

## Assessment of Water Quality Status and Pollution Levels in MaduruOya Reservoir in Sri Lanka

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MaduruOya reservoir was constructed in 1983 under the Accelerated Mahaweli Program. The dam is located in North Central province and the reservoir extends to Eastern province and Uva provinces (between 7° 32' 42" to 7° 39' 57" North latitude and 81° 11' 35" to 81° 12' 21" East longitude). It is reported that high amount of nutrients and other chemical residues accumulate in water of the reservoir due to heavy use of agrochemicals in the catchment area. Fifteen locations were selected for sub-surface water sampling and analysis from February to July in 2016. Temperature, pH, Dissolved Oxygen (DO), Electrical Conductivity (EC) and Turbidity were measured *in-situ*. Ammonical nitrogen, nitrate nitrogen, nitrite nitrogen, dissolved phosphate, and other chemical parameters such as alkalinity and hardness were also assessed.

Water temperature of the reservoir varied from 29.7 °C to 36 °C while pH value was from 6.8 to 9.5. DO value was from 3.3 ppm to 9.4 ppm. EC varied from 94  $\mu\text{S cm}^{-1}$  to 200  $\mu\text{S cm}^{-1}$  and turbidity of water fluctuated from 0.96 NTU to 49.4 NTU. Ammonical nitrogen varied from 0.001 ppm to 0.652 ppm. Nitrite Nitrogen was from 0.001 ppm to 0.905 ppm and Nitrate Nitrogen was detected from 0.001 ppm to 1.131 ppm. The highest phosphate concentration was detected as 0.468 ppm near the dam site of the reservoir in July. Total hardness was from 21 ppm to 68 ppm and alkalinity varied from 15 ppm to 190 ppm. The highest pH was recorded in June near the dam site of the reservoir and exceed the WHO standards for drinking water. The maximum nitrate and nitrite concentrations were recorded in June at the middle of reservoir and maximum ammoniacal nitrogen was also recorded in June and it was at the dam site. High accumulation of nutrients can lead to eutrophication in the reservoir and it causes the spreading of toxin producing algal species such as *Microcystis* affecting the ecosystem health and human livelihood.

**Keywords:** *MaduruOya reservoir, water quality assessment, water pollution, pH value, eutrophication*

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