

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 and 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
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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
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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*
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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)
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PEER REVIEW ACTIVITIES

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

[AEESP](#) | [ACS](#) | [ASCE](#) | [SWE](#)