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Environmental Engineer
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Nationalities: United States (Lawful Permanent Resident: EB1-A "Extraordinary Ability"); India (Birth).

ACADEMIC HISTORY AND CERTIFICATIONS

Virginia Tech, College of Engineering – Blacksburg, VA
2018 *Ph.D. in Civil Engineering (program: Environmental 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

2022+ **UNC Water Institute**, University of North Carolina, Chapel Hill, NC
Research Associate (Oct 2022-present)
- To lead research and projects related to drinking water safety – in particular, issues related to testing, monitoring, and management of under-recognized contaminants in drinking water in low- and middle-income countries in West Africa, with an emphasis on lead and toxic metals.

2018-22 **Virginia Tech Department of Civil and Environmental Engineering**, Blacksburg, VA
Research Scientist (Oct 2020-Oct 2022)
Postdoctoral Research Associate, US Water Study Team founding co-leader (2018-20)

- Field sampling 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 and a decision-making tool for homeowners to control waterborne pathogens like *Legionella* (in: *Water Res.*).
- Wastewater-based epidemiology: Used lead in sewage sludge (biosolids) and children's blood datasets to estimate magnitude and timing of lead release from plumbing to water and population exposure during the Flint Water Crisis (in: *Water Res.* and *Env Sci: WRT)*.
- Water, public health and health disparities studies: 1) Fetal deaths (overall and race-specific) and fertility impacts from maternal lead exposure during the Flint Water Crisis (in: *J Exp Sci Env Epid*); 2) Trends in waterborne lead and childhood exposure in six US/Canadian cities (ongoing).
- Population-based retrospective cohort study in low-income communities facing water crises: Quantifying adverse educational outcomes and psychological health harm in Flint children following the Flint Water Crisis (in review).

- Mixed methods surveys capturing population perceptions: 1) Survey of public school teachers' health perceptions of water lead exposure in Flint children and impacts on learning and special education; 2) National survey of US NSF fellows' (n=244) perceptions and experiences on dominant incentives, research misconduct and scientific integrity in STEM academia; 3) Survey of South Side Chicago residents participating in water lead testing on public trust in tap water, government agencies and experts
- Mentor to 14 advisees in conducting research, publishing, and winning state/national awards
- Course instructor for water treatment, math, chemical contaminants for water utility operators
- Executive producer of the US Water Study podcast (two seasons) on Apple iTunes and original documentary series on YouTube.

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 Obama, garnered over $1.2 billion in relief for Flint residents, and informed the $1 Trillion Infrastructure Bill (H.R. 3684) in 2021.
- 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 within high-rise 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
- Engineers Without Borders-USA: 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 7 (to undergraduate advisees)

2016-22

- STAT Wunderkind 2021 (early-career heroes of science and medicine across North America), STAT News/The Boston Globe
- IWA Young Leadership Award 2020-22 (global award; first Indian and first US nominee), International Water Association (IWA)
- ASCE New Face of Civil Engineering Professionals (Ten civil engineers across the US), American Society of Civil Engineers (ASCE)
- AAAS Early Career Award for Public Engagement with Science / Finalist (Three scientists across the U.S. and the E.U.), American Association for the Advancement of Science (AAAS)
- WEF Water Leadership Institute Class of 2018, Water Environment Federation (WEF)
- Paper on perverse incentives in academia placed in Top 1% of Engineering (cited 300+ times)
- Scientist Sentinel: Civic Engagement & Leadership Program (competitive; declined), COMPASS
- Who's Who in America list
- Rising Stars of the Water Industry, WQP Magazine
- Graduate Student of the Year (from over 6000 enrolled graduate students), Virginia Tech
- Virginia AWWA Graduate Student Scholarship (one annual scholarship awarded in the State), 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 documentary: https://youtu.be/t0ZNYHB7TvE

2009-15

- Water Is Life Award, American Civil Liberties Union (ACLU) - Michigan
  For "your courage to shine a light on the Flint water crisis protecting the health of countless residents"
- Third Prize (National), Fresh Ideas Poster Competition w/ K Phetxumphou at AWWA ACE 2015
- Citizen Scholar Award, Virginia Tech
- 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

