

## **Investigation of the effect of heavy metals and other physico-chemical parameters for the coloration in water of Kattakaduwa reservoir**

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The study was conducted at Kattakaduwa reservoir, Hambantota district, Sri Lanka in 2017 to assess the variation of five heavy metals (Mn, Fe, Cu, Cd and Pb) and seven physico-chemical parameters (dissolved oxygen, pH, temperature, alkalinity, turbidity, conductivity, sulphate ion) throughout the year to narrow down the reason for brown colour fluctuation of reservoir water. Sediment analysis for five selected heavy metals was also carried out. Average water temperature, pH, dissolved oxygen, sulphate concentration, turbidity, conductivity and alkalinity of reservoir water are  $32.917 \pm 0.229^\circ\text{C}$ ,  $7.516 \pm 0.036$ ,  $7.080 \pm 0.508$  mg/L,  $57.42 \pm 6.81$  mol/m<sup>3</sup>,  $36.74 \pm 5.45$  NTU,  $605.3 \pm 34.6$   $\mu\text{S}$ ,  $175.92 \pm 9.32$  mg/L, respectively. Corresponding values after purification are  $31.667 \pm 0.355^\circ\text{C}$ ,  $7.350 \pm 0.028$ ,  $8.172 \pm 0.195$  mg/L,  $86.0 \pm 10.3$  mol/m<sup>3</sup>,  $1.39 \pm 0.26$  NTU,  $692.8 \pm 34.6$   $\mu\text{S}$ ,  $127.3 \pm 9.0$  mg/L, respectively. Maximum Fe concentration was recorded in March (1.73 mg/L) while minimum was in January (0.712 mg/L) exceeding the US federal limits of Fe (0.3 mg/L) throughout the year. But Mn exceed the US federal limit (0.05 mg/L) only in May (0.053 mg/L), July (0.051 mg/L) and October (0.052 mg/L). The presence of the rest of the heavy metals is negligible. The concentrations of Fe ( $15291 \pm 3598$  ppm) in sediments are much greater than Mn ( $1178 \pm 330$  ppm), and hence the brown colour in water may be due to adsorbed Fe in sediments, which can easily leach to the water. All concentration values of heavy metals in purified water are negligible.

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