Abstract

Lake Gregory, which is located within the bounds of the Nuwara Eliya city in the central hills of Sri Lanka is one of the unique water bodies in Sri Lanka. This study aims to analyze water quality in Lake Gregory using selected parameters (13) using standard methods such as atomic absorption spectroscopy (AAS), UV-VIS spectroscopy and Winkler method *etc.*

The analyses were subdivided into three parts; Lake Gregory, main inlet (Nanu Oya upstream) and main outlet (Nanu Oya downstream). Representative samples were collected from top to bottom from the Nanu Oya upstream covering highly populated areas as well as undisturbed habitats areas on monthly basis for a period of six months in 2009. It is obvious that the pollutants such as nitrate and phosphate level increase from top to bottom of the upstream and a clear decline of DO along the inlet. These results agree with the fact that the various pollutants accumulate into the inlet from various sources including toilet waste and solid-wastes.

From seven sample locations of Lake Gregory, "*sampling location 9*" shows significant deviation from rest of the locations due to one small water streams joining this point from Nuwara Eliya suburb which passes through the tea plantations and agricultural lands. A significant effect for the Lake Gregory is the accumulation of organic waste that comes from different sources in the catchment such as sewage, urban and agricultural runoffs, *etc.* These inputs contribute to increase in the COD and BOD levels and give rise to unpleasant odour in Lake Gregory.

Three sampling locations were considered in Nanu Oya downstream. There are no any significant deviations in analyzed parameters, but parameters such as PO_4^{-3} and NO_3^- show slight decreasing trend and this may be due to self cleansing or sedimentation processes may have occurred in Lake Gregory. But further analysis and evaluation is needed for the clear verification of this.