Travel or Publishing Grants (2015-21)

- Travel Grant, Foundation for Individual Rights in Education (FIRE) 2019, 2021 Conference
- Open Access Subvention Funds to publish a Flint citizen science paper (£500), Virginia Tech
- Travel Grant, Nat. Assoc. of Corrosion Engineers to present at CORROSION 2016 conference
- 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

Flint Water Study Team Awards (2015-18)

- Kellogg Foundation Community Engagement Scholarship Award, W. K. Kellogg Foundation
- 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 1.4 million views; on TED.com since April 2017).

SCHOLARLY PUBLICATIONS

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

Per Google Scholar: total citations = 902; h-index = 10

1. Roy, S.* and M.A. Edwards. Addressing the Preprint Dilemma. *International Journal of Hygiene and Environmental Health.* doi: 10.1016/j.ijheh.2021.113896.
2. Roy, S.* and M.A. Edwards. Are there excess fetal deaths attributable to waterborne lead exposure during the Flint Water Crisis? Evidence from Bio-kinetic Model Predictions and Vital Records. *Journal of Exposure Science and Environmental Epidemiology.* doi: 10.1038/s41370-021-00363-z
3. Roy, S.*, K. Mosteller, M. Mosteller, K. Webber, V. Webber, S. Webber, L. Reid, L. Walters, and M.A. Edwards. 2021. Citizen science chlorine surveillance during the Flint, Michigan federal water emergency. *Water Research.* doi: 10.1016/j.watres.2021.117304.
4. # Lightner, T.*, S. Roy, M.A. Edwards and J. London. 2021. Centering the public: A narrative analysis of engineering graduate students' journeys navigating public-inspired science work. *ASEE Annual Conference and Exposition 2021*, Jul 25-28, 2021.
5. Roy, S.* and M.A. Edwards. 2020. 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
6. Roy, S.*, M. Tang, and M.A. Edwards. 2019. 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
7. 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
8. 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
9. Roy, S.*, P. Smith^, G. House^, and M.A. Edwards. 2018. Cavitation and Erosion Corrosion Resistance of Nonleaded Alloys in Chlorinated Potable Water. *CORROSION*. doi:10.5006/2939
10. Roy, S.* and M.A. Edwards. 2018. 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
11. Pieper, K.J., M. Tang, R. Martin, L. Walters, J. Parks, S. Roy, C. Devine, and M.A. Edwards*. 2018. Evaluating Water Lead Levels during the Flint Water Crisis. *Environmental Science & Technology*. doi:10.1021/acs.est.8b00791

12. Roy, S.*, J.M. Coyne, J.A. Novak, and M.A. Edwards. 2017. Flow-induced failure mechanisms of copper pipe in potable water systems. *Corrosion Reviews*. doi:10.1515/corrrev-2017-0120
13. Edwards, M.A.* and S. Roy. 2016. 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
14. # Roy, S.* and M.A. Edwards. 2016. 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.
15. Phetxumphou, K., S. Roy, B.M. Davy, P.A. Estabrooks, W. You, and A.M. Dietrich*. 2016. Assessing clarity of message communication for mandated USEPA drinking water quality reports. *Journal of Water and Health*, doi:10.2166/wh.2015.134
16. Roy, S.*, K. Phetxumphou, A.M. Dietrich, P.A. Estabrooks, W. You, and B.M. Davy. 2015. An Evaluation of the Readability of Drinking Water Quality Reports: A National Assessment. *Journal of Water and Health*, doi:10.2166/wh.2015.194
17. # Lambrinidou, Y.*, W.J. Rhoads, S. Roy, E. Heaney, G. Ratajczak, and J. Ratajczak. 2014. Ethnography in Engineering Ethics Education: A Pedagogy for Transformative Listening. *ASEE Annual Conference and Exposition*, Jun 15-18 2014, Indianapolis, IN.

