COLLEGE OF ENGINEERING
THE CHARLES E. VIA, JR. DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
VIRGINIA TECH

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ACADEMIC HISTORY AND CERTIFICATIONS

Virginia Tech, College of Engineering – Blacksburg, VA
2018 *Ph.D. in Civil Engineering (program: Environmental and Water Resources Engineering)*
+ Graduate Student of the Year
2015 *M.S. in Environmental Engineering*
+ "Water INTERface" IGEP Fellow
2014 *Interdisciplinary Water and Health Sciences Graduate Certificate*

Nirma University, Institute of Technology – Ahmedabad, India
2010 *B.Tech. in Chemical Engineering*
+ First Class with Distinction

State of Virginia, Engineer in Training (EIT)
2020 *Environmental Engineering License #0420072931*

PROFESSIONAL APPOINTMENTS AND KEY RESPONSIBILITIES

2018+ **Virginia Tech Department of Civil and Environmental Engineering**, Blacksburg, VA
Postdoctoral Research Associate, US Water Study Team founding co-leader (2018-present)

- Field research in environmental justice communities: a) Led/co-led water sampling campaigns in 300+ homes in Chicago, IL and its suburbs of Berwyn, Cicero and Robbins that uncovered persistently high lead in drinking water (*Chicago Tribune* front page); b) Large scale surveillance of chlorine residuals in Flint, Michigan's distribution system using citizen science (under review)
- Wastewater based epidemiology: Used lead in sewage sludge (biosolids) and children's blood datasets to estimate magnitude and timing of lead release to water and population exposure during the Flint Water Crisis (published: *Water Research* and *ESWRT)*.
- Lead exposure impact studies: 1) Bio-kinetic modeling of fetal deaths (miscarriages/stillbirths) from lead exposure in Flint (under review), 2) sewage sludge analyses to identify waterborne lead trends and effectiveness of corrosion control in eight cities across America (ongoing).
- Population based retrospective cohort study: quantifying adverse educational outcomes and behavioral health harm in Flint children following the Flint Water Crisis (under review).
- National survey of NSF Graduate Research Fellows: qualitative survey on NSF fellow (n=244) perceptions and attitudes on perverse incentives, dominant pressures, and research misconduct in engineering research academia (article forthcoming).
- Mentor to 11 advisees (past + present) in conducting research, publishing, and winning awards
- Course instructor for water treatment, math, chemical contaminants for water utility operators

2012-18 **Virginia Tech Department of Civil and Environmental Engineering**, Blacksburg, VA
Graduate Research and Teaching Assistant, Laboratory of Dr. Marc Edwards (2013-18)
Co-Leader and Communications Director, The Flint Water Study Team (2015-18)
Head Grant Writer/Researcher, Guatemala project, Engineers Without Borders USA (2013-15)

- We used citizen science, field sampling, lab experiments, investigative journalism and social media to help uncover the Flint, MI Water Crisis. Our efforts led to declaration of a national "Public Health Emergency" by President Barack Obama, garnered over $1.2 billion in relief for Flint residents, and informed a long overdue debate on "safe" water in America.
- Dissertation research: a) Refuted 70+ years of conventional wisdom to prove hard waters can be equally or more aggressive than soft water in causing and exacerbating erosion corrosion (or, flow-induced failures) in pipes through laboratory experiments and forensic investigations of copper pipe failures in real buildings in the San Francisco Bay Area. b) Elucidated the roles of precipitated particulates, temperature, pH, disinfectants, flow velocities, and dissolved oxygen leading to corrosion failures in hot water recirculation systems. c) Devised an accelerated test protocol that reliably reproduces erosion corrosion in a matter of days, using it to compare materials performance of over a dozen alloys used in plumbing carrying potable water.
- Led or co-led water sampling campaigns in hundreds of homes and businesses for lead, disinfection by-products, and opportunistic pathogens like *Legionella* in Flint MI and Denmark SC
- Contributed to the engineering design of and raised $26,450 from Boeing, Bechtel, Pratt & Whitney, and crowdfunding to sponsor a wastewater (septic tank) system for a Guatemalan boarding school. The project directly affects over 130 Guatemalan children and staff.

2010-12 **Cognizant Technology Solutions**, Merck Europe Support Project, Pune, India
Programmer Analyst (Business Intelligence and Data Analytics), Innovation Lead

- Utilized Datawarehousing and Business Intelligence technologies (IBM® Cognos) to assist pharmaceutical managers navigate drug sales and marketing data.
- Worked with managers and team leads of the Merck Europe program (100+ developers) to facilitate 28 project innovations ($246K person-hour savings) in Q3-Q4 2011.

