

Investigation of shallow tube-well water quality considering the influence of nearby latrines in a rural village of Bangladesh

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Abstract Considering the hypothesis “shallow tube-well water might be contaminated by microorganisms from a nearby open pit latrine”, litho-stratigraphy, physico-chemical properties along with microbial contamination level of shallow tube-well water and socio-economic aspects related to sanitation of a rural village (Gakulnagar, Bangladesh) were investigated. A questionnaire survey, an open pit of 33 m, tube-well water temperature, Electrical Conductivity (EC), pH, Total Dissolved Solid (TDS), Iron (Fe), Manganese (Mn), Arsenic (As), Phosphate (PO₄), Total Hardness, Nitrate (NO₃) and Total Coliform Bacteria were analysed using standard methods. The litho-stratigraphy of Gakulnagar village consists of clay (7 m), fine sand (3 m), medium sand (3 m) and coarse sand (20 m) layers from the surface. Values of all parameters were found within the tolerable limits, except coliform, in very few samples, where pit latrines were adjacent to the tube-well. Values of total coliform bacteria showed an inverse relationship with the distance between the tube-well and the pit latrine.

Key words water quality; tube-well; pit latrine; Bangladesh; litho-stratigraphy