

# Shama E. Haque, Ph.D.

Geochemist and Environmental Scientist

## EDUCATION

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**Ph.D., Environmental Science and Engineering (Geochemistry) 2007**

The University of Texas at Arlington, USA

- *Thesis: Hydrogeochemical evolution of arsenic along groundwater flow paths: linking aqueous and solid phase arsenic speciation*

**B.S., Civil Engineering 1995**

The University of Texas at Austin, USA

## EMPLOYMENT HISTORY

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**Assistant Professor 2016-Date**

*Department of Civil and Environmental Engineering, North South University, Dhaka, Bangladesh*

**Instructor 2011-2012**

*Department of Earth and Environmental Sciences, Douglas College, New Westminster, BC, Canada*

- Responsible for teaching introductory Earth History and Physical Geology courses.

**Lecturer 2011-2011**

*Department of Earth and Ocean Sciences, University of British Columbia, Vancouver, BC, Canada*

- Course administrator for Earth Science for Engineers course.

**Postdoctoral Research Fellow 2009-2010**

*Department of Earth and Ocean Sciences, University of British Columbia, Vancouver, BC, Canada*

- Involved in a multidisciplinary oil sands mining (Suncor) project that aims to understand the impact of process-affected water ingress on metal speciation, redox state, and mobilization. Work involved performing detailed mineralogical analyses of sediments, managing project, controlling budget, providing work updates to supervisor, presenting findings in conferences, writing scientific journal articles.
- Involved in a biofuel biodegradation study that aimed to understand the fate of generated gases in the subsurface. Responsibilities included managing the project, developing and controlling budget, setting up experiment, planning, organizing and implementing field trips, analyzing data, and mentoring a student.

**Environmental Scientist/Geochemist in Training 2008**

*Amec Earth and Environmental Limited, Saskatoon, SK, Canada*

- Participated in hydrocarbon contaminated site investigation projects. Worked involved collecting sediments and groundwater samples for analysis, preparing environmental monitoring reports.

**Postdoctoral Research Fellow****2007***Department of Geological Sciences, University of Saskatchewan, Saskatoon, SK, Canada*

- Involved in a study aiming to identify a geologic fault. Responsibilities included collecting sediment samples, geochemical data analysis/interpretation and determination of distribution of elements of concern.
- Participated in a Uranium mine tailings project (Cameco). Performed initial research on U analysis in tailings samples using asymmetrical flow field-flow fractionation method.

**Graduate Research and Teaching Assistant****2003-2007***Department of Earth & Environmental Sciences, The University of Texas at Arlington, Arlington, TX, USA*

- Research assistant involved in a multidisciplinary project investigating the evolution of arsenic (As) concentrations and speciation in groundwaters. Responsible for developing a conceptual model of As mobility and speciation along groundwater flow paths based on the field and laboratory studies, planning, organizing and implementing field trips, collecting sediment and groundwater samples for analyses, managing laboratory and training incoming students, writing proposals, reports and scientific journal articles.
- Research assistant involved in a study of surface water quality of the Trinity River, Texas. Responsibilities included collecting groundwater samples and measuring geochemical parameters.
- Teaching assistant for Earth Systems laboratory course. Topics covered: plate tectonics, the formation of different rock types, geologic time, the deep earth, surface geology. Responsible for giving lectures, grading exams and leading student field trips to the Arbuckle Mountains, OK.

**Assistant Civil Engineer****1996-2000***Bangladesh Consultants Limited, Dhaka, Bangladesh*

- Involved in multidisciplinary projects including the feasibility study and detailed engineering of road bridge over the Ganges River (Paksey), and pre-feasibility and feasibility study of bridge over the Meghna River (Bhairab). Responsible for conducting traffic and environmental surveys, assisting in bridge approach road design, preparing proposals and progress reports.

**Student Intern****1995***Bangladesh Consultants Limited, Dhaka, Bangladesh*

- Assisted in routine environmental and traffic surveys, and in preparing proposals.

**PUBLICATIONS**

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**Book Chapter**

- Haque, S.E., 2017. An Overview of Groundwater in Bangladesh, in: Mukherjee, A. (Ed.), Groundwater of South Asia. Springer Publishing Company (*In review*).

**Published papers**

- A.A. Holden, **S.E. Haque**, K.U. Mayer, A.C. Ulrich, 2013. Biogeochemical processes controlling the mobility of major ions and trace metals in aquitard sediments beneath an oil sand tailing pond: Laboratory studies and reactive transport modeling. *Journal of Contaminant Hydrology*. DOI: 10.1016/j.jconhyd.2013.04.006

- S. Willis, **S. Haque**, K. Johannesson, 2011. Arsenic and antimony in groundwater flow systems: A comparative study. *Aquatic Geochemistry*. DOI: 10.1007/s10498-011-9131-6
- A. Holden, T. Tompkins, **S. Haque**, L. Perez, H. Sutherland, M. Bowron, K. Biggar, R. Donahue, C. Mendoza, J. Martin, K.U. Myer, J. Baker, D. Segó, A. Ulrich 2010. Fate and transport of process-affected water in out-of-pit tailings ponds in the oil sands industry in Canada. *Geotechnical News*, 29(1): 53-57.
- **S. Haque**, J. Ji, K. Johannesson, 2008. Evaluating mobilization and transport of As in sediments and groundwaters of Aquia aquifer, Maryland, USA. *Journal of Contaminant Hydrology*, 99: 68-84.
- **S. Haque**, J. Tang, W. Bounds, D. Burdige, K. Johannesson, 2007. Geochemistry of the Great Dismal Swamp, Virginia, USA: Possible Organic Matter Controls. *Aquatic Geochemistry*, 13: 289-308.
- R. Basu, **S. Haque**, J. Tang, J. Ji, K. Johannesson, 2007. Evolution of selenium concentrations and speciation in groundwater flow systems: Upper Floridan (Florida) and Carrizo Sand (Texas) aquifers. *Chemical Geology*, 246: 147-169.
- **S. Haque**, K. Johannesson, 2006. Arsenic concentrations and speciation along a groundwater flow path: The Carrizo Sand aquifer, Texas, USA. *Chemical Geology*, 228: 57-71.
- **S. Haque**, K. Johannesson, 2006. Concentrations and speciation of arsenic along a groundwater flow-path in the Upper Floridan aquifer, Florida, USA. *Environmental Geology*, 50: 219-228.

