

**Curriculum vitae of
Mohammad Moshir Rahman**
Email: mohammad.rahman@northsouth.edu

Education

Ph.D.

Delft University of Technology, the Netherlands 2017
Research: Field Experiments and Reactive Transport Modeling of Subsurface Arsenic Removal in Bangladesh. Advisor: Mark Bakker, Ph.D. (mark.bakker@tudelft.nl), Professor in Computational Groundwater Dynamics, Faculty of Civil Engineering and Geosciences, Water Resources Section, Delft University of Technology, Stevinweg 1 2628 CN Delft, the Netherlands.

Master of Science

Queens College, City University of New York June, 2010 GPA: 3.7 out of 4
Research: Arsenic loading on soil due to large scale groundwater irrigation and its impact on rice productivity in Bangladesh **Advisor:** Yan Zheng, Ph.D. (yan.zheng@qc.cuny.edu), professor, School of Earth and Environmental Sciences, Queens College, CUNY, NY-11367.

Master of Science in Geology

December, 2003 First Class 2nd position
University of Dhaka, Dhaka, Bangladesh
Thesis: Hydrogeological and Hydrochemical Evaluation of Burichang and Sadar Upazila, Comilla District, Bangladesh. **Supervisor:** Kazi Matin Ahmed, Ph.D. (kazimatin@yahoo.com), professor, Department of Geology, University of Dhaka, Dhaka- 1000, Bangladesh

B.Sc. Honors in Geology (4 years Integrated) December, 2002 2nd Class 2nd position
University of Dhaka, Dhaka, Bangladesh

H. S. C. first division from Science group 1998
Rangpur Cadet College, Rangpur

S. S. C. first division from Science group 1996
Rangpur Cadet College, Rangpur

Work Experience

Assistant Professor (May 2017 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.

PhD researcher (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/>. Defense date: September 07, 2017.

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

Lecturer (September 2010 to April 2017): 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.

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.

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.

Assistant Director, Geological Survey of Bangladesh, and Government of the peoples 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., 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 Araihasar 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, Pôle 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., 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 Araihasar 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., Professor, Department of Geology, University of Dhaka, Dhaka – 1000, Bangladesh.

Responsibilities:

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

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 1 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. Moshir 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. Moshir 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., **Moshir 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 Araihasar ,

Bangladesh , for up to 5 years: Implications for arsenic mitigation, Journal of Environmental Science and Health , 42, 1729- 1740, 2007.

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

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Faculty of Civil Engineering and Geosciences
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professor,
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