HONORS AND AWARDS

Total = 29 (individual), 10 (team), and 5 (to undergrad advisees)

2020

- Young Leadership Award / Finalist (Four finalists worldwide), International Water Association

2019

- New Face of Civil Engineering Professionals (Ten civil engineers across America), American Society of Civil Engineers (ASCE)
- Early Career Award for Public Engagement with Science / Finalist (Three finalists across America/Europe), American Association for the Advancement of Science (AAAS)
- Travel Grant, Foundation for Individual Rights in Education (FIRE) faculty conference 2019

2018

- Open Access Subvention Funds to publish a Flint citizen science paper (£500), Virginia Tech
- Water Leadership Institute Class of 2018, Water Environment Federation (WEF)

- Paper on perverse incentives in academia placed in Top 1% of Engineering (cited 100+ times)
- Scientist Sentinel: Civic Engagement & Leadership Program (competitive; declined), COMPASS
- Who's Who in America list

2017
- Rising Stars of the Water Industry, WQP Magazine
- Graduate Student of the Year, Virginia Tech

2016
- Profile Feature in CEP Magazine (American Institute of Chemical Engineers' flagship journal)
- Keynote Speaker, VA AWWA/VWEA WaterJAM conference
- Virginia AWWA Graduate Student Scholarship, VA American Water Works Association
- Ut Prosim Scholar, Virginia Tech
- Graduate Student Service Excellence Award, Virginia Tech
- National Video Competition Second Prize, Association of Environmental Engineering and Science Professors (AEESP) for the mini-documentary: https://youtu.be/t0ZNYHB7TvE
- Travel Grant, National Association of Corrosion Engineers to present at CORROSION 2016 conference

2015
- Water Is Life Award, American Civil Liberties Union - Michigan
  For "your courage to shine a light on the Flint water crisis protecting the health of countless residents"
- Travel Grant, VT Graduate Student Assembly to present at UNC Water and Health 2015
- Travel Grant, VT Water IGEP to present at Ohio AWWA SDWA 2015 conference
- Third Prize (National), Fresh Ideas Poster Competition w/ K Phetxumphou at AWWA ACE 2015
- Citizen Scholar Award, Virginia Tech

Before 2015
- Class of 2014: Outstanding Winter Graduate, Virginia Tech
- Engineers Without Borders-USA Global Leadership Program Scholarship, Black and Veatch Fdn
- Interdisciplinary Graduate Education Program (IGEP) Fellowship 2014-15, Virginia Tech
- Student Business Concept Challenge Finalist, Virginia Tech Knowledge Works
  Idea: Rapid cholera bacteria detection kits in contaminated drinking water for developing regions
- Best Technical Paper (1st Prize), I-FEST conference at Nirma University India, 2009
- Best Technical Paper (1st Prize), Brahmaastra conference at BVM India, 2009

Flint Water Study Team Awards (2015-18)

- Kellogg Foundation Community Engagement Scholarship Award, APLU
- UPCEA Engagement Award, University Professional and Continuing Education Association
- The Jean and Leslie Douglas Pearl Award, Cornell Douglas Foundation
- Special Recognition, Earth Day Network Climate Leadership Gala, Washington DC
- Alumni Award for Outreach Excellence, Virginia Tech *(wrote the award proposal)*
- Newsmaker of the Year, Virginia Professional Communicators
- Public Integrity Award, American Society for Public Administration
- Citizen Scholar Award, Virginia Tech *(wrote the award proposal)*
- Proclamation (Commendation), City of West Hollywood California
- Certificate of Appreciation, City of Flint Michigan, 2015

TED TALK

Science in service to the public good (over 1 million views; debuted on TED.com in April 2017).

SCHOLARLY PUBLICATIONS

Peer-reviewed publications
(#: peer-reviewed conference paper, ^: advised undergraduate student, *: corresponding author)

Per Google Scholar: total citations = 441; h-index = 7
Per Web of Science: total citations = 200

