

Article Abstract

Title:	Impact of industrial effluent from an iron and steel company on the physico-chemical quality of Kwekwe River water in Zimbabwe
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Abstract:	The concentrations of heavy metals in bank soils, bed sediments and water of Kwekwe River, upstream and downstream of the industrial effluent discharge point were examined with the aim of determining the effect of the effluent on the river water quality. Five sampling sites were selected along the river and samples were collected between April and June 2005. Water variable characteristics data were analysed for variations using one-way analysis of variance (ANOVA). Hierarchical method, average linkage cluster analysis was applied to the mean values of the water variables for each site. Two clusters were produced, grouping the reference site and two furthest sites downstream of the effluent discharge point. Water physico-chemical variables and heavy metals changed remarkably at downstream ($p < 0.05$). Calcium and iron proved to be the most metals influencing the river water quality with accumulation factors of 6.1 and 7.8, respectively in the sediments. The concentrations of cations were higher in sediments than those in bank soils at sites downstream of the discharge point. The river had the highest self-purification amounts with respect to total dissolved solids. The results of the study proved deterioration of Kwekwe River water quality due to the discharged effluent.
Keywords:	Physico-chemical variables, sediments, river water quality, industrial effluent