SRABONI CHOWDHURY

Ph.D. Candidate, EIT
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PROFESSIONAL SUMMARY

Environmental scientist and engineer-in-training specializing in contaminant fate and exposure, water quality, stormwater infrastructure, safe water reuse. Experienced in designing nature-based solutions for urban stormwater management, conducting laboratory and field scale research projects, applying advanced analytical chemistry techniques, and translating scientific findings into accessible insights. Passionate about science-informed policymaking that strengthens infrastructure resilience and protects environment and public health.

EDUCATION

Ph.D. Candidate, Civil and Environmental Engineering
University of Iowa, Iowa City, Iowa, USA *2021 - Present*
Focus: Environmental Engineering and Science
Relevant Coursework: Watershed hydrology and ecosystem processes, Mass spectrometry, Human toxicology and risk assessment, Politics and economics of food, energy, and water nexus.
Thesis: Understanding Fate of Emerging Contaminants of Recycled Water from Crops to Consumers

Master of Science, Civil Engineering
University of Delaware, Newark, Delaware, USA *2019 - 2021*
Relevant Coursework: Physical, chemical and biological aspects of environmental engineering, Microbiology of engineered systems, Fate of organic pollutants, Statistical research methods.
Thesis: Biochar Amendment for Enhanced Infiltration and Aggregation of Compact Urban Soil

Bachelor of Science, Civil Engineering
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh. *2013 - 2017*
Relevant Coursework: Design of water supply, sanitation and sewerage system, Fluid mechanics, Open channel flow, Soil-water interaction, Environmental and sustainable management, Hydrology, irrigation and flood management, Project planning and construction management.
Thesis: Benchmarking the Real Water Loss of Dhaka WASA DMAs and Generating Pipe Leakage Risk Map

PROFESSIONAL CERTIFICATIONS

Engineer-in-Training (EIT) Certification *2025 - Present*

WORK EXPERIENCE

Graduate Research Assistant
University of Iowa, IIHR- Hydroscience and Engineering *2021 - Present*
- Studying chemical fate across water-plant-consumer continuum with implications for safe water reuse, sustainable agriculture, and public health protection

Graduate Research Assistant
University of Delaware, Department of Civil and Environmental Engineering *2019 - 2021*
- Designed, implemented and monitored biochar-based stormwater management solutions, used by state department of transportation and municipalities.

Lecturer (Teaching Faculty)
Presidency University, Department of Civil Engineering, Bangladesh *2017 - 2019*

- I taught courses communicating scientific concepts to non-specialist learners.

TECHNICAL SKILLS

Technical Expertise

- Field scale biochar-amended stormwater infrastructure design and monitoring
- Laboratory scale experiment with hydroponic, in-vitro digestion and fermentation system
- Fate analysis of emerging contaminants (CECs) with radiolabeled chemicals
- Environmental contaminant quantification and transformation analysis
- Material characterization (soil, biochar, bioretention media)
- Technical writing and peer-reviewed publication preparation

Analytical Tools and Software

- Liquid Chromatography-Mass Spectrometry (LC-MS/MS, HRMS)
- Liquid Scintillation Counting (LSC) and Bio-Oxidizer
- Compound Discoverer for metabolomics
- AutoCAD, ArcGIS, EPANET, WaterGEMS
- Scientific graphic and data analysis: OriginPro, GraphPad prism, JMP, R
- Microsoft Office Suite

MAJOR RESEARCH PROJECTS

Plant Uptake, Metabolism, and Bioaccessibility of Emerging Contaminants (funded by *USDA-NIFA*)

- Designed and conducted hydroponic plant exposure studies to investigate plant uptake and metabolism of emerging contaminants
- Analyzed water, plant tissue, and digest matrices using advanced mass spectrometry techniques
- Developed analytical methods to study plant uptake kinetics of contaminants
- Conducted in-vitro digestion and colonic fermentation experiments to assess contaminant bioaccessibility an potential transformation in the human gut
- Utilized LC-MS/MS, HRMS, and Compound Discoverer for identification of contaminant transformation products and pathways

Biochar Amendment to Highway Greenways (Funded by *Maryland Transportation Authority*)

- Designed and implemented large-scale biochar application in U.S. Interstate highway greenways
- Monitored water infiltration and retention, soil compaction, and vegetation growth periodically
- Performed laboratory analysis of soil samples for different physical-chemical-biological properties to evaluate biochar's effectiveness overtime.
- Prepared project documentation and reports for coordination and permitting with regulatory agencies.

