

IMPACT OF SAND MINING ACTIVITIES ON THE QUALITY OF THE WATER AT LOWER REACHES OF KALUGANGA

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Out of 103 number of rivers in Sri Lanka the 3rd largest major river is Kaluganga. It has the highest volume of discharge as a percent (%) of precipitation per year out of the Sri Lankan rivers. It originates 4600m above mean sea level (Sripada), is 118km in length and opens to the sea at Kalutara.

At the lower reaches of Kaluganga is a densely populated zone where the inhabitants are highly dependent on sand mining activities which adversely affect the quality of the water in the river. To assess the extent of mining effects, six sites were selected. Out of those sites, water samples were collected for monitoring purpose samples were collected from the Kethhena water intake. In the other five sites heavy sand mining activities are on going. To compare the variation of chemical, physical & biological parameters in water, samples were collected from each site and analysed weekly for two months.

The physical parameters measured include - temperature, turbidity, suspended solids and electrical conductivity. Chemical parameters assessed include pH, dissolved oxygen, BOD₅ (biological oxygen demand), alkalinity, water hardness, [Mg⁺²], [Ca⁺²], [Cl⁻] and COD. The data were analyzed by TWO WAY ANOVA using GLM procedure of MINITAB. Microscopic identification of biological parameters (phytoplankton's) was identified.

According to the results obtained, the value of pH, temperature and dissolved oxygen are in the desirable level. But some values like conductivity, suspended solids, turbidity, alkalinity, [Cl⁻], [Fe], phosphates as P₂O₅, COD are higher than the desired range. BOD₅ is within desired which means low organic matter in the river. [Cl⁻] along the river indicates the salt-water intrusion directly effected by mining lowering the river bed. [Mg⁺²], [Ca⁺²], Nitrogen, water hardness are lower than the desired level. *Anabena*, *Nostoc*, *Microcystis*, *Closterium*, *Cosmarium*, *Occilatoria*, *Spirogyra*, *Spirulina* Spps are found as biological indicators in the water at mining sites but in lower abundancy. At the site of water intake few species were identified but abundancy is higher than in other sites. These species include, *Occilatoria*, *Euglina* ssp., *Closterium*, *Cosmarium*, *Spirogira*.

According to the above results it can be concluded that the sand mining activities has adversely affected the quality of the water at the lower reaches of Kaluganga.