ASSESSMENT OF THE HEAVY METAL POLLUTION IN THE SEDIMENT SAMPLES OF MAJOR CANALS IN DHAKA CITY BY MULTIVARIATE STATISTICAL ANALYSIS

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ABSTRACT

In this study, the levels of selected metals (Cd, Cr, Cu, Mn, Fe and Pb) concentrations were measured by Flame Emission Atomic Absorption Spectrophotometer (FL-AAS) in sediment (sludge) samples collected from 10 different Canals in and around the Dhaka City Corporation (DCC) area of Bangladesh. The analysis result shows that Cr, Cu and Pb were present as major pollutants in the some canals in the DCC area with high concentration levels, while Cd, Mn and Fe emerged as minor pollutants. Principal Component Analysis (PCA) and Cluster analysis were used to assess the metal contamination in the canals. Positive correlations were found between Mn–Fe ($r = 0.860$), Pb–Cu ($r = 0.786$), Pb–Cd ($r = 0.398$) and Cu-Cd ($r = 0.227$) pairs. The present metal concentration in the canal sediments data shows that Cr, Pb and Pb levels are higher than recommended sediment quality guideline by USEPA but pollutants concentrations in the sludge are below the prescribed hazard limit provided by USEPA for land application of sludge.

KEYWORDS: Canals, Sludge, Heavy Metal, Principal Component Analysis, Cluster Analysis**.**