

## Abstract

Comparative study on variation of water quality along the Kalu Ganga with the Sri Lanka standard of potable water (614:1983) was the main aim of this research<sup>1</sup>. Identifying the suitable areas of Kalu Ganga water for drinking purposes, introduce baseline water quality parameters for Ganga, investigate the intrusion of hazardous chemicals to Ganga and develop a water quality index for Ganga were other achievements.

In here, the physical and the chemical requirement of Sri Lanka standard of potable water was considered. Further, thirty six separate water samples were analyzed along the Kalu Ganga in Ratnapuara, Haraniyawaka, Ellagawa, Kandana, Kethhena and Kalutara once a month from June 2009 to November 2009 continuously. The selected physical parameters were colour and turbidity and chemical parameters (basic) were pH, electrical conductivity, chloride (as Cl), nitrate (as N), nitrite (as N), phosphates (as PO<sub>4</sub>) and iron (as Fe). The selected chemical parameters (optional) were copper (as Cu), manganese (as Mn), zinc (as Zn) and chemical oxygen demand (COD). Further cadmium (as Cd), lead (as Pb) and chromium (as Cr) were measured as toxic substances under chemical parameters. The parameter biological oxygen demand (BOD) was also measured.

The study revealed that there was no location found containing water in excellent condition but most of the parameter results complied with the Sri Lanka standard of potable water (614: 1983) and some varied. The variations depend basically on tributaries which are connected to Kalu Ganga, the rain fall, sand and gem mining process and tidal variations. Based on the study defined a Water Quality Index (WQI) as a single numeric score that describes the surface water quality condition at a particular time and a location. It was found that the water quality in Kalu Ganga decrease gradually from upper stream to down stream from good to fair. Depending of the location different parameters were responsible for the water quality index variation such as high colour, high turbidity, low pH, high chemical oxygen demand, higher levels of iron, manganese and cadmium. Special attention has to be given to the area of Kandana because the water quality index changed from usual pattern and was found to be 75.5.

Due to the importance of Kalu Ganga water body, such studies are required to identify the changes in water quality in advance and it would help to take precautions in future problems.