Total journal manuscripts being revised, under review or in progress: 7

18. Roy, S.*, K.J. Petrie, G.D. Gamble, and M.A. Edwards*. Did lead exposure during the Flint, Michigan water crisis increase special education enrollment in school children? *Under Review.*
19. Roy, S.* and M.A. Edwards. NSF Fellows' perceptions about incentives, research misconduct, and scientific integrity in STEM academia. *Under Review.*
20. Roy, S.*, K.J. Petrie, G.D. Gamble, E. Jacques, and M.A. Edwards. Effects of negative health perceptions of waterborne lead exposure in the Flint, Michigan Water Crisis: Evidence from a schoolteacher survey. *Survey completed/Manuscript in preparation.*
21. Roy, S.* and M.A. Edwards. Ethically Street Smart? A survey of "Engineering Ethics and the Public" graduate course alumni, 2010-20. *Survey completed/Manuscript in preparation.*
22. Roy, S.*, T. Odimayomi, and M.A. Edwards. Tracking Community Scale Lead Release to Potable Water through Biosolids Data in Six Cities across North America. *In preparation.*
23. Wait, K., S. Roy, A. Katner, J. Purchase, R. Kriss, T. Odimayomi, A. Pruden and M.A. Edwards*. Case Studies of Citizen Science Water Quality Interventions: Successes and Lessons Learned. *In preparation.*
24. Roy, S.*, C. Battle, R.P. Hall and M.A. Edwards. Evaluating waterborne lead and public trust in water during a citizen science sampling program in the Chicago Metropolitan Area (working title). *Survey completed/Manuscript in preparation.*

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

1. ** Roy, S., K. Mosteller, M. Mosteller, K. Webber, V. Webber, S. Webber, L. Reid, L. Walters, and M.A. Edwards. Citizen science chlorine surveillance during the Flint, Michigan federal water emergency. IWA Disinfection + DBPs, Jun 27-Jul 1, 2022, Milan, Italy.
2. Roy, S. and M.A. Edwards. NSF Fellows' attitudes on the research climate in STEM academia. AEESP Conference 2022, Jun 28-30, 2022, St. Louis, MO.

3. ** Roy, S. and M.A. Edwards. Exposing Infrastructure Inequality and Environmental Injustice through a Citizen Science-supported Graduate Training Program: The US Water Study Experience. C*Sci 2022, May 23-26, 2022, Virtual.
4. Roy, S., K. Mosteller, M. Mosteller, K. Webber, V. Webber, S. Webber, L. Reid, L. Walters, and M.A. Edwards. Citizen science chlorine surveillance during the Flint, Michigan federal water emergency. AWWA WQTC 2021, Nov 7-10, 2021, Tacoma WA.
5. Wait, K., S. Roy, and M.A. Edwards. Can Iron and Manganese Deposits on Copper and Stainless-Steel Plumbing Produce Rapid Pipe Failures at Water Temperatures >60°C? AWWA WQTC 2021, Nov 7-10, 2021, Tacoma WA.
6. ** Edwards, M.A. and S. Roy. A "Public Inspired Science" Graduate Training Program. US National Academy of Engineering Promising Practices, 2021.
7. Roy, S. and M.A. Edwards. Are there excess fetal deaths attributable to waterborne lead exposure during the Flint Water Crisis? Evidence from Bio-kinetic Model Predictions and Vital Records. American Chemical Society (ACS) Fall 2021, Aug 22-26, 2021, Atlanta GA.
8. ** Odimayomi, T., S. Roy, and M.A. Edwards. Tracking Lead (Pb) Release to Potable Water through Biosolids Data in Six Cities across North America: Challenges and Opportunities. AWWA ACE 2021, Jun 14-17, 2021.
9. Roy, S., M. Tang, and M.A. Edwards. Documenting Continued Reductions in Lead Release to Potable Water in the Aftermath of the Flint, MI Water Crisis. AWWA Virtual Summit on Water Quality and Infrastructure, Dec 8-10, 2020.
10. Edwards, M.A., J. Purchase, K.G. Lopez, 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. * 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.
18. 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.

