Curriculum vitae of

Mohammad Moshiur Rahman

Email: mohammad.rahman@northsouth.edu

Education

PhD

Delft University of Technology, the Netherlands September 2017

Master of Science

Queens College, City University of New York June, 2010

Master of Science in Geology December, 2003

University of Dhaka, Dhaka, Bangladesh

B.Sc. Honors in Geology (4 years Integrated) December, 2002

University of Dhaka, Dhaka, Bangladesh

H. S. C. 1998

Rangpur Cadet College, Rangpur

S. S. C. 1996

Rangpur Cadet College, Rangpur

Achievements of note:
25 peer reviewed publications in water sector, along with 10 presentations at international technical conferences. I have contributed to a technical report on Bangladesh National Water Quality published by UNICEF Bangladesh. Over 15 years of experience on management and development of water resources in Bangladesh. I have worked on mitigation of hazardous contaminants in aquatic environments for the purpose of providing safe water to communities.

Work Experience

Associate Professor (April 2022 to Present): at the department of environmental science and management, North-South university, Dhaka Bangladesh.

Responsibilities: teaching environmental science ENV 107, geology and geomorphology ENV 311, geographical information system (GIS) ENV 316.

Assistant Professor and Chair (July 2018 to September 2020): at the department of environmental science and management, North-South university, Dhaka Bangladesh.

Responsibilities: Overall management of the Department of Environmental Science and Management, teaching environmental science ENV 107, geology and geomorphology ENV 311, geographical information system (GIS) ENV 316.

Assistant Professor (May 2017 to March 2022): at the department of environmental science and management, North-South university, Dhaka Bangladesh.

Responsibilities: teaching environmental science ENV 107, geology and geomorphology ENV 311, geographical information system (GIS) ENV 316.

PhD researcher (February 2011 to 2017): Project title: Safe drinking water in Bangladesh: an integrated framework assessing acceptability, social technological feasibility, and sustainability of hand-pump subsurface arsenic removal in diverse settings of rural Bangladesh, the environmental research project by the Delft University of Technology, the Netherlands. Supervisor: Mark Bakker, PhD, Delft University of Technology, the Netherlands.

Thesis Title: Field Experiments and Reactive Transport Modeling of Subsurface Arsenic Removal in Bangladesh. An electronic version of this dissertation is available at http://repository.tudelft.nl/.

Responsibilities: Development of a reactive transport model of the fate and transport of arsenic during subsurface arsenic removal.

Lecturer (September 2010 to Present): at the department of environmental science and management, North-South university, Dhaka Bangladesh.

Responsibilities: teaching environmental science ENV 101, geographical information system (GIS) ENV 316.

Research Assistant (August 2008 to June 2010): Project title: Humic Substances and Iron Redox Reactions in Bangladesh aquifers The Environmental Research Project conducted by the 'Queens College, CUNY, New York and INSTAAR, Dept. of Ecology & Evolutionary Biology, University of Colorado. Supervisor: Yan Zheng, Ph.D. Queens College, CUNY, New York, USA

Responsibilities: Collecting groundwater sample and analyze those to determine anions, cations and fluorescence data.

Adjunct Lecturer (August, 2008 to June, 2010): School of earth and Environmental Sciences, Queens College, CUNY, New York, USA.

Responsibilities: teaching environmental science 111 lab sections.

Assistant Director, Geological Survey of Bangladesh, and Government of the people's Republic of Bangladesh (2007 to 2008):

Responsibilities:

Geotechnical investigation: Soil and sediment sampling for determination of geotechnical characteristics of subsoil.

Subsurface Modeling: using geotechnical data with Rockworks 2004 subsurface modeling software

Research Associate (2005 to 2007): Project Title: "Health Hazard and Arsenic Mobilization in Bangladesh Groundwater". The Environmental Research Project conducted by the 'Lamont-Doherty Earth Observatory (L-DEO) of Columbia University, New York, USA. Employer: Kazi Matin Ahmed, Ph.D. (kazimatin@yahoo.com), professor, Department of Geology, University of Dhaka, Dhaka– 1000, Bangladesh

Responsibilities:

• Hydrogeological investigation: Water sampling for geochemical and Isotope analysis of groundwater, groundwater and surface level fluctuation monitoring, relative head measurements and understand the distribution and mobilization of arsenic in the aquifers of the Araihazar Upazila area of Bangladesh.

• Geophysical Investigation for Hydrogeological evaluation: Electro-Magnetic (EM31&) surveying, Resistivity profiling & 2D subsurface imaging, and geophysical logging for Natural Gamma & EM conductivity.

Research Associate (2006 to 2006): Project Title: "Transfert et transformation de la spéciation de l'arsenic dans la rhizosphère du riz résultant de l'irrigation par des eaux contaminées au Bangladesh." Employer: Jean-Marie Garnier, Ph.D. [garnier@cerege.fr], Equipe: Physico-chimie aux interfaces, C.E.R.E.G.E. UMR 6536-CNRS, Europôle Méditerranéen de l'Arbois, BP 80, 13545 Aix-en-Provence Cedex, France.