#### Short paper

- A.A. Holden, **S.E. Haque**, R.B. Donahue, A.C. Ulrich, 2010. Leaching of trace elements from a clay till aquitard by seepage from an oil sands tailings facility. Proceedings of the 7th International Groundwater Quality Conference (13-18 June 2010), Switzerland. pp. 330-333.

#### Presentations and Abstracts

- **S. Haque**, A. Holden, T. Tompkins, K.U. Mayer, A. Ulrich, J. Barker, 2010. Biogeochemical impacts of oil sands process water on aquifer and aquitard materials, Goldschmidt Conference, USA.
- **S. Haque**, T. Tompkins, A. Holden, K.U. Mayer, A. Ulrich, J. Barker, 2010. Evaluation of trace element mobility in a sandy aquifer of the Athabasca oil sands, Alberta, GeoCanada Conference Abstracts, Canada.
- **S. Haque**, T. Tompkins, A. Holden, K.U. Mayer, A. Ulrich, J. Barker, 2009. Distribution of metals and metalloids in aquifers impacted by the ingress of process-affected water from oil sands tailings. Geological Society of America (GSA), 41: 327, USA.
- S. Hund, **S. Haque**, K. Jones, K.U. Ulrich, 2009. Gas generation in sand columns contaminated with small volume releases of ethanol. GSA, 41: 653, USA.
- T. Tompkins, J. Barker, S. Holden, A. Ulrich, J. Martin, L. Perez, **S. Haque**, K.U. Mayer, W. Vincent-Lambert, 2009. Natural gradient tracer tests to investigate the fate and migration of oil sands process-affected water in a sand aquifer. Gussow Geoscience Conference, Canada.
- K.U. Mayer, **S. Haque**, S. Hund, K. Jones, 2009. Examination of influences of gas generation and transport on LNAPL site evolution - implications for natural attenuation and groundwater remediation. University Consortium for Field-Focused Groundwater Contamination Research, Annual Meeting, Canada.
- **S. Haque**, K. Johannesson, 2007. Arsenic and antimony in groundwater flow systems. GSA, 39: 517, USA.
- **S. Haque**, K. Johannesson, 2006. Speciation and distribution of arsenic in the Aquia aquifer, Maryland. GSA, 38: 321, USA.

- **S. Haque**, K. Johannesson, 2005. Speciation and distribution of arsenic along a groundwater flow path in the Upper Floridan aquifer, Florida, USA. GSA, 37: 171, USA.
- K. Johannesson, **S. Haque**, 2005. Impact of dissolved organic matter on inorganic arsenic speciation: evidence from a blackwater swamp, GSA, 37: 248, USA.
- **S. Haque**, K. Johannesson, 2004. Concentrations and speciation of arsenic along a groundwater flow path in the Carrizo Sand aquifer, Texas, USA. GSA, 36: 28, USA.
- **S. Haque**, M. Smith, J. Tang, K. Johannesson, 2003. Arsenic concentrations and speciation along groundwater flow paths: the Carrizo Sand and Floridan aquifers, Texas and Florida, USA. GSA, 35: 48, USA.
- M. Smith, **S. Haque**, J. Tang, K. Johannesson, 2003. Chromium along groundwater flow paths: the Carrizo Sand and Floridan aquifers, Texas and Florida, USA. GSA, 35: 564, USA.

#### MEMBERSHIP IN EDITORIAL BOARD

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- Editor, Groundwater for Sustainable Development (Elsevier)

#### PAST REFEREE FOR

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- Chemical Geology
- Applied Geochemistry
- Geochimica et Cosmochimica Acta
- Springer Publishing Company
- Journal of Environmental Management
- International Journal of Soil, Sediment and Water: Documenting the Cutting Edge of Environmental Stewardship

#### AWARDS AND HONORS

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- 2007 University Scholar, The University of Texas at Arlington (UTA)
- 2007 College of Science Academic Excellence Award, UTA
- 2006 Outstanding Doctoral Student Award, UTA
- 2006 University Scholar, UTA
- 2005-2007 STEM Doctoral Research Assistant Fellowship, UTA
- 2005 Research Award for Excellence in Research, UTA
- 2005 Teaching Assistant Award for Excellence in Laboratory Instruction, UTA
- 2005 Dean's Excellence Scholarship Award, UTA
- 2004-2007 Rudolf Hermanns Graduate Fellowship, UTA
- 2003-2007 Phi Beta Delta, International Scholar Honor Society, USA
- 2002-2004 Graduate Deans Scholarship, UTA
- 1997 Selected for Commonwealth Scholarship, UK
- 1994 National Honor List, USA
- 1993-present Chi Epsilon, Civil Engineering Honor Society, USA
- 1992-1993 Dean's Honor List, University of Texas at Austin