

IMPACT OF MUNICIPAL WASTE DUMPING ON SOIL AND WATER AROUND A DUMP SITE IN RAJSHAHI CITY

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ABSTRACT

This study was conducted to understand the impact of open dumping of municipal waste on surface water, groundwater and soil due to the open dumping of solid waste at a site in Rajshahi, Bangladesh. Surface water samples were collected from two locations and ground water samples were collected from one tube well near the dump site. Also soil samples were collected from three locations near the dump site. All the samples were collected at two months interval from August, 2010 to July, 2012. The collected surface and groundwater samples were analyzed for the parameters including pH, EC, DO, BOD₅, COD, CO₃²⁻ and HCO₃⁻, Cl, K, Ca, Mg, Na, Cu, Fe, Mn, Zn and As. The major cations of Na⁺ and Zn²⁺ were found in the surface water at location S1, 310 mg/L and 0.1 mg/L. Among anions, HCO₃⁻ and Cl⁻ were found at concentrations of 446 mg/L and 570 mg/L. The concentration of K⁺ and Zn²⁺ were found in the surface water at location S2 1130 mg/L and 0.1 mg/L. Among anions, HCO₃⁻ and Cl⁻ were found to be 684 mg/L and 390 mg/L. Mg²⁺ was the dominant ionic species among the cations of the shallow tube well water samples, and at the end of the study it was found at a concentration of 230 mg/L; among the anions, HCO₃⁻ and Cl⁻ were found at a concentration of 210 mg/L and 14 mg/L at the end of the study. The concentrations of Fe³⁺ and K⁺ were found in the soil in the highest and lowest quantities among cations, respectively at location A and at the end of the study the amount were 165.7 µg/g and 3.12 µg/g respectively at top soil and among anions, S and P were found at concentrations of 255 µg/g and 188 µg/g at the end of the study.

KEYWORDS: Highest and Lowest Quantities