19. 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.
20. 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.
21. 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.
22. * 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.
23. * 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.
24. 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.
25. 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.
26. 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.
27. * 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.
28. 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.
29. ** 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
30. Roy, S. Revitalizing Ethics Training of STEM Graduates: The Tonawanda NY Experience. DuPont Summit on Science, Technology & Environmental Policy, Dec 5 2014, Washington, DC.
31. 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. [In preparation] Edwards, M.A., S. Roy, R. Kriss, K.J. Pieper A. Katner, E. Berglund and C. Cooper. 2022. Transdisciplinary Research into Detecting and Controlling Lead in Drinking Water. *Final Report being prepared for U.S. Environmental Protection Agency*.
2. Purchase, J.M., S. Roy, A. Katner, K.J. Pieper and M.A. Edwards. 2022. Practical Applications of NSF/ANSI 53 Lead Certified Filters: Investigating Lead Removal, Clogging and Consumer Experience. *Final Report prepared for U.S. Housing and Urban Development*.
3. Roy, S., P. Smith, G. House, and M.A. Edwards. 2018. Corrosion of Nonleaded Pump Impeller Alloys in Chlorinated Potable Water. *Water Research Foundation* (WRF) Project 4658 Final Report. WRF. Denver, CO.
4. Roy, S., G. House, and M.A. Edwards. 2018. Comparative Resistance of Six Copper Alloys to Erosion Corrosion in Simulated Potable Water. *Final Report prepared for Chase Brass*.
5. Roy, S. and M.A. Edwards. 2016. Hard $CaCO_3$ Particles Formed by Water Heating Exacerbate Copper Erosion Corrosion. *Final Report prepared for Copper Development Association*.

Editorials and columns in popular press (not peer-reviewed)

1. Edwards, M., A. Pruden, S. Roy, K. Faust, S. Masten. *After we tried to correct claims about 'deadly' water filters in Flint, we were accused of scientific misconduct—and that was just the beginning.* Retraction Watch. May 2022
2. Edwards, M., C. Yang, and S. Roy. *Who dares to speak up? An interview with Tuskegee whistleblower Peter Buxtun.* American Scientist. Jul-Aug 2021
3. Roy, S. *What can we learn from misinformation on scientific matters in the water space?* International Water Association. November 2020
4. Roy, S. and M. Edwards. *From Sewage Sludge, a New Perspective on the Flint Water Crisis*. Undark. September 2020 (syndicated: Mother Jones)
5. Roy, S. and M. Edwards. *Flint water crisis shows the danger of a scientific dark age.* CNN. March 2019
6. Roy, S. and M. Edwards. *Intègres comme des coureurs du Tour de France*. Books. March-April 2018
7. Roy, S. and M. Edwards. *Science is a public good in peril – here's how to fix it.* Aeon. Nov. 2017
8. 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
9. Roy, S. *The Hand-in-Hand Spread of Mistrust and Misinformation in Flint.* American Scientist. January-February 2017
10. 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

PUBLIC SCHOLARSHIP AND SELECTED PRESS

Science Documentaries, Podcasts and Websites

1. Executive Producer. *The Public-inspired Science Podcast*. Two seasons on Apple iTunes.
2. Executive Producer and Videographer. *The U.S. Water Study documentary series.* YouTube.
3. Producer and Narrator. *Flint Water Study – An ode to environmental engineers.* Award-winning science documentary: https://youtu.be/t0ZNYHB7TvE
4. Creator and curator. *USWaterStudy.org*
5. Creator and curator. *FlintWaterStudy.org* (over 1 million views) and social media (Facebook and Twitter).
   My Twitter (@flintwaterstudy) engagement was the subject of a peer-reviewed journal article by science communication researchers (doi: 10.1177/1075547017751948).
6. Producer and Videographer. *Public Inspired Science.* US Water Study: https://youtu.be/hnbXQ4Z0evo
7. Script and Video-segment producer. *MacArthur Foundation 100&Change grant proposal video abstract "Science as a public good"*: https://youtu.be/j8Y2Q7WPLOE
8. Producer and Videographer. Water sampling videos for Flint, Michigan (https://youtu.be/dEQDaPws2xk), California schools (https://youtu.be/pxg9X9NMy4g) and Virginia schools (https://youtu.be/dcmgP4VEx50).

