Assessing groundwater stoichiometric composition and its suitability in northwestern Bangladesh

ABSTRACT

Groundwater quality analyses included pH, EC, cations (Ca2+, Mg2+, Na+, K+, Zn2+, Cu2+, Mn2+, Fe3+ and As3+), anions (CO32-, HCO3-, NO3-, SO42-, PO43- and Cl-) and TDS of northwestern Bangladesh. The samples contained Ca2+, Mg2+ and Na+ as the dominant cations and HCO3- and Cl- were the dominant anions. Ratios of major cations and anions of water samples suggest the predominance of Ca and Mg-containing minerals over Na-containing minerals. According to TDS and SAR values, all samples were classed as 'freshwater' and 'excellent' categories. The SSP of all waters was under 'excellent' and 'good' classes. All samples were within 'soft' class regarding hardness with 'suitable' RSC. Based on As3+, Zn2+, Mn2+, Fe3+, SO42-, NO3- and Cl- all groundwater samples were within the 'safe' limit for drinking but unsuitable for some industries for specific ions.

Keyword: Groundwater; Suitability; Northwestern Bangladesh