1. Roy, S.* and M.A. Edwards. Efficacy of Corrosion Control and Pipe Replacement in Reducing Citywide Lead Exposure during the Flint, Michigan Water System Recovery. *Environmental Science: Water Research & Technology*. doi: 10.1039/d0ew00583e
2. Roy, S.*, M. Tang, and M.A. Edwards. Lead Release to Potable Water during the Flint, Michigan Water Crisis as revealed by Routine Biosolids Monitoring Data. *Water Research*. doi: 10.1016/j.watres.2019.05.091
3. Roy, S.* and M.A. Edwards. Citizen Science During the Flint, Michigan Federal Water Emergency: Ethical Dilemmas and Lessons Learned. *Citizen Science: Theory and Practice*. doi:10.5334/cstp.154
4. Roy, S.* and M.A. Edwards. Preventing another Lead (Pb) in Drinking Water Crisis: Lessons from Washington DC and Flint MI contamination events. *Current Opinion in Environmental Science & Health*. doi:10.1016/j.coesh.2018.10.002
5. Roy, S.*, P. Smith^, G. House^, and M.A. Edwards. Cavitation and Erosion Corrosion Resistance of Nonleaded Alloys in Chlorinated Potable Water. *CORROSION*. doi:10.5006/2939
6. Roy, S.* and M.A. Edwards. Interactive Effects of Water Chemistry, Hydrodynamics, and Precipitated Calcium Carbonate Causing Erosion Corrosion of Copper in Hot Water Recirculation Systems: Case Study and Experimental Work. *CORROSION*. doi:10.5006/2937
7. Roy, S.*, J.M. Coyne, J.A. Novak, and M.A. Edwards. Flow-induced failure mechanisms of copper pipe in potable water systems. *Corrosion Reviews*. doi:10.1515/corrrev-2017-0120
8. Pieper, K.J., M. Tang, R. Martin, L. Walters, J. Parks, S. Roy, C. Devine, and M.A. Edwards*. Evaluating Water Lead Levels during the Flint Water Crisis. *Environmental Science & Technology*. doi:10.1021/acs.est.8b00791
9. # Roy, S.* and M.A. Edwards. Effects of Calcium Carbonate precipitation on erosion corrosion of non-leaded brass fittings in potable hot water systems. *Proc. NACE CORROSION 2016*, Mar 6-10, 2016, Vancouver, Canada.
10. Edwards, M.A.* and S. Roy. Academic Research in the 21st Century: Maintaining Scientific Integrity in a Climate of Perverse Incentives and Hyper-competition. *Environmental Engineering Science*. doi:10.1089/ees.2016.0223.
    > Top 1% cited paper in Engineering academe; 'Most Read' paper in journal's history; 250,000+ downloads; Trended #1 on Reddit Science; Featured in Science News & Chemistry World
11. Phetxumphou, K., S. Roy, B.M. Davy, P.A. Estabrooks, W. You, and A.M. Dietrich*. Assessing clarity of message communication for mandated USEPA drinking water quality reports. *Journal of Water and Health*, doi:10.2166/wh.2015.134
12. Roy, S.*, K. Phetxumphou, A.M. Dietrich, P.A. Estabrooks, W. You, and B.M. Davy. An Evaluation of the Readability of Drinking Water Quality Reports: A National Assessment. *Journal of Water and Health*, doi:10.2166/wh.2015.194

13. # Lambrinidou, Y.*, W.J. Rhoads, S. Roy, E. Heaney, G. Ratajczak, and J. Ratajczak. Ethnography in Engineering Ethics Education: A Pedagogy for Transformative Listening. *ASEE Annual Conference and Exposition*, Jun 15-18 2014, Indianapolis, IN.

Total journal articles under review or in progress: 6

Peer-reviewed conference presentations *(* implies invited; ** implies conference poster; "peer-reviewed" = abstract reviewed before acceptance)*

1. Edwards, M.A., Purchase J., Lopez, K.G., and S. Roy. Engineering Ethics and Citizen Science in Underserved Communities: Experiences of The US Water Study Team. AEESP Converging COVID-19, environment, health, and equity conference, Oct 16-Nov 20, 2020.
2. Roy, S., Pieper, K.J., Battle, C., Lopez, K.G., and M.A. Edwards. Citizen science monitoring for India's water sector: Tools and protocols from the US experience. AWWA India Annual Conference, Dec 13-14, 2019, Mumbai, India.
3. Roy, S., M. Tang, and M.A. Edwards. Lead (Pb) in water, childhood lead exposure, and adverse pregnancy outcomes during the Flint Water Crisis: Quantifying the "unknown". American College of Toxicology Annual Meeting, Nov 17-19, 2019, Phoenix, AZ.
4. Roy, S., M. Tang, and M.A. Edwards. Lead (Pb) Exposure and Associated Adverse Health Outcomes During the Flint, Mich. Water Crisis: Quantifying the "Unknown." AWWA WQTC, Nov 3-7, 2019, Dallas, TX.
5. Roy, S. and M.A. Edwards. The Promises and Perils of Citizen Science and Community Engagement witnessed in the Flint Water Crisis. International Society of Environmental Epidemiology, Aug 25-28, 2019, Utrecht, the Netherlands.
6. Roy, S. and M.A. Edwards. Anatomy of Public Health Crises: Flint MI and Washington D.C. Lead in Water Emergencies. International Society of Environmental Epidemiology, Aug 25-28, 2019, Utrecht, the Netherlands.
7. Roy, S., M. Tang, and M.A. Edwards. Lead Release to Potable Water during the Flint, Michigan Water Crisis as revealed by Routine Biosolids Monitoring Data. AWWA ACE, Jun 9-12, 2019, Denver, CO.
8. * Roy, S. Citizen science to monitor water quality in underserved communities and emergencies: Tools and protocols from the US experience. U.S.-Jordan Conference on Development and Policy Responses to the Syrian Refugee Crisis, Jun 4-7, 2019, Blacksburg, VA.
9. Roy, S. and M.A. Edwards. Citizen Science During the Flint, Michigan Federal Water Emergency: Ethical Dilemmas and Lessons Learned. AEESP Conference, May 14-16, 2019, Tempe, AZ.
10. Roy, S. and M.A. Edwards. A Case Study of Postmodern Science Anarchy and Ethics: The Flint, MI Federal Emergency. Forum on Philosophy, Engineering and Technology 2018, May 30-Jun 1, 2018, College Park, MD.
11. Roy, S. and M.A. Edwards. WRF 4658: Cavitation and Erosion Corrosion Resistance of Nonleaded Alloys in Chlorinated Potable Water. AWWA WQTC, Nov 12-16, 2017, Portland, OR.
12. Roy, S. and M.A. Edwards. Cavitation and Erosion Corrosion Resistance of Nonleaded Alloys in Chlorinated Potable Water. AWWA ACE, Jun 11-14, 2017, Philadelphia, PA.
13. * Roy, S. and M.A. Edwards. Science for the Public Good vs. Perverse Incentives in Academia. AAAS Annual Meeting, Feb 16-20, 2017, Boston, MA.