Invited Keynote Lectures, Talks, and Expert Panels

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

1. AIChE (Webinar), 2016.
2. AIHA/ASSE Conference (Denver, CO), 2017.
3. Cal Poly (San Luis Obispo, CA), 2022.
4. Chandler-Gilbert CC (Chandler, AZ), 2018.
5. Chapman University (Orange, CA), 2021
6. George Walton Academy (Monroe, GA), 2020.
7. Georgetown University (Washington DC), 2022.
8. ComSciCon 2016 (Cambridge, MA), 2016.
9. Kids' Tech University (Blacksburg, VA), 2018.
10. IWA Emerging Water Leaders Forum, 2021.
11. Interpublic Group (virtual), 2022.
12. Linda Hall Library of Science Engineering, and Technology (Kansas City, MO), 2020.
13. Louisiana State Univ. (Baton Rouge, LA), 2020.
14. MIT (Cambridge, MA), 2018.
15. Middlebury College (Middlebury, VT), 2018.
16. NJ Institute of Technology (Newark, NJ), 2021.
17. Northwestern University (Evanston, IL), 2016.
18. Ohio AWWA (Columbus, OH), 2015.
19. Phillips Exeter Academy (Exeter, NH), 2016.
20. Princeton University (Princeton, NJ), 2018.
21. Purdue University (West Lafayette, IN), 2021.
22. Queen's University (Canada; Virtual), 2022.
23. Rising Silo Brewery (Blacksburg, VA), 2018.
24. Rutgers University (New Brunswick, NJ), 2022.
25. Science Museum of VA (Richmond), 2017, 2019.
26. Science Writers Conf. (San Antonio, TX), 2016.
27. Slovenian Academy of Sciences and Arts (Ljubljana, Slovenia), 2019.
28. Stanford University (Stanford, CA), 2021.
29. St. Lawrence Univ. (Canton, NY), 2022.
30. TCA Hollywood Press (Pasadena, CA), 2017.
31. Tufts University (Medford, MA), 2018.
32. University of Arizona (Tucson, AZ), 2022.
33. University at Buffalo (Buffalo, NY), 2020.
34. UCLA (Virtual), 2022.
35. University of Houston (Houston, TX), 2021.
36. Univ. of Maryland (College Park, MD), 2017.
37. UMass Amherst (Amherst, MA), 2020.
38. Univ. of Notre Dame (South Bend, IN), 2017.
39. University of Virginia (Virtual), 2022.
40. Virginia AWWA/VWEA WaterJAM 2016 Keynote (Virginia Beach, VA), 2016.
41. VA Historical Society (Richmond, VA), 2017.
42. Wesleyan University (Middletown, CT), 2018.
43. W. Mich. University (Kalamazoo, MI), 2016.
44. WGBH Idea Lab (Cambridge, MA), 2016.
45. World Health Organization (Geneva, Switzerland), 2017.

Media Coverage (Science Documentaries and Movies)

1. PBS NOVA. 'Poisoned Water', 2017 *(on Netflix; winner of AAAS Kavli Science Journalism award).*
2. BBC. FLINT, 2020.
3. Virginia Tech. 'Cicero', 2019
4. Discovery (UK)/National Geographic (US). Disasters Engineered. Season 02. Ep. 08. Contaminated Waters. 2020-21.
5. LIFETIME. 'Flint', 2018 *(streaming on Hulu; factually inaccurate, but entertaining)*