Reducing Stormwater Runoff with Biochar in Howard County, MD (*funded by Howard EcoWorks under grant from National Fish and Wildlife Foundation*)

- Designed and implemented biochar-amended filter strips beside urban parking lots
- Measured soil infiltration improvements and runoff reduction performance
- Conducted physical-chemical-biological characterization of biochar-amended soil
- Prepared project report and shared research findings through webinar and community engagement program under *Ellicott city soak it up campaign*

Biochar's Impact on Bioretention Soil Media (funded by *Delaware Department of Transportation*)

- Investigated the impact of wood derived biochar amendment to conventional bioretention soil media using greenhouse bioretention system.

- Performed periodic measurements to evaluate biochar effects on hydrologic, and water quality performance, and plant growth and survivability under drought conditions.

Benchmarking Water Loss in Dhaka WASA DMAs

- Evaluated the real water loss(leakage) of the water distribution system for 26 District Meter Areas (DMAs) of Dhaka, Bangladesh
- Conducted leakage analysis and generated risk maps using EPANET, WaterGEMS, and ArcGIS

PEER-REVIEWED PUBLICATIONS

- **Chowdhury, S.** and LeFevre, G. (2025). *Bioaccessibility and transformation of conjugated benzotriazole phytometabolites during in vitro digestion: implications for exposure from recycled irrigation water*. Environmental Science and Technology. (Accepted on Nov 5,2025)
- **Chowdhury, S.**, Akpinar, D., Nakhli, S. A., Bowser, M., Imhoff, E., Susan, C. Y., & Imhoff, P.T. (2024). *Improving stormwater infiltration and retention in compacted urban soils at impervious surface disconnections with biochar*. Journal of Environmental Management, 360, 121032
- Akpinar, D., **Chowdhury, S.**, Tian, J., Guo, M., Barton, S., & Imhoff, P. T. (2023). *Understanding a wood-derived biochar's impact on stormwater quality, plant growth, and survivability in bioretention soil mixtures*. Journal of Environmental Management, 348, 119359
- Muerdter, C.P**.**, Powers, M.M., Webb, D.T., **Chowdhury, S**., Roach, K.E., LeFevre, G.H. (2023). *Functional group properties and position drive differences in xenobiotic plant uptake rates, but metabolism shares a similar pathway.* Environmental Science & Technology Letters, 10(7): 596-603
- Muerdter, C.P., Powers, M.M., **Chowdhury, S.**, Mianecki, A.L., LeFevre, G.H. (2022). *Rapid plant uptake of isothiazolinone biocides and formation of metabolites by hydroponic Arabidopsis*. Environmental Science: Processes & Impacts, 24, 1735-1747

CONFERENCE PRESENTATIONS

- AEESP 2025, Durham, NC: *Probing Plant Metabolism as an Underappreciated Exposure Pathway to Human Exposure to Contaminants in Recycled Irrigation Water*
- ACS Fall 2024, Denver, CO: *Investigating Fate and Bioaccessibility of CECs in Recycled Water*
- EWRI, ASCE 2022, Atlanta, GA: *Biochar Amendment for Enhanced Infiltration and Aggregation of Compact Urban Roadway Soils*
- IWA Water Loss 2018, Cape Town, South Africa: *Benchmarking the Real Water Loss of Dhaka WASA DMAs and Generating Pipe Leakage Risk Map*

SCHOLARSHIPS, FELLOWSHIPS, AND AWARDS

- Graduate College Ballard and Seashore Dissertation Fellowship, *University of Iowa* (2025)
- Graduate College Post-Comprehensive Research Fellowship, *University of Iowa* (2024)
- N. Fisher Environmental Engineering Scholarship, *University of Iowa* (2024)
- R. S. Kirkpatrick and Kenneth W. Kirkpatrick Engineering Scholarship, *University of Iowa* (2023)

PEER REVIEW ACTIVITIES

- Reviewer for *Journal of Environmental Management* (4 reviews)

PROFESSIONAL AFFILIATIONS

AEESP | ACS | ASCE | SWE