14. * Roy, S. and M.A. Edwards. The Flint Water Crisis: Responding to a Public Health Emergency. E.U. SAFEWATER Conference, Nov 23-24, 2016, Zurich, Switzerland.
15. Roy, S. and M.A. Edwards. Revisiting the public health tragedy in Flint and why we are ill-equipped to prevent another. APHA Annual Meeting and Expo, Oct 29-Nov 2, 2016, Denver, CO.
16. Pieper, K.J., A. Katner, S. Roy, and M.A. Edwards. Lead in Water Equation: Understanding variables that influence lead in drinking water. UNC Water and Health, Oct 10-14, 2016, Chapel Hill, NC.
17. Roy, S. and M.A. Edwards. The Flint MI Water Crisis: Lessons in Communicating Science and Influencing Public Discourse with Research. AWWA ACE, Jun 19-22, 2016, Chicago, IL.
18. * Roy, S., K. Phetxumphou, A.M. Dietrich, P.A. Estabrooks, W. You, and B.M. Davy. Communicating Water Quality: Available tools for evaluation. UNC Water and Health Conference, Oct 26-30, 2015, Chapel Hill, NC.
19. Roy, S. and M.A. Edwards. Role of water hardness precipitation and flashing cavitation in erosion corrosion of copper in potable water systems. AWWA ACE, Jun 7-10, 2015, Anaheim, CA.
20. ** Phetxumphou, K.,^ S. Roy^, B.M. Davy, P.A. Estabrooks, W. You, and A.M. Dietrich. Evaluating readability and clarity of USEPA mandated Drinking Water Quality Reports: A National Assessment. AWWA ACE, Jun 7-10, 2015, Anaheim, CA. ^equal contribution
21. Roy, S. Revitalizing Ethics Training of STEM Graduates: The Tonawanda NY Experience. DuPont Summit on Science, Technology and Environmental Policy, Dec 5 2014, Washington, DC.
22. Roy, S. and M.A. Edwards. Erosion Corrosion of Copper as a function of temperature, flow rates and water hardness. AWWA ACE, Jun 8-12, 2014, Boston, MA.

Technical Reports

1. Roy, S., P. Smith, G. House, and M.A. Edwards. Corrosion of Nonleaded Pump Impeller Alloys in Chlorinated Potable Water. *Water Research Foundation* (WRF) Project 4658 Final Report. WRF. Denver, CO.
2. Roy, S., G. House, and M.A. Edwards. Comparative Resistance of Six Copper Alloys to Erosion Corrosion in Simulated Potable Water. *Final Report prepared for Chase Brass*.
3. Roy, S. and M.A. Edwards. Hard $CaCO_3$ Particles Formed by Water Heating Exacerbate Copper Erosion Corrosion. *Final Report prepared for Copper Development Association*.

PUBLIC SCHOLARSHIP AND SELECTED PRESS

Editorials and Columns

1. Roy, S. and M. Edwards. *From Sewage Sludge, a New Perspective on the Flint Water Crisis*. Undark. September 2020 (syndicated: Mother Jones)
2. Roy, S. and M. Edwards. *Flint water crisis shows the danger of a scientific dark age.* CNN. March 2019
3. Roy, S. and M. Edwards. *Intègres comme des coureurs du Tour de France*. Books. March-April 2018

4. Roy, S. and M. Edwards. *Science is a public good in peril – here's how to fix it.* Aeon. November 2017
5. Phetxumphou, K., S. Roy B.M. Davy, P.A. Estabrooks, W. You, and A.M. Dietrich. *Write Consumer Confidence Reports Customers Can Understand.* OpFlow. February 2017
6. Roy, S. *The Hand-in-Hand Spread of Mistrust and Misinformation in Flint.* American Scientist. January-February 2017
7. Rhoads, W.J., R. Martin and S. Roy. *We helped uncover a public health crisis in Flint, but learned there are costs to doing good science.* The Conversation (syndicated: PBS, Scientific American, Huffington Post). January 2016