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 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 (AIChE's flagship journal; profile feature): 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. STAT News: Lessons from a Flint water crisis researcher about building trust in science during the pandemic (Nov 18, 2021)
27. St. Louis Post-Dispatch: Districts move to test water for lead after elevated levels found in some St. Louis schools (Aug 25, 2016)
28. The American Prospect: Beyond Flint: How Local Governments Ignore Federal Water Standards (Feb 24, 2016)
29. The Dallas Morning News: Disabled Texans in three state homes have been drinking water with Flint-level amounts of lead (May 13, 2016)
30. Flint Journal: Meet the key figures in NOVA's 'Poisoned Water' feature on Flint (May 2017)
31. Flint Journal: Researchers say sewage data holds clues to Flint water crisis (May 30, 2019)
32. The Guardian: A hidden scandal: America's school students exposed to water tainted by toxic lead (Mar 6, 2019)
33. The New York Times (centerspread): As Flint Fought to Be Heard, Virginia Tech Team Sounded Alarm (Feb 6, 2016)
34. The Roanoke Times: Virginia Tech researchers fought for Flint in water crisis (Jan 23, 2016)
35. Virginia Tech Magazine: Fighting for Flint: A Virginia Tech team exposes lead poisoning (Spring 2016 issue)
36. Virginia Tech Magazine: Tapping the Ripple Effect (Fall 2018 issue)
37. WIRED: Ripple Effect: The crisis in Flint isn't over. It's everywhere. (Jun 2016 issue)
38. WIRED: The Flint Water Crisis Is Bigger Than Elon Musk (Jul 12, 2018)

Media Coverage: 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. WDBJ7: Sunday morning TV panel (Jan 2016)
4. TRT World: Has Flint's water crisis been solved? (Apr 19, 2018)
5. WSLS10: Virginia Tech researchers announce Flint water is safe (Sep 17, 2017)

Media Coverage: Podcasts and Radio

1. Mother Jones' Inquiring Minds (2017)
2. Science Soapbox (2016)
3. The Nature of Cities (2016)
4. The Story Collider (2017)
5. International Water Association (2021)
6. International Water Association (2020)
7. Vanguard STEM. (2016)
8. BBC World Service (2016)
9. Iowa Public Radio (NPR): Iowa's Drinking Water: Could Flint Happen Here? (June 2016)
10. KCRW's To The Point: Lead in America's Water Systems (March 2016)
11. Minnesota Public Radio (NPR): This American Moment: Restoring the public's faith in science and expertise (November 2018)
12. WMUK (NPR): WSW: Flint's Lesson About Science And Ethics (February 2016)
13. WUFT (NPR): What Led The Alachua County School District To Install Water Filters To Prevent Lead Contamination (October 2018)

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

1. [Research] Spring Point Partners, LLC ($3,000,000). *Exposing Infrastructure Inequality in America: Leveraging Success and Building Capacity* (2017-present). Co-Investigator.
2. [Research] ACX ($25,000). *Citizen science sampling for waterborne opportunistic pathogens including Legionella* (2022-on). Lead Investigator and Primary Author.
3. [Research] Water Research Foundation ($60,000). 4658: *Corrosion of Nonleaded Pump Impeller Alloys in Chlorinated Potable Water* (2016-18). Lead Investigator and Primary Author.
4. [Research] Chase Brass ($16,200). Technical Assistance Program: Erosion Corrosion in Nonleaded Alloys (2016-17). Lead Investigator and Primary Author.
5. [Research] Union of Concerned Scientists and EPA College/Underserved Community Partnership Program. ($10,000). Lead in Water Pilot Project for public schools near Georgia College, Tuskegee University and UNC Wilmington (2016-17). Primary Coordinator.
6. [Research] Flint Water Study Crowdfunding ($100,000+). GoFundMe to recover discretionary funds directed to Flint (2016). Co-written/co-led with Dr. Marc Edwards.
7. [Development/Service] Engineers Without Borders ($26,450). Guatemala Boarding School Sanitation Project. Primary Author. Funds from Boeing, Pratt & Whitney and Bechtel (2013-15).

