

# SOURCE IDENTIFICATION AND POLLUTION ASSESSMENT IN MAHAWELI RIVER AROUND KANDY CITY AREA

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In most of the developing countries, frequently the river pollution can be mainly attributed to untreated waste discharges from commercial and industrial establishments. The danger is that in a situation where water pollution may be steadily increasing, unless an effort is made to build up records, and understanding of the processes and trends, the changeover from tolerable conditions to intolerable conditions may come as a sudden event.

Among the rivers, "*Mahaweli*" is the largest river basin found in Sri Lanka which has a drainage area of 16 percent of Sri Lanka's land surface (10327 km<sup>2</sup>). In recent times with increase in population and urbanization, settlement around townships especially on the banks of "*Mahaweli*" has shown a marked increase. Among these, Kandy, the second largest city in Sri Lanka is believed to contribute most of the pollution into the headwaters through a number of its tributaries around the city.

In this study, three major tributaries namely Pinga Oya, Nanu Oya and Maha Oya around Kandy area are selected for monitoring the water quality. Out of these tributaries, two flow through highly populated areas with concentrated dwellings and industrial establishments especially by the side of the river. In an initial survey, highly polluted zones were identified and sampling points were selected from headwaters to the downstream based on the findings. At each cross-section, samples were taken at various depths across the river twice a month from August 2000.

According to the obtained data, temperatures were recorded in the range of 23°C and 31°C and pH almost in neutral condition creating ideal condition for bacterial growth. The recorded DO concentration was in the range of 6.5-2 mg/l in most occasions. Comparatively higher DO concentration was recorded at the upstream than the downstream. Conversely, due to large waste loads and stagnant water conditions, very low DO concentrations were observed at the downstream of Pinga Oya. The low level of nutrients and the BOD<sub>5</sub> values (BOD<sub>5</sub> less than 5 mg/l, nutrients less than 2 mg/l) indicates effects of good dilution and high assimilation. However, higher COD values recorded at some locations imply that the organic matter making up the COD may include substances that are slowly biodegradable that can be harmful to aquatic life. Further, the most alarming circumstance was the high levels of fecal coliform detected in all three tributaries throughout the study period (in the order of 500 to 7000 cfu/100ml). Hence, from the obtained results, especially low DO concentrations and high coliform counts show high pollution levels in the tributaries and indicate a possible limiting state of their assimilative capacity in some river stretches.