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Assessment of physico-chemical parameters of Sagar lake, India

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The aim of this study was to determine physicochemical parameters of Sagar lake. This study was undertaken in Sagar lake, India, from January 2004 to June 2004. Samples were collected from three sampling sites and transported to the laboratory for analysis of physicochemical parameter of interest was carried out following the standard methods for water and waste water. The CD at 0.05 of DO nitrate, BOD, COD, phosphate, CO_2 alkalinity and chloride were 7.288, 28.22, 27.32, 56.17, 0.219, 2.55, 101.17, 278.26, respectively. From the parameters analyzed in this study, it is evident that Sagar district residents threatened the ecological integrity of Sagar lake by discharging organic waste into it without any form of treatment. Consequently, aquatic weeds now cover the major portion of the lake area leading to progressive eutrophication. The investigation shows that Sagar lake water is not safe for household purpose.

Key words : Sagar lake water, Physico-chemical parameters.

INTRODUCTION

The quality of water is of vital concern for mankind in our surrounding. There is a definite permissible limit of different organic and inorganic substance in water which a man can tolerate in the form of domestic water supplies for drinking water. Water quality characteristic of aquatic environments arise from a multitude of physical, chemical and biological interactions. The water bodies, rivers and lakes are continuously subject to a dynamic slate of change with respect to their physiological and biological characteristics.Nagarathna and Hosmani (2003) correlated physico-chemical parameters and phytoplanktons in a polluted Doda lake of Malavalli. Pandey *et al.,* (2003) assessed the physico-chemical characteristics of sub surface water of Makrana, district of Nagour (Rajasthan). Dissolved oxygen, pH and water temperatures serve as variables since the fluctuation of one affects the values of others (Fafioye *et al.,* 2005).

At present Sagar lake is grossly contaminated by the inflow of waste water which shows a high level of nutrients, organic matter, coliform bacteria etc. Due to high and prolific growth of water hyacinth the lake is highly eutrophic. This study, therefore, has been designed to determine the physico chemical parameters of Sagar lake from three selected sites.

MATERIALS AND METHODS

Collection of samples:

Samples were collected once monthly a period of six months from three sampling sites of Sagar lake (M.P.) from January 2004 to June 2004.These three sampling station were Site-I : Dhobi ghat, Site – II : Temple site and Site-III : Chakra ghat.

Standard procedures were adopted for the determination of phsico-chemical parameters such as pH, alkalinity chlorides, nitrate, phosphate, BOD, COD and DO according to Adoni,(1985);APHA,(1985) and NEERI,(1988).

RESULTS AND DISCUSSION

The analysis of the water samples showed that the condition of the Sagar lake is very poor. During the field visit it was observed that the water of the reservoir covered by excessive vegetation. Results of chemical parameters are tabulated in Table 1.

The Sagar lake was alkaline in nature. The pH of water sample ranged from 7.5 to 8.1 at site I, 8.5 to 9.0 at site II, and 8.6 to 9.1 at site III. The pH was found to be low in summer, while high in winter. The high biota production due to high pH values have been supported by high free carbon dioxide values in Omi water body of Ago-lwoye, Nigeria (Fafioye *et al.,* 2005). The water tends to be more alkaline when it contains large quantities of bicarbonates, carbon dioxide and calcium. The average range of water temperature was between 15- 26 °C. The temperature ranged from 15 to 25 ^{0}C at site I, 15 to 26 ^{0}C at site II, and 15 to 26 ^{0}C at site III. The minimum water temperature (15°C) was observed in all the three sites in January and the temperature peak (26 °C) was recorded

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