RESEARCH CONTRACTS AND GRANTS – NOT FUNDED

8. [Finalist] Water Quality Research Foundation ($50,000). *Point-of-Use (POU) and Point-of-Entry (POE) Treatment Solutions for Contaminant Removal from Drinking Water and Compliance with the Safe Drinking Water Act.* Lead Investigator and Primary Author.
9. [Finalist] Water Quality Research Foundation ($50,000). *Underperformance and Premature Failures of Point-of-Use (POU) Treatment Systems: A Technical, Consumer Experience, and Economic Sustainability Analysis.* Lead Investigator and Primary Author.
10. UC National Center for Free Speech and Civic Engagement ($20,000). *Academic freedom and free speech in an engineering ethics and whistleblower training program.* Lead Investigator.
11. [Shortlisted] MacArthur Foundation 100&Change ($100,000,000). *Advancing science as a public good*. Co-Investigator and Video Abstract Lead.

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*)
- Schools in NC (New Hanover and Brunswick Cos.) and Milledgeville GA (2016-17) – lead
- 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
- Boston/Cambridge MA (2021-22) – citizen science sampling through outpatient clinics for waterborne lead and aluminum in households of patients with chronic kidney disease
- Unnamed SC town and Harrisonburg VA (2022) – citizen science sampling for waterborne opportunistic pathogens: acanthamoeba (suspected behind acanthamoeba keratitis case) / *Lp*

Undergraduate and Graduate Research Assistants advised

Trainee	*Current Position*	*Research Area*
Minyoung Choi	Undergraduate Student, Virginia Tech	Water and Trust/Chicago
Fadi Hindi	Undergraduate Student, Virginia Tech	Water and Trust/Chicago
Natalie Kinnamon	Undergraduate Student, Virginia Tech	Water Quality Communication
Grace Psenicska	Undergraduate Student, Virginia Tech	Research Ethics Survey
Helen Salko	Undergraduate Student, Virginia Tech	Blood lead trends in US
Brenda Velasco	Undergraduate Student, Virginia Tech	Engineering Education
Carol Yang	Undergraduate Student, Virginia Tech	Whistleblowing/Tuskegee
Gregory House, B.S.	Graduate Student, Penn State	Copper Corrosion
Sophia Lee, B.S.	Environmental Planner, ATCS, P.L.C.	Misinformation/Flint Water
Philip Smith, B.S.	Staff Engineer, GORDON	Copper Corrosion/Cavitation
Zihan Wang, M.S.	Stormwater Engineer, HDR	Erosion Corrosion
Chivonne Battle, M.S.	Graduate Student, Virginia Tech	Environmental Justice/Lead
Kris Mapili, M.S.	Civil Engineer, Wood	Corrosion/Disinfection
Kathryn Lopez, B.S.	Graduate Student, Virginia Tech	Blood lead modeling
Taylor Lightner, M.S.	Graduate Student, Virginia Tech	Graduate Ethics Training
Tolulope Odimayomi, M.S.	Graduate Student, Virginia Tech	Biosolids/Pathogen citizen sci

Awards (university or state level) to advisees

- First Prize – Technical Poster (Tolu Odimayomi – AWWA ACE 2021), 2021
- First Prize – Technical Poster - People's Choice (Tolu Odimayomi – AWWA ACE 2021), 2021
- First Prize – Technical Paper (Philip Smith – ASCE Virginias' Section), 2018
- Third Prize – Technical Poster (Philip Smith – 7th CEE Research Day, Virginia Tech), 2017
- Third Prize – Technical Paper (Kristine Mapili – ASCE Virginias' Section), 2016
- First Prize – Technical Poster (Kristine Mapili – 6th CEE Research Day, Virginia Tech), 2016
- First Prize – Technical Poster (Zihan Wang – 5th CEE Research Day, Virginia Tech), 2015

TEACHING EXPERIENCE AND TRAINING

Instructor for short-term Virginia Department of Health-sponsored state-level courses

