truelstrup Hansen L, **Murphy HM** and Krentz C A. 2006. Detection and resistance of *E. coli* in drinking water distribution systems. *In: Water Quality Technology Conference 2006 Proceedings*, Denver, CO, USA, November 5-9, 2006.

Murphy HM, Payne SJ, Springthorpe S, Sattar SA, and Gagnon GA .2006. Impact of integrated disinfection strategies for mitigating *E. coli* in model distribution systems. *In: American Water Works Association (AWWA) Annual Conference Proceedings*, San Antonio, Texas, USA, June 11-15, 2006.

Murphy HM, Payne SJ, Springthorpe S, Sattar SA, and Gagnon GA.2005. Understanding disinfection resistance of *E. coli* in drinking water biofilms. *In: American Water Works Association (AWWA) Water Quality and Technology Conference (WQTC) Proceedings*, Québec City, Québec, Canada, November 6-9, 2005.

Hu Z, **Murphy HM**, McDonald BC, Gagnon GA and Hofman R. 2005. Chlorine decay in distribution systems under cross-connection occurrences. *In: American Water Works Association (AWWA) Annual Conference and Exposition Proceedings*, San Francisco, California, USA, June 12-16, 2005.

Murphy HM and Gagnon GA. 2005. Drinking water treatment- disinfection strategies. *Presentation at the Advanced Foods and Materials Network (AFMNet) Atlantic Highly Qualified Personnel (HQP) Summit*, Halifax, Nova Scotia, August 8-9, 2005.

Newspaper articles, online press releases

November 2015

Study reveals hidden dangers of tap water: Millions of Canadians drinking from substandard sources- National Post

http://news.nationalpost.com/health/study-reveals-hidden-dangers-of-tap-water-millions-of-canadiansdrinking-from-substandard-sources?_isa=7ac6-5083

December 2015

Temple researcher links private water wells to illness-

Heather Murphy's research in Canada could be helpful in Pennsylvania and elsewhere.

<http://news.temple.edu/news/2015-12-15/temple-researcher-links-private-water-wells-illness>

December 2015

New study looks at contamination of private well water

<https://cph.temple.edu/news/new-study-looks-contamination-private-well-water>

May 2016

UNICEF Grant Helps Researcher Build Groundwork for Hygiene

<https://cph.temple.edu/news/unicef-grant-helps-researcher-build-groundwork-hygiene>

June 2017

Epi-Bio Prof Adds Her Expertise to CDC Panel

<http://cph.temple.edu/news/epi-bio-prof-adds-her-expertise-cdc-panel>

July 2018

Hoping to improve sanitation worldwide, Murphy receives college's first Gates Foundation grant

<https://cph.temple.edu/news/hoping-improve-sanitation-worldwide-murphy-receives-first-gates-foundation-grant>

RECENT SPECIAL SEMINARS AND PRESENTATIONS

- August 2018 Swimming with the bugs in Philadelphia? *Invited Speaker- Water-Related Research in the Delaware River Basin: Progress and Needs- Delaware Valley Regional Planning Commission Philadelphia*
- April 2018 Epidemiological Evidence of the contribution of groundwater to enteric disease, 1948-2015- *Invited Speaker- Philadelphia Global Water Alliance Annual Conference 2018- Villanova*
- November 2017 WASH in Schools- A Costing Tool- *Keynote- 6th WASH in Schools International Learning Exchange (WinS ILE) Nay Pyi Taw and Bagan, Myanmar-*
- October 2017 The impact of septic systems and rainfall events on groundwater quality in private wells in rural Pennsylvania, USA- *UNC Water and Health Conference 2017*
- October 2017 Epidemiological evidence of groundwater contribution to global enteric disease, 1948-2015- *UNC Water and Health Conference 2017*
- October 2017 Continuing to address waterborne disease in the United State- *Invited Speaker CDC hosted Side Event- UNC Water and Health Conference 2017*
- May 2017 Are Current stormwater harvesting guidelines and treatment technologies adequate for protecting public health from Campylobacter? -*UNC Water Microbiology Conference/ IWA Health Related Water Microbiology Conference 2017*
- May 2017 Using QMRA to estimate the burden of waterborne disease in Canada-Side Event Presentation- *UNC Water Microbiology Conference/ IWA Health Related Water Microbiology Conference 2017*
- May 2017 Could Septic Systems be the Source of Human Fecal Markers in Private Wells in Rural Pennsylvania?- *2017-PA Groundwater Symposium*
- March 2017 Estimating the number of cases of acute gastrointestinal illnesses attributable to drinking water in Canada- *Invited Talk- Dalhousie University, Halifax, Canada*
- October 2016 Predicting drinking water advisories in small community water systems-*UNC Water & Health Conference 2016.*
- September 2016 Groundwater and Enteric Disease: Could Enteric Pathogens be Present in Wells in Pennsylvania? *Invited Webinar for Penn State Extension- <http://extension.psu.edu/natural-resources/water/courses/water-resource-webinars/webinars/groundwater-and-enteric-disease-could-enteric-pathogens-be-present-in-wells-in-pa>*

- September 2016 Using Quantitative Microbial Risk Assessment to quantify the burden of disease associated with small water systems and private wells in Canada- *Invited Seminar for the Philadelphia Water Department, Philadelphia, PA*
- May 2016 How can we measure the health risks associated with drinking water distribution? *Invited Talk- Pennsylvania American Water Works Association Conference 2016*
- April 2016 POU water treatment in rural Cambodia- *Philadelphia Global Water Alliance Annual Conference 2016- Temple University, Philadelphia, PA, USA*
- April 2016 Estimating the number of cases of acute gastrointestinal illnesses attributable to drinking water in Canada- *Invited Talk- University of Wisconsin- Stevens Point/ USDA*
- February 2016 Estimating the number of cases of acute gastrointestinal illnesses attributable to drinking water in Canada- *Invited Talk- Emory University- Center for Global Safe WASH/ Center for Disease Control (CDC)*