

Abstract

Contamination of water bodies due to natural or anthropogenic sources is unavoidable. Evaluation of level of contamination is therefore important. Before we conclude that a particular water body is contaminated or being contaminated the prevailing condition of the considered parameter is important. In this evaluation the physical, chemical & biological parameters of the Kalu Ganga were evaluated. The evaluation was from September 2013 to June 2014, a ten month study period within which the data were collected from 10 sampling stations throughout the flow of the river covering upper stream to the river mouth. The data was analyzed with rainfall data collected from the reliable data source results were compared with that of other river systems in the country and with the national standards. In this study Water Quality Index (WQI) was formulated for the river Kalu Gana system. WQI was based on the Canadian Council of Ministers of the Environment (CCME) procedure.

WQI was calculated separately for each parameter, i.e. for water temperature, nitrate, phosphate, total iron, manganese and dissolved oxygen levels were 'Excellent'; pH, nitrite, fluoride, sulphate, BOD and COD were 'Good'; Colour and ammonia levels were 'Marginal'; EC, chloride, total alkalinity, total hardness, TSS and TDS levels were 'Fair'; and turbidity and bacteriological levels were 'Poor'; in Kalu Ganga during the period of study. WQI was calculated separately for each category, i.e. for physical parameters, WQI of the river was 71.21 & condition was 'Fair'; and for chemical parameters, WQI of the river was 85.55 and condition was 'Good'; for bacteriological WQI of the river was 19.79 and condition was 'Poor'; for physical and chemical WQI of the river was 82.29 and condition was 'Good'; the year 2013/14. Also along the river WQI of the Kalu Ganga was 81.94 and condition was 'Good'; for the year 2013/14. The WQI is an effective tool to evaluate water quality of raw water sources for drinking water supply systems. The period of the study is very important for this evaluation.

Regarding the overall results, the Kalu Ganga system is susceptible to contamination due to excess of turbidity, colour, electrical conductivity and biological parameters. These parameters are directly correlated with the rainfall and the land use and due to the sea water intrusion during dry season, as a result of lowering the river bed due to excess sand mining.