Science Documentaries, Podcasts and Websites

1. Executive Producer (with Dr. Marc Edwards). *The Public-inspired Science Podcast* (Seasons 01 and 02 recorded live at the Haymarket Theater in Blacksburg VA on Mar 1st 2019 and February 14th 2020 and are now streaming on Apple iTunes).
2. Executive Producer and Videographer (with Dr. Marc Edwards and Ms. Erica Corder). *The U.S. Water Study science documentary series.* Five documentaries currently in production.
3. Producer and Narrator. *Flint Water Study – An ode to environmental engineers.* Award-winning science documentary. Available on YouTube: https://youtu.be/t0ZNYHB7TvE
4. Creator and curator. *USWaterStudy.org*
5. Creator and curator. *FlintWaterStudy.org* (over 1 million views) and social media (Facebook/Twitter).
   My Twitter (@flintwaterstudy) engagement was the subject of a peer-reviewed journal article by science communication researchers (doi: 10.1177/1075547017751948).
6. Script and Video-segment producer. *MacArthur Foundation 100&Change grant proposal video abstract "Science as a public good."* Available on YouTube: https://youtu.be/j8Y2Q7WPLOE
7. Producer and Videographer. Water sampling videos for Flint, Michigan (https://youtu.be/dEQDaPws2xk) and California schools (https://youtu.be/pxg9X9NMy4g).

Invited Keynote Lectures, Talks, and Expert Panels

Selected listing in alphabetical order. Full list: *https://siddhartharoy.org/events/*

1. American Institute of Chemical Engineers (Webinar), 2016.
2. AIHA/ASSE Conference (Denver, CO), 2017.
3. Chandler-Gilbert Community College (Chandler, AZ), 2018.
4. George Walton Academy (Monroe, GA), 2020.
5. Harvard University's ComSciCon 2016 (Cambridge, MA), 2016.
6. Kids' Tech University (Blacksburg, VA), 2018.
7. Louisiana State University (Baton Rouge, LA), 2020.
8. Massachusetts Institute of Technology (Cambridge, MA), 2018.
9. Middlebury College (Middlebury, VT), 2018.
10. Northwestern University (Evanston, IL), 2016.
11. Ohio AWWA (Columbus, OH), 2015.
12. Phillips Exeter Academy (Exeter, NH), 2016.
13. Princeton University (Princeton, NJ), 2018.
14. Rising Silo Brewery (Blacksburg, VA), 2018.

15. Science Museum of Virginia (Richmond, VA), 2017, 2019.
16. Science Writers Conference (San Antonio, TX), 2016.
17. Slovenian Academy of Sciences and Arts (Ljubljana, Slovenia. via satellite), 2019.
18. Tufts University (Medford, MA), 2018.
19. University at Buffalo (Buffalo, NY), 2020.
20. University of Maryland (College Park, MD), 2017.
21. University of Massachusetts Amherst, MA), 2020.
22. University of Notre Dame (South Bend, IN), 2017.
23. Wesleyan University (Middletown, CT), 2018.
24. Western Michigan University (Kalamazoo, MI), 2016.
25. WGBH Idea Lab (Cambridge, MA), 2016.
26. World Health Organization (Geneva, Switzerland), 2017.

Media Coverage (Newspapers and Magazines)

Selected listing in alphabetical order.

1. ABC News: Flint Water Crisis: How a Water Study Researcher Would Address the Damage (Jan 19, 2016)
2. American Scientist: Moving Forward After Flint (May-June 2016 issue)
3. Associated Press: Flint lead problem could be eased by recoating old pipes (Jan 22, 2016)
4. ASCE News: Young Engineer Finds His Calling Through Flint Water Crisis Solutions (Feb 13, 2019)
5. ATTN: Flint, Michigan Has Been Charging Its Residents for Toxic Water (Jan 19, 2016)
6. ATTN: The Water in Flint Is Better, but People Aren't Using It (Oct 21, 2016)
7. Bloomberg BNA: Flint, Mich., Didn't Follow Drinking Water Controls (Oct 20, 2015)
8. Burlington Free Press: Vermont schools have lead in their water supply. How concerned should you be? (Jan 27, 2020)
9. CEP Magazine: Profile: Pursuing Science for the Public Good (December 2016 issue)
10. Chicago Tribune (front page): Flint researchers find alarming levels of lead in Cicero, Berwyn tap water, suggesting thousands of older homes at risk (Aug 10, 2018)
11. Christian Science Monitor: How to fix Flint's lead pipe problem (Jan 23, 2016)
12. Chronicle of Higher Education: The Accidental Ethicist (Oct 2, 2016)
13. Engineer's Forum: PUZZLING PIPES: Civil engineers plumb corrosion mystery (September 2015 issue)
14. Five Thirty-Eight: What Went Wrong In Flint (Jan 26, 2016)
15. Grist: Shift Happens, one PB&J at a time (Dec 3, 2016)
16. Healthline: How toxic is the water in Flint (Jan 25, 2016)
17. Jacobin: Capitalism Is Ruining Science (July 2018 issue)
18. Michigan Radio: Team testing Flint water for lead sample by sample (Sep 6, 2015)
19. Michigan Radio: New study questions some of the citizen science projects during Flint's water crisis (Mar 8, 2019)
20. My Suburban Life: Testing by local organization, Virginia Tech finds high lead levels in Berwyn, Cicero water (Aug 14, 2018)
21. Notre Dame Science: Virginia Tech researchers explain the Flint water crisis (Dec 8, 2016)
22. National Science Foundation: Flint water crisis: For young engineers, a lesson on the importance of listening (Mar 23, 2016)

