

Original Research Article

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## Analysis of Physico-Chemical Parameters and Heavy Metals from Surface Water and Sediments of Ujani Backwaters

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### ABSTRACT

The concentration of four eco-toxic heavy metals such as Hg, Pb, Cu, and Zn have been analysed from two sampling sites of Ujani backwaters for three seasons by atomic absorption spectrometer. The concentrations of these heavy metals have been found to be  $0.0025 \pm 0.005$ ,  $0.029 \pm 0.056$ ,  $1.58 \pm 0.313$ ,  $4.39 \pm 1.17$  &  $0.00240 \pm 0.005$ ,  $0.047 \pm 0.067$ ,  $2.043 \pm 0.309$ ,  $6.09 \pm 1.281$  respectively. These values are found to be slightly above the permissible limit of drinking water quality standards. The data has been used for the calculation of Heavy-metal Pollution Index (HPI) and Metal Index (MI). The mean HPI values of ground water in Site-I and Site-II are 244.45 and 229.93 respectively. The results indicated that mean HPI values were found to be above the critical pollution index value of 100. The mean MI values of ground water at Site-I & Site-II are 6.047 and 6.147 respectively. These results of MI indicate the strong heavy metal pollution at both sites. Same metals were analysed from sediments of same sites. Average values found are  $0.033 \pm 0.009$ ,  $0.17 \pm 0.077$ ,  $19.45 \pm 4.64$ ,  $17.48 \pm 2.8$  &  $0.036 \pm 0.005$ ,  $0.225 \pm 0.06$ ,  $20.77 \pm 4.82$ ,  $21.01 \pm 5.33$  respectively. Physicochemical parameters like temperature, pH, total hardness, & dissolved oxygen were also evaluated for two years. Average values of these parameters for site-I & site-II were  $26.7^\circ\text{C}$ , 8.00, 318.71mg/L, 4.63mg/L &  $26.59^\circ\text{C}$ , 7.9, 357.7mg/L, 4.12mg/L respectively.

#### Keywords

Ujani backwaters, Sediment, Heavy metals, Physico-chemical parameters

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### Introduction

Water is characteristic feature of planet Earth and is component of both organic and inorganic substances. Its role as solvent, medium for reaction and transport, it is essential for all abiotic and biotic processes on Earth. Its ability of forming

intermolecular hydrogen bonds, it has an array of unique physicochemical properties which form fundamental relevance for the matter and energy budgets of ecosystems (Gordalla *et al.*, 2007). About 70% of total freshwater is present in the form of glaciers and icecaps which is not available for human use. Remaining 30% of freshwater is present