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**Distribution of Selected Heavy Metals and Other Water Quality Parameters in Thuruwila Wewa Reservoir**

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**Abstract**

Water is a valuable natural resource and many anthropogenic activities including population growth, agricultural, and industrial development have deteriorated the quality leading to water pollution. Accumulation of heavy metals in water and sediments in reservoirs is a major environmental issue and the consequences are much worse if the reservoirs are used for domestic use especially for drinking purposes. The main objective of this study is to investigate spatial distribution and the concentration of selected heavy metals and other water quality parameters in Thuruwila wewa drinking water supply reservoir. Fifteen (15) surface water samples and ten (10) sediment samples were collected in July 2020 and analyzed using internationally accepted standard procedures. Water samples were analyzed for pH, conductivity, metals: Fe, Mn, Cd, Pb, Cu, Ni, Cr, Na, K, Ca, and Mg, and anions: F<sup>-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>2-</sup>. The sediments were analyzed for the metals Mn, Fe, Cd, Pb, and Ni. The concentration of heavy metals and other water quality parameters tested in this study were within permissible limits given by World Health Organization except for Cd and F<sup>-</sup> concentration. The average Cd concentration was 9.19 µgL<sup>-1</sup> which exceeded the guideline value of 3.0 µgL<sup>-1</sup> and the average F<sup>-</sup> concentration is 0.486 mgL<sup>-1</sup> which is below the guideline value of 0.5-1.5 mgL<sup>-1</sup>. According to the spatial distribution of heavy metals, higher concentrations for Fe, Ni, Cd, Cu, and Mn metals were observed at the inlet compared to other areas of the reservoir. The concentrations of heavy metals (mgkg<sup>-1</sup>) in surface sediments ranged from 53 to 1,716 for Mn, 22 to 637 for Fe, 0.213 to 1.995 for Cd, 0.262 to 0.777 for Pb, and from 1 to 33 for Ni. The high concentrations of Fe, Mn, and Ni in sediments were observed in the middle, south, and west parts of the reservoir. Since Thuruwila is suitable as a drinking water reservoir, it is crucial to constantly monitor Cd levels. More experimental data is required to properly assess the water quality in the reservoir.

**Keywords:** Heavy metals, Water quality, Sediment, Drinking water