23. Pittsburgh Tribune-Review**.**
24. SciDev: India, MENA region face severe water crisis (Aug 15, 2019)
25. Scientific American: Water Wand (Jun 2020)
26. St. Louis Post-Dispatch: Districts move to test water for lead after elevated levels found in some St. Louis schools (Aug 25, 2016)
27. The American Prospect: Beyond Flint: How Local Governments Ignore Federal Water Standards (Feb 24, 2016)
28. The Dallas Morning News: Disabled Texans in three state homes have been drinking water with Flint-level amounts of lead (May 13, 2016)
29. The Flint Journal: Meet the key figures in NOVA's 'Poisoned Water' feature on Flint (May 2017)
30. The Flint Journal: Researchers say sewage data holds clues to Flint water crisis (May 30, 2019)
31. The Guardian: A hidden scandal: America's school students exposed to water tainted by toxic lead (Mar 6, 2019)
32. The New York Times (centerspread): As Flint Fought to Be Heard, Virginia Tech Team Sounded Alarm (Feb 6, 2016)
33. The Roanoke Times: Virginia Tech researchers fought for Flint in water crisis (Jan 23, 2016)
34. Virginia Tech Magazine: Fighting for Flint: A Virginia Tech team exposes lead poisoning (Spring 2016 issue)
35. Virginia Tech Magazine: Tapping the Ripple Effect (Fall 2018 issue)
36. WIRED: Ripple Effect: The crisis in Flint isn't over. It's everywhere. (Jun 2016 issue)
37. WIRED: The Flint Water Crisis Is Bigger Than Elon Musk (Jul 12, 2018)

Media Coverage (Television, Radio, and Podcasts)

Podcasts

1. Mother Jones' Inquiring Minds.
2. Science Soapbox.
3. The Nature of Cities (citizen science).
4. The Story Collider (science & courage).
5. Vanguard STEM.

Radio

1. BBC World Service
2. Iowa Public Radio (NPR): Iowa's Drinking Water: Could Flint Happen Here? (Jun 17, 2016)
3. KCRW's To The Point: Lead in America's Water Systems (Mar 30, 2016)
4. Minnesota Public Radio (NPR): This American Moment: Restoring the public's faith in science and expertise (Nov 6, 2018)
5. WMUK (NPR): WSW: Flint's Lesson About Science And Ethics (Feb 4, 2016)
6. WUFT (NPR): What Led The Alachua County School District To Install Water Filters To Prevent Lead Contamination (Oct 17, 2018)

Television

1. FOX17: Virginia Tech scientist talks 'Flint water crisis' with WMU students, staff (Feb 10, 2016)
2. Sky News UK: Dirty Water Supplies 'Poisoning Public Trust' (May 30, 2016)
3. TRT World: Has Flint's water crisis been solved? (Apr 19, 2018)
4. WDBJ7 (TV panel on Sunday morning news). (Jan 2016)
5. WSLS10: Virginia Tech researchers announce Flint water is safe (Sep 17, 2017)

Media Coverage (Science Documentaries and Movies)

1. Discovery® Channel. Disaster Engineered. Season 02. Ep. 08. Flint Water Crisis. *(forthcoming).*
2. PBS® NOVA® 'Poisoned Water' documentary, 2017 *(streaming on Netflix; winner of the AAAS Kavli Science Journalism award for In-depth Reporting-Silver in 2017).*
3. Virginia Tech documentary 'Cicero', 2019
4. LIFETIME® movie 'Flint', 2018 *(factually inaccurate, but features an actor playing 'Sid')*

RESEARCH CONTRACTS AND GRANTS ($5,000 and over)

1. [Research] Water Research Foundation ($60,000). 4658: *Corrosion of Nonleaded Pump Impeller Alloys in Chlorinated Potable Water* (2016-18). Lead Investigator and Primary Author.
2. [Research] Chase Brass ($16,200). Technical Assistance Program: Erosion Corrosion in Nonleaded Alloys (2016-17). Lead Investigator and Primary Author.
3. [Research] Union of Concerned Scientists and EPA College/Underserved Community Partnership Program. ($10,000). Lead in Water Pilot Project for public schools around Georgia College, Tuskegee University and UNC Wilmington (2016-17). Primary Coordinator.
4. [Award] W.K. Kellogg Foundation Community Engagement Scholarship Award ($5,000). Flint (2018). Primary author.
5. [Research] Flint Water Study Crowdfunding ($100,000+). GoFundMe to recover discretionary funds directed to Flint (2016). Co-written/co-led with Dr. Marc Edwards.
6. [Development/Service] Engineers Without Borders ($26,450). Guatemala Boarding School Sanitation Project. Primary Author. Funds received from Boeing, Pratt & Whitney and Bechtel (2013-15).

