JEP> Vol.2 No.6, August 2011

OPEN ACCESS

Ecotoxicity and Ecosystem Health of a Ramsar Wetland System of India

PDF (Size:313KB) PP. 710-719 DOI: 10.4236/jep.2011.26082

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ABSTRACT

In this study one economically important Ramsar wetland system of India, Vembanad wetland system, is studied to determine the environmental pollution. Six surface sediment samples collected from two extreme zones of the wetland system were analyzed for heavy metals such as Copper, Zinc, Manganese, Cadmium, Lead, Nickel and Mercury. Highest metal concentration was found at industrial zone and lowest concentration was detected at southern upstream of the wetland system. The results showed that the pollution level is significant in the industrial zone. Comparison of the results with different sediment quality guidelines indicated ultra high degree of contamination in the industrial zone. The numerical value of degree of contamination, pollution load index, sum of toxic units, enrichment factor and geo-accumulation index confirmed the above fact. Based on National Oceanic and Atmospheric Administration guidelines, the health of the ecosystem was seriously impaired with frequent occurring of biological effects in the industrial zone. The percentage of heavy metal calculated with respect to the industrial zone as the base line and the correlation analysis with organic matter indicated that, mobility of the specific metal has higher impact on its concentration at the fresh water region of the wetland.

KEYWORDS

Heavy Metal, Sediment Quality Guidelines, Degree of Contamination, Pollution Load Index, Index of Geo-Accumulation

Cite this paper

U. Nasir and P. Harikumar, "Ecotoxicity and Ecosystem Health of a Ramsar Wetland System of India," *Journal of Environmental Protection*, Vol. 2 No. 6, 2011, pp. 710-719. doi: 10.4236/jep.2011.26082.

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