1. "Contaminants of Concern: Chemistry, Toxicity and Treatment," Virtual (2021)
2. "Groundwater Math for Small Systems," Richmond VA (2020)
3. "Preventing the next lead (Pb) in water crisis," Blacksburg VA (2019)
4. "Groundwater Math for Small Systems," Roanoke VA (2019)
5. "Basic Groundwater Course for Small Systems," Roanoke VA (2019)
6. "Contaminants of Concern: Chemistry, Toxicity and Treatment," Richmond VA (2018)

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

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

Instructor of Record

Spring 2021 for ESM4404 'Fundamentals of Professional Engineering' (for Ethics and Professional Practice portion) (P/F)

Teaching Assistant and/or Guest Lecturer

Fall 2014-16, 2018-21 for CEE5804 'Engineering Ethics and the Public'

Guest Lectures in graduate and undergraduate classes

- *Virginia Tech (graduate-level): GRAD5414 Water and Health (Spring 2020); GRAD5414 Water and Health (Spring 2019); GRAD5134 Interdisciplinary Research (Spring 2016)*
- *Virginia Tech:* AAEC3314 Environmental Law (Spring 2022), ENSC3604 Fundamentals of Environmental Science (Fall 2019, Fall 2020, Fall 2021), ENGR1014 Engineering Research (Fall 2019), ENGE1215 Fundamentals of Engineering (Fall 2017), CEE3104 Intro to Environmental Engineering (Fall 2016)
- *Purdue University* (Fall 2021): CE 597 Disasters and Emergencies
- *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 and conference proceedings

American Journal of Public Health
Citizen Science: Theory and Practice
CORROSION
Corrosion Reviews
Environmental Engineering Science
Environmental Science and Technology
Environmental Science and Technology Letters
ES: Water Research & Technology
IWA World Water Congress 2022, Denmark
Forensic Sciences Research
Journal of Water and Health
Proceedings of the National Academy of Sciences of USA
Water Research
WIRES: Water
Utilities Policy

Federal Advisory Boards

US Environmental Protection Agency, Board of Scientific Counsellors - *Social and Community Science* federal advisory committee, 2022-onward

Journal Editorial Boards

Invited to join: *International Journal of Environmental Research and Public Health* in 2020 (declined)

Research Proposal/Award Reviewer

University of Wisconsin Water Resources Institute – Research Proposals, 2022
National Science Foundation ENG/CBET Program – Research Proposals, 2021
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

Conferences and Workshops

- Organizer and Moderator, “The Science and Politics of Journal Retractions” webinar, HxEES, May 25, 2022, Virtual
- Organizer and Moderator, “Fighting the coronavirus pandemic: Evidence-based approaches from Environmental Engineers” webinar, HxEES, Jul 29, 2020, Virtual

- Conference Session Chair, “Special Case Studies” at AWWA India Annual Conference and Exposition, Dec 13-14, 2019, Mumbai, India
- Conference Workshop Chair, “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

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 and management, technical writing, (grant) budgeting, fundraising, leadership, client communication, public speaking, interdisciplinary collaborations
Scientific (general): Experimental design, hypothesis-driven research, environmental statistics, proposal writing, interdisciplinary collaborations, qualitative surveys, IRB protocols and consent
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): ICP-MS, ESEM, XRD
Statistics (quantitative): R, Excel, SPSS Statistics, Minitab, gretl, Gephi
Statistics (qualitative/coding): R, Qualtrics, QDA Miner
Code/programming/web languages: WordPress, HTML, C, C++, Pascal, SQL, Markdown
Documentary/Podcasting: GoPros, DSLRs, Sony Alphas, Audacity, Movie Maker
Human languages: English (fluent), Hindi (fluent), Bengali (native), Gujarati (basic)

ORGANIZATIONAL MEMBERSHIPS

Current: Association of Environmental Engineering and Science Professors (AEESP), Heterodox Academy (HxA), International Water Association (IWA), Society of Toxicology (SOT). Previously active: American Society of Civil Engineers (ASCE), American Water Works Association (AWWA), Engineers Without Borders USA (EWB-USA), National Association of Corrosion Engineers (NACE), Society of International Development–US (SID-US), Water Environment Federation (WEF).