

ABSTRACT

This study aimed at assessing the seasonal and longitudinal variations in four selected heavy metals associated with industries in Eldoret Municipality along Sosiani River in Uasin Gishu County. An experimental design was used to collect water samples upstream midstream and downstream of Eldoret town. Samples were collected from 13 different effluent discharge points in accordance to APHA, 2012 water sampling procedures along the river for a period of one year during the dry and wet seasons. The heavy metals were analysed using an Atomic Absorption Spectrophotometer (ASS Spectronic 21D) flame atomizer method. Results were analysed using SPSS version 20 for ANOVA and correlation analysis. Sosiani River exhibited both seasonal and spatial distribution of these heavy metals. The concentrations were lowest upstream at the source of the river but increased midstream as the river drained more effluent. However, they declined further downstream in Turbo town which perhaps suggests self purification ability of Sosiani River. There was significant variation in Zn levels ($F=305.70$ & $P<0.001$), Cd levels ($F=2.71$ $P<0.003$) Pb levels ($F=72.26$ $P<0.001$) and Cr levels ($F=140.26$ $P<0.001$) along the river and with the onset of rainy season. Levels of Zn and Cr were below NEMA/WHO standards while Cd and Pb were above NEMA/WHO standards hence a health concern. The study recommends that Municipal effluent should be channelled into effluent treatment works for pre-treatment and all facilities discharging effluent should develop wetlands if not connected to the sewer line. ELDOWAS should include chemical treatment in Huruma sewage treatment plant to improve the efficacy of treatment of heavy metals and construct a wetland.

Key words: Sosiani River, water quality variations, Heavy metals