

Heavy metals Fractionation in Bagmati River Sediments, Nepal

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ABSTRACT

The aim of this work was speciation of heavy metals on the level of the geochemical background; in bottom sediments of the Bagmati River in Kathmandu valley. The distribution and accumulation of heavy metals in the sediments of the Bagmati River were investigated. Sediment samples from six locations were collected and characterized for metals content (cadmium, lead, copper and zinc). The determination of extractable heavy metals such as, Cd, Pb, Cu and Zn, in the sediment samples was carried out by atomic absorption spectrometry. The study has been conducted using five steps sequential extraction procedure described by Tessier. Apart from total concentration, the distribution of the above metals into five fractions: exchangeable, bound to carbonates, bound to Fe-Mn oxides, bound to organic matter, and residual, was studied by means of an analytical procedure involving sequential chemical extraction. The result obtained showed total metal concentration to be in the range of Cd 0.89-2.29 mg/kg; Pb 57.58-221 mg/kg; Cu 52.2-198.17 mg/kg and 78.23-362.90 mg/kg in all the areas studied. The fractionated toxic metals like Cd, and Pb were observed to be in the range of 15-36%, and 11- 29%, respectively, in mobile or bio-available fractions of sediments. This potentially mobile fraction could pose a serious threat, with respect to contamination of waterways and aquatic environment.

Keywords: *heavy metals, sediments, Bagmati River, distribution, mobile.*