



ORIGINAL ARTICLE

Assessment of Dissolved Oxygen a Marker of Water Quality Index in Chambal River at Dholpur District**Pratap Singh Tiwari¹ and Mahendra Lodha²**¹Department of Zoology, Kamla P.G. College, Dholpur²Department of Zoology, Govt. College, DholpurEmail: pratapsinghtiwari1@gmail.comReceived: 21st April 2017, Revised: 6th May 2017, Accepted: 9th May 2017**ABSTRACT**

Broad spectrum and pesticides were currently used for pest control in many ways to the soil, water bodies, crop and to the stored grain in the form of liquid, dust, sprayers, granules and metal contained in industrial effluents constitute a major source of metallic pollution of hydrosphere when discharged in Chambal River this will lead to increase in concentration of toxic elements within food chain in Chambal River ecosystem. It is with this reason dissolved oxygen studies has been conducted in Chambal River at dholpur district of Madhya Pradesh.

Key words: D.O., water quality index, Chambal rive, Dholpur

INTRODUCTION

Discharge of chemical waste in River is a serious environmental problem today. This may seriously affect the life of aquatic fauna in Chambal River. Therefore, entire food chain become poisonous. The purity of Chambal has never been in doubt yet we have allowed the pollution of this River which is the symbol of spirituality of the people of M.P. and Rajasthan. Water is a vital component of the environment which sustains life on earth. The rapid pace of industrialization, urbanization, agricultural activities and population growth have made all the sources of water either polluted or contaminated globally. Release of treated and untreated industrial effluents in an unplanned manner is one of the major causes of water pollution. almost 70% of water in india has become polluted due to the discharges of domestic sewages, detergents and industrial effluents into natural water resources 1 e.g. Rivers, lakes etc. Chambal, the principal tributary of River yamuna and the most important River of the malwa plateau, originates from janapao hill in M.P., enters bundi, kota and then dholpur districts of rajasthan and unite with yamuna, 38 km away from Etawah in U.P. as Chambal River flows from different areas of dholpur district, it becomes polluted due to which bod in the River often rises to 9-14 mg/litre. Roughly 70 mld. of munciple waste is also dumped in Chambal River from different areas situated on its bank in dholpur district. The large population of coastal area of this River is totally dependent on its water. Therefore, it is necessary to assess water quality of Chambal River water at upstream site and downstream site d. the ecological studies revealed that inspite of similar pattern of relationship exhibited by abiotic factor. There occurs adiversity in nature of the Chambal River in form of flora & fauna flourishing in it. Chambal is a lotic River accounts for the differences in the range of water, temp recorded in it.

MATERIALS AND METHODS**D.O. (DISSOLVED OXYGEN):**

It is one of the most important parameter in water for assessment and reflects the physical and biological process prevailing in water dissolved oxygen is essential to maintain the higher form of biological life in water. low oxygen in water can kill fish and other organism present in water. Oxygen saturated water have a pleasant taste while deficiency of o₂ have an insipid taste. The dissolved oxygen in chambol River water sample was determined by modification of winkler's and azide iodometric method (apha-1992).

Process:

collected sample in 300 ml capacity of bod bottle then add 2 ml mnso_4 solution then add 2 ml alkalis iodideazide reagent, when add reagent, tip of pipet just below the surface stopper carefully to exclude air bubbles and mix sample by inverting the bottle 2-3 times-when precipitate settled down one third in bottle add 2 ml conc. h_2so_4 , then restopper and mix well until all the precipitate get dissolved.taken 203 ml. solution in a conical flask and titrated with standard 0.025 n ($\text{na}_2\text{S}_2\text{O}_3$) sodium thiosulphates used starch as an indicator and continue titrated till the first disappearance of the blue colour.

Calculation:

$$\text{D. O. (mg/l)} = \frac{\text{Titrant used} \times \text{N} \times 8000}{\text{ml of \%sample}}$$

RESULTS AND DISCUSSION**D.O. (DISSOLVED OXYGEN)**

There was no significant variation in the dissolved oxygen of Chambal water at different four sampling stations. However the dissolved oxygen of Chambal water varies significantly after each three months interval.

Table 1: Average dissolved oxygen (mg/l)

Month	Dissolved Oxygen			
	Site A	Site B	Site C	Site D
Oct-04	7.2	7.3	7.0	5.9
Jan-05	8.1	8.0	7.1	5.6
April-05	7.9	7.8	7.3	3.4
July-05	7.0	7.2	7.0	6.8

Site A= High way, Site B= Shamshan Ghat, Site C= Shergarh Fort, Site D= Near railway bridge

In the present investigation observation clearly indicate that the values of dissolved oxygen decrease significantly from site A to site D but in the month of July 2005 it increased which indicate that there is no effect of rainfall due to increase of raised water due to rainfall. Depletion in dissolved oxygen is an index increased organic pollution at down stream site D as compared to up stream site A, it is due to addition of different types effluents of Dholpur area in the River at down stream site D. Further decrease in the dissolved oxygen may also be due to turbidity, which interfere the penetration of light for the liberation of oxygen in the process of photosynthetic mechanism and respiration of biota, Verma *et al.* (1992), Sunkand *et al.* (2004). However the depletion of oxygen content could attributed to decrease the light rays which effect the photosynthetic activity over balancing the photosynthetic production of oxygen. The low values of D. O. at down stream site D in summer months are mainly due to the decreased volume of water, while disposal of waste water and sewage remain virtually the same. The sewage continuously discharged in Chambal River but their decomposition remain partial due to which lower D. O. values obtain. The water quality with regard to D. O., indicates that down stream site (D) are highly polluted as compared to upstream site (A). It is thus obvious (*vide super*) that D. O. of Chambal water in Dholpur area is affected by domestic, sewage and small scale industries effluents and is in affirmation