RESEARCH SUPERVISION AND ADVISING

Research sampling trips led or facilitated

- Flint MI (September 2015) – heavy metals, sequential sampling, press conference
- Flint MI (May 2016) – disinfection byproducts
- Flint MI (August 2016) – opportunistic pathogens incl. *Legionella pneumophila* (*Lp*)
- Denmark SC (August 2017) – opportunistic pathogens incl. *Lp* and *Naegleria fowleri*
- Berwyn and Cicero IL (June 2018) – heavy metals, sequential sampling
- Berwyn and Cicero IL (August 2018) – citywide water sampling for lead and press conference
- Chicago IL (August 2019) – citywide water sampling in Chicago's South Side

Undergraduate and Graduate Research Assistants advised

Trainee	*Current Position*
Grace Psenicska	Undergraduate Student, Virginia Tech
Carol Yang	Undergraduate Student, Virginia Tech
Gregory House, B.S.	Graduate Student, Virginia Tech
Sophia Lee, B.S.	Environmental Planner, ATCS, P.L.C.
Philip Smith, B.S.	Water Resources Staff Engineer, GORDON
Zihan Wang, M.S.	Stormwater Engineer, HDR
Chivonne Battle, M.S.	Graduate Student, Virginia Tech
Kris Mapili, M.S.	Civil Engineer, Stantec

Kathryn Lopez, B.S.	Graduate Student, Virginia Tech
Taylor Lightner, M.S.	Graduate Student, Virginia Tech
Tolulope Odimayomi, M.S.	Graduate Student, Virginia Tech

Awards (university or state level) to advisees

- First Prize – Technical Paper Award (Philip Smith – ASCE Virginias' Section), 2018
- Third Prize – Best Poster Award (Philip Smith – 7th CEE Research Day, Virginia Tech), 2017
- Third Prize – Technical Paper Award (Kristine Mapili – ASCE Virginias' Section), 2016
- First Prize – Best Poster Award (Kristine Mapili – 6th CEE Research Day, Virginia Tech), 2016
- First Prize – Best Poster Award (Zihan Wang – 5th CEE Research Day, Virginia Tech), 2015

TEACHING EXPERIENCE AND TRAINING

Princeton University Pathways into the Academy future faculty workshop (competitive), 2019-20

Instructor for short-term Virginia state-level courses

1. "Groundwater Math for Small Systems," Virginia Dept. of Health (VDH), Richmond VA (2020)
2. "Preventing the next lead (Pb) in water crisis," Virginia Dept. of Health (VDH), Blacksburg VA (2019)
3. "Groundwater Math for Small Systems," Virginia Dept. of Health (VDH), Roanoke VA (2019)
4. "Basic Groundwater Course for Small Systems," VT, Roanoke VA (2019)
5. "Contaminants of Concern: Chemistry, Toxicity and Treatment," VT/VDH, Richmond VA (2018)

Open-ended feedback from courses (when available): "wonderful job!" / "Sid's presentation was AWESOME!" and "very interesting" / "showed how to handle social media situations, as well as, how to handle situations with local, state and federal entities" / "experts on the topics" and "very knowledgeable, prepared, and energetic" / "Timely information, depth and first-hand knowledge"

Teaching Assistant and/or Guest Lecturer

Fall 2014/2015/2016/2018/2019 for CEE5804 'Engineering Ethics and the Public'

Guest Lectures in Virginia Tech graduate classes

GRAD5414 Water and Health (Spring 2020); GRAD5414 Water and Health (Spring 2019); GRAD5134 Interdisciplinary Research (Spring 2016)

Guest Lectures in undergraduate classes:

- *Virginia Tech:* ENSC3604 Fundamentals of Environmental Science (Fall 2019), ENGR1014 Engineering Research (Fall 2019), ENGE1215 Fundamentals of Engineering (Fall 2017), CEE3104 Intro to Environmental Engineering (Fall 2016)
- *Middlebury College* (Fall 2018): ENVS 0401 Community Engaged Practicum
- *University of Maryland College Park* (Fall 2017): ENME 467 Engineering for Social Change
- *University of Notre Dame* (Fall 2016): Sustainability at Notre Dame
- *Wesleyan University* (Spring 2018): CIS121 Math and Science Scholars Class, Think Tank
  Western Michigan University (Spring 2016)