Responsibilities:

• Hydrogeological investigation: Water sampling for geochemical analysis of groundwater, Core sampling, Core sample analysis, Sediment extraction analysis.

• Project Monitoring and Project Management: Coordinating fieldworks and laboratory analysis. Negotiation with local people; Input into strategic planning.

Research Student (January, 2005): Project Title: "*Health Hazard and Arsenic Mobilization in Bangladesh Groundwater*". The Environmental Research Project conducted by the 'Lamont-Doherty Earth Observatory (L-DEO)'of Columbia University, New York of the USA. Employer: Kazi Matin Ahmed Ph. D. [kazimatin@yahoo.com], Professor, Department of Geology, University of Dhaka, Dhaka – 1000

Responsibilities:

Baseline Survey: Baseline survey to understand the distribution of arsenic in the aquifers of the Araihazar Upazila area of Bangladesh.

Junior Geophysicist (July, 2005): Project Title: "*Geophysical investigation for deeper aquifer assessment in Dhaka city and Singair upazila*" The Geophysical Research Project conducted by the "Institute of Water Modeling (IWM), Dhaka, Bangladesh. Employer: Kazi Matin Ahmed, Ph. D. [kazimatin@yahoo.com], Professor, Department of Geology, University of Dhaka, Dhaka – 1000, Bangladesh.

Responsibilities:
Geophysical Investigation for Hydrogeological Evaluation: Borehole logging(Natural Gamma-Gamma & Conductivity)

On-going Research Projects

1. Enhancing efficiency of Subsurface Arsenic Removal (SAR) Technology through Chemical Modification. Funding Organization: North South University, Dhaka

Completed Research Projects

1 Temporal and seasonal variability of arsenic in drinking water and wells in Matlab, Southeastern Bangladesh. Funding Organization: Ministry of Science and Technology, GoB

2 Reduction of excess phosphorous in agricultural runoff using locally available low cost material to prevent eutrophication in Haor regions of Bangladesh. Funding Organization: North South University, Dhaka

Selected Publications

Peer Reviewed Publications:

1. Z. Aziz, B.C. Bostick, Y. Zheng, M.R. Huq, M.M. Rahman, K.M. Ahmed, A. van Geen, Evidence of decoupling between arsenic and phosphate in shallow groundwater of Bangladesh and potential implications, Appl. Geochem. (2016), ISSN 0883-2927.

2. Jung, H.B., Zheng, Y., Rahman, M.W., Rahman, M.M., Ahmed, K.M., 2015. Redox zonation and oscillation in the hyporheic zone of the Ganges-Brahmaputra- Meghna Delta: Implications for the fate of groundwater arsenic during discharge. Appl. Geochem. 63, 647–660. doi:10.1016/j.apgeochem.2015.09.001

3. M.M. Rahman, M. Bakker, C.H.L. Patty, Z. Hassan, W.F.M. Röling, K.M. Ahmed, B.M. van Breukelen, Reactive transport modeling of subsurface arsenic removal systems in rural Bangladesh., Science of the Total Environment 537 (2015) 277–293.

4. N. Mladenov, Y. Zheng, B. Simone, T.M. Bilinski, D.M. McKnight, D.R. Nemergut, K.A. Radloff, M. M. Rahman, and K.M.U. Ahmed, Dissolved Organic Matter Quality in a Shallow Aquifer of Bangladesh: Implications for Arsenic Mobility., Environmental Science & Technology (2015), DOI: 10.1021/acs.est.5b01962.

5. Radloff, K.A., Zheng, Y., Stute, M., Weinman, B., Bostick, B., Mihajlov, I., Bounds, M., Rahman, M.M., Huq, M.R., Ahmed, K.M., Schlosser, P., van Geen, A., n.d. Reversible adsorption and flushing of arsenic in a shallow, Holocene aquifer of Bangladesh. Appl. Geochem. doi:10.1016/j.apgeochem.2015.11.003

6. M.M. Rahman, M. Bakker, S.C.B. Freitas, D. van Halem, B.M. van Breukelen, K.M. Ahmed, A.B.M. Badruzzaman, 2014. Exploratory experiments to determine the effect of alternative operations on the efficiency of subsurface arsenic removal in rural Bangladesh. Hydrogeol. J. 23, 19–34. doi:10.1007/s10040-014-1179-0

7. Freitas, S.C.B., Van Halem, D., Rahman, M.M., Verberk, J.Q.J.C., Badruzzaman, A.B.M., Van Der Meer, W.G.J., 2014. Hand-pump subsurface arsenic removal: The effect of groundwater conditions and intermittent operation. Water Science and Technology: Water Supply 14.

8. Legg, T.M., Zheng, V., Simone, B., Radloff, K.A., Mladenov, N., Gonzalez, A., Knights, D., Siu, H.C., Rahman, M.M., Ahmed, K.M., McKnight, D.M., Nemergut, D.R. Carbon, metals, and grain size correlate with bacterial community structure in sediments of a high arsenic aquifer (2012) Frontiers in Microbiology.

