

EXPERTISE SUMMARY

Siddhartha Roy is an environmental engineer with nine years of research, engineering, and consulting experience in the areas of drinking water (chemistry, treatment, & infrastructure), public health (WASH, contamination, citizen monitoring, & biokinetic modeling), and environmental justice. He and his team's scientific and humanitarian relief work, with residents of Flint Mich., helped uncover the Flint Water Crisis.

ACADEMIC HISTORY AND LICENSES

Virginia Tech, College of Engineering – Blacksburg, VA

2018 *Ph.D. in Civil Engineering (Emphasis: Environmental Engineering), Graduate Student of the Year*

2015 *M.S. in Environmental Engineering, "Water INTERface" IGEP Fellow*

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*

WORK AND RESEARCH EXPERIENCE

2012+ **Virginia Tech Department of Civil and Environmental Engineering** – Blacksburg, VA

Research Scientist (10/2020-present)

Postdoctoral Research Associate, US Water Study Team founding co-leader (2018-20)

Student Leader and Communications Director, Flint Water Study Team of 40+ members (2015-18)

Graduate Research and Teaching Assistant, Laboratory of Dr. Marc Edwards (2013-18)

Head Grant Writer and Researcher, Guatemala project, Engineers Without Borders USA (2013-15)

- Project Manager for multiple research projects focused on waterborne lead (Pb), water infrastructure, corrosion, citizen science, modeling, pathogens & perverse incentives in academia.
- Mentor to 13 advisees (past + present) in conducting research, publishing, and winning awards.
- We used citizen science, open data sharing, field sampling, lab experiments, investigative journalism and social media to expose the Flint, MI Water Crisis (2014-15). 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 (HR 3684) in 2021.
- Used lead in sewage and children's blood datasets to estimate timing and magnitude of water lead exposure during the Flint Water Crisis and ran bio-kinetic models to estimate fetal deaths.
- Led water sampling campaigns in 300+ homes in Chicago, IL and 3 suburbs; these datasets revealed harmful and persistent lead in drinking water issues (*Chicago Tribune* front page)
- Contributed to the engineering design of and raised \$26,450 from Boeing, Bechtel, Pratt & Whitney, and crowdfunding to sponsor a septic tank system for a Guatemalan boarding school.
- Funded grants: \$10K = EPA, \$16.2K = Chase Brass, \$60K = Water Res Fdn, \$100K+ = crowd
- *PhD Dissertation*: Interplay of water chemistry and entrained particulates in erosion corrosion of copper and unleaded alloys in potable water systems
- *Coursework*: Water and Wastewater Treatment, Aquatic Chemistry, Environmental Statistics, Environmental Microbiology, Env. Engineering Principles, Public Health Fundamentals, Ethics, Electrochemistry/Corrosion, Water Resources Policy & Economics, Politics of Developing Areas

2010-12 **Cognizant Technology Solutions**, Merck Europe, Middle East & Africa Project – Pune, India

Programmer Analyst (Business Intelligence and Data Analytics), Innovation Lead

HONORS/AWARDS

2021 STAT Wunderkind 2021 (early career heroes of science and medicine; national), STAT News/Boston Globe

2020 IWA Young Leadership Award 2020-22 (global prize), International Water Association

2019 New Face of Civil Engineering Professionals (national award), American Society of Civil Engineers

2019 Early Career Award for Public Engagement with Science Finalist, American A. for Advancement of Science

2018 Water Leadership Institute Class of 2018 (national), Water Environment Federation

2017 Rising Stars of the Water Industry (national award), WQP Magazine

2017 Graduate Student of the Year, Virginia Tech

2015 Water Is Life Award, American Civil Liberties Union Michigan

2014 Engineers Without Borders-USA Global Leadership Program scholarship (national), Black and Veatch Fdn

SKILLS

General: project planning and management, technical writing, grant writing, budgeting, fundraising, leadership, mentoring, client communication, intercultural communication, emotional intelligence, public speaking, outreach

Scientific: experimental design, hypothesis-driven research, interdisciplinary collaborations, surveys, bench-scale experimentation, laboratory probes, spectrophotometers, sample characterization, environmental statistics

Statistics software (qualitative and quantitative): R, Excel, SPSS Statistics, Qualtrics, QDA Miner, Minitab

Programming languages: WordPress, HTML, C, C++, Pascal, SQL, Markdown

Human languages: English, Hindi, Bengali, Gujarati

PEER-REVIEWED SCHOLARSHIP

Total peer-reviewed publications = 17 (12 as first author); Citations = 740; h-index=10 (Google Scholar);

Conference presentations = 28; Technical reports = 3; Articles under review/preparation = 6

1. **Roy, S.** and M.A. Edwards. Are there excess fetal deaths attributable to waterborne lead exposure during the Flint Water Crisis? **Journal of Exposure Science and Env Epidemiology**. doi: 10.1038/s41370-021-00363-z
2. **Roy, S.**, Mosteller, K. ... M.A. Edwards. Citizen science chlorine surveillance during the Flint, Michigan federal water emergency. **Water Research**. doi: 10.1016/j.watres.2021.117304
3. **Roy, S.** and M.A. Edwards. Efficacy of Corrosion Control and Pipe Replacement in Reducing Citywide Lead Exposure during the Flint Water System Recovery. **ES: Water Research & Tech**. doi: 10.1039/d0ew00583e
4. **Roy, S.**, Tang, M. 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
5. **Roy, S.** and M.A. Edwards. Interactive Effects of Water Chemistry, Hydrodynamics, and Precipitated CaCO₃ Causing Erosion Corrosion of Copper in Hot Water Recirculation Systems. **CORROSION**. doi:10.5006/2937
6. **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
7. Edwards, M.A. and **S. Roy**. Academic Research in the 21st Century: Maintaining Scientific Integrity in a Climate of Perverse Incentives and Hyper-competition. **Environ Eng Sci**. doi:10.1089/ees.2016.0223.
8. **Roy, S.**, K. Phetxumhou ... 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

PUBLIC UNDERSTANDING OF SCIENCE

- *TED Talk:* Science in service to the public good (<https://go.ted.com/Cvoj>), over 1 million views
- *Documentaries featured in:* PBS NOVA 'Poisoned Water' (on Netflix; Kavli winner), Discovery®, BBC
- *Media coverage (60+):* ABC News, BBC, Chicago Tribune, Mother Jones, National Science Foundation, NPR stations, Sky News UK, Story Collider, The Guardian, The New York Times, WIRED
- *Public talks (75+):* MIT, Northwestern, Princeton, World Health Organization, Middlebury, Wesleyan, Tufts, Harvard, Notre Dame, Phillips Exeter Academy, University of Maryland, Slovenian Academy of Sciences & Arts, WGBH Idea Lab, Science Museum of Virginia, TCA Hollywood Press Tour, European Union conference
- *Articles authored in:* CNN, American Scientist, Aeon Magazine, OpFlow, Scientific American, Undark, IWA
- *Research/data websites curated:* www.uswaterstudy.org, www.flintwaterstudy.org (1M+ visits)
- *Producer:* The Public-inspired Science Podcast (on [iTunes](https://www.apple.com/itunes/)), US Water Study documentary series (ongoing), water sampling instruction videos for Flint, MI and California schools, MacArthur Foundation grant video pitch.

TEACHING AND SERVICE

- *Organizer:* "Responding to the coronavirus pandemic: Environmental Engineering approaches" webinar (2020)
- *Co-organizer:* US-Jordan forced displacement/Syrian refugee crisis conference session on water (2019)
- *Instructor:* Six courses for water treatment plant operators sponsored by Virginia Dept. of Health (2018-21)
- *Teaching Assistant/Co-teacher:* 'Engineering Ethics and the Public' graduate-level course (2014-21)
- *Tutor:* Math and Science – 4th Grade, Kipps Elementary, Blacksburg Refugee Partnership, 2018
- *Reviewer:* National Science Foundation ENG/CBET (2021), NC WRI (2020), AAAS Kavli Science Journalism (2020), AAAS IF/THEN Ambassadors (2019), Graduate Women in Science National Fellowships (2019)
- *Expert Judge:* Virginia State Science and Engineering Fair (2020), U.S. Stockholm Junior Water Prize (2021)
- *Moderator,* Heterodox Environmental Engineering and Science (HxEES) Community (2020-present)
- *Referee:* PNAS, Env Sci. & Tech., Env. Engg. Sci., ES: WRT, CORROSION, J. Water & Health, Util. Policy
- *Memberships:* ASCE, AEESP, AWWA, EWB-USA, HxA, NACE, SID-W, WEF.