Others
- Lead Instructor, Academic Integrity and Ethics Workshop for CEE graduate students, 2014-16
- Instructor (*Water for Health* course), VA Governor's School of Agriculture Summer School, 2014
- Research Assistant, LEWAS lab (gathered and provided stream data from water quality sensors installed in Stroubles Creek for 3000-level Hydrology class students), 2012
- Tutor (Math and Science – 4th Grade, Kipps Elementary), Blacksburg Refugee Partnership, 2018
- Instructor (3000-level), College of Dairy Science & Food Technology (SDAU, India), 2010

SCIENCE/WATER/LEADERSHIP WORKSHOPS

2018 Water Leadership Institute (competitive), Water Environment Federation
2016 ComSciCon 2016 (Keynote Panel), Harvard University/Microsoft NERD, 2016
2015 Water Quality Challenges in Underrepresented Communities (co-taught), UNC Chapel Hill
2015 Grand Challenges in Environmental Engineering/Science in the 21st Century, Yale University
2014 [4000-Level] EWB-USA Design Global, Engineer Local: Water Sanitation and Hygiene (competitive), Panama City, Panama
2013 Ethics, Culture and Community Based Participatory Research, Syracuse University
2013 Graduate Ethics Workshop: Learning to Listen (co-taught), Colorado School of Mines

PROFESSIONAL SERVICE

Referee for peer-reviewed journals
CORROSION, Corrosion Reviews, Environmental Engineering Science, Environmental Science and Technology, Forensic Sciences Research, Journal of Water and Health, Proceedings of the National Academy of Sciences, Utilities Policy

Conferences and Workshops
- Organizer and Moderator, "Fighting the coronavirus pandemic: Evidence-based approaches from Environmental Engineers" webinar, HxEES, Jul 29, 2020, Virtual
- Session Chair, "Special Case Studies" at AWWA India Annual Conference and Exposition, Dec 13-14, 2019, Mumbai, India
- Organizer, "Water Quality and Citizen Science 101" teaching workshop at UNC Water and Health Conference 2019, Oct 11 2019, Chapel Hill, NC
- Conference Moderator, "Disinfection Byproduct Health Impacts and Compliance Strategies" at AWWA WQTC 2019 in Dallas, TX (Nov 3-7, 2019)
- Co-organizer, US-Jordan "Transformational Ideas to Improve Development and Policy Response to Forced Displacement" conference on the Syrian refugee crisis, Jun 4-7 2019, Blacksburg VA

Research Proposal/Award Reviewer
NC Water Resource Research Institute – Research Proposals, 2020
AAAS Kavli Science Journalism Awards – Science Reporting: In Depth, 2020
AAAS IF/THEN Ambassadors (100 women in STEM as role models for middle school girls), 2019
Graduate Women in Science National Fellowship Program, 2019
VT Graduate Research Development Program – student research proposals, 2013

Expert Judge
Virginia State Science and Engineering Fair, 2020
Paul E. Torgersen Graduate Research Excellence Competition, Virginia Tech, 2019
U.S. Stockholm Junior Water Prize, Blueridge Highlands Science Fair, Radford VA, 2018
Young Professionals Poster Competition, AWWA Annual Conference, Denver CO, 2017

Miscellaneous
Moderator, Heterodox Academy Environmental Engineering and Science, 2020
Board Member, Virginia Tech Science and Technology Policy Initiative, 2014
Science Blogger, Water IGEP program at Virginia Tech, 2013-15

SKILLS

General: Project planning/management/evaluation, technical writing, budgeting, fundraising, leadership, client communication, public speaking, interdisciplinary collaborations
Scientific (general): Experimental design, hypothesis-driven research, grant budgeting, proposal writing, interdisciplinary collaborations, qualitative surveys, IRB
Laboratory/field techniques: Bench-scale and pilot-scale electrochemical/corrosion studies, colorimeters (free/total chlorine), spectrophotometers (Hach DR6000; chlorine, ammonia, copper, chlorine dioxide, among others), multi-parameter sondes (dissolved oxygen, pH, ORP, and temperature sensors for streams), laboratory probes (conductivity, dissolved oxygen, pH, temperature, and turbidity), turbidimeters
Sample characterization (assisted only): ICP-MS, ESEM, XRD
Statistics (qualitative & quantitative): R, Excel, SPSS Statistics, Qualtrics, QDA Miner
Code/programming/web languages: WordPress, HTML, C, C++, Pascal, SQL, Hugo
Documentary/Podcast-making: GoPros, DSLRs, Sony Alphas, Audacity, Movie Maker
Human languages: English (fluent), Hindi (fluent), Bengali (native), Gujarati (basic)

ORGANIZATIONAL MEMBERSHIPS

Active: American Society of Civil Engineers (ASCE), Association of Environmental Engineering and Science Professors (AEESP), Heterodox Academy (HxA), Society of International Development - Washington (SID-W).

Inactive: American Water Works Association (AWWA), Engineers Without Borders USA (EWB-USA), National Association of Corrosion Engineers (NACE), Water Environment Federation (WEF).

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