9. Natalie mladenov, Yan zheng, Matthew p. Miller, Diana R. Nemergut, Teresa legg, Bailey Simone,Clarrisa Hageman, M. Moshiur Rahman, K. Matin Ahmed, Diane M. Macknight "Dissolved Organic Matter Sources and Consequences for Iron and Arsenic Mobilization in Bangladesh Aquifers" Environmental Science and Technology, 2009

10. Jessica Leber, M. Moshiur Rahman, M. Tareq Chowdury, Kazi M. Ahmed, Brian Mailloux, Alexander van Geen "Contrasting Influence of Geology on E. coli and Arsenic in Aquifers of Bangladesh, Vol. 49, No. 1–GROUND WATER–January-February 2011 (pages 111–123).

11. Radloff, K.A., Manning, A.R., Mailloux, B., Zheng, Y., Moshiur Rahman, M., Rezaul Huq, M., Ahmed, K.M., Geen, A.v. Considerations for conducting incubations to study the mechanisms of As release in reducing groundwater aquifers (2008) Applied Geochemistry, 23 (11), pp. 3224- 3235.

12. van Geen, A., Z. Cheng, Q. Jia, A. A. Seddique, M. W. Rahman, M. M. Rahman, and K. M. Ahmed, Monitoring 51 deep community wells in Araihazar, Bangladesh , for up to 5 years: Implications for arsenic mitigation, Journal of Environmental Science and Health , 42, 1729-1740, 2007.

13. Sarker, Md Siddiqur R., Mohammad Moshiur Rahman, and Nadim Khandaker 2018 Defining the Kinetics of the Novel Application of Anaerobic Acetogenics for Treating Textile Dyeing Wastewater. Modeling Earth Systems and Environment: 1–12.

14. Kundu, Debasish Kumar, Aarti Gupta, Arthur P. J. Mol, Mohammad Moshiur Rahman, and Doris van Halem 2018 Experimenting with a Novel Technology for Provision of Safe Drinking Water in Rural Bangladesh: The Case of Sub-Surface Arsenic Removal (SAR). Technology in Society 53: 161–172.

15. Iqbal, Afrida Binth et al. 2020. "Assessment of Bangladesh Groundwater for Drinking and Irrigation Using Weighted Overlay Analysis." Groundwater for Sustainable Development 10: 100312.

16. Sharmin, Ayesha et al. 2020. "Reducing Excess Phosphorus in Agricultural Runoff with Low-Cost, Locally Available Materials to Prevent Toxic Eutrophication in Hoar Areas of Bangladesh." Groundwater for Sustainable Development 10: 100348.

17. Al Amin, M., Rahman, M.E., Hossain, S., Rahman, M., Rahman, M.M., Jakariya, M., Sikder, M.T. (2020) Trace metals in vegetables and associated health risks in industrial areas of savar, Bangladesh. Journal of Health and Pollution, 10 (27), art. no. 905, .

18. Md. Shawkat Islam Sohel, Sudipta Kumar Hore, Mohammed Abdus Salam, Muhammad Al-amin Hoque, Naser Ahmed, Mohammad Moshiur Rahman, Haniyum Maria Khan, Sohanur Rahman, Analysis of erosion–accretion dynamics of major rivers of world's largest mangrove forest using geospatial techniques, Regional Studies in Marine Science, Volume 46, 2021, 101901, ISSN 2352-4855, https://doi.org/10.1016/j.rsma.2021.101901.

Technical Report:
1. UNICEF Bangladesh - Bangladesh national drinking water quality survey of 2009. (March 22, 2011).

Conference Abstracts:
1. M.M. Rahman, S.C. Borges Freitas, M. Bakker, D. van Halem, K.M. Ahmed, A.B.M. Badruzzaman Exploratory experiments to assess Subsurface Arsenic Removal (SAR) under different operational parameters in rural Bangladesh. GeoGen 2013 International Conference Towards sustainable safe drinking water supply in developing countries: The challenges of geogenic contaminants and mitigation measures. 5-7 February, Addis Ababa, Ethiopia.
2. M.M. Rahman, B.M. van Breukelen, M. Bakker, K.M. Ahmed. Reactive Transport Modeling of Subsurface Arsenic Removal Systems in Rural Bangladesh. AGU 2014 Fall Meeting, 15-19 December, San Francisco, USA

3. M.M. Rahman, M. Bakker, K.M. Ahmed, B.M. van Breukelen. Nationwide Assessment of Potential for Subsurface Arsenic Removal Technology in Bangladesh. AGU 2015 Fall Meeting, 14-18 December, San Francisco, USA

REFERENCES

Dr. A. S. M. Maksud Kamal
Professor And Pro-Vice Chancellor
Department of Disaster Science and Management
Faculty of Earth and Environmental Sciences
Email: maksudkamal@du.ac.bd

Mark Bakker, Ph.D.
Professor in Computational Groundwater Dynamics
Faculty of Civil Engineering and Geosciences
Water Resources Section

Delft University of Technology
Delft, The Netherlands
Email: mark.bakker@tudelft.nl

Kazi Matin U Ahmed, Ph.D.
Professor and Chairman
Department of Geology
Faculty of Earth and Environmental Sciences
University of Dhaka
Curzon Hall Campus, Dhaka 1000
Bangladesh
Email: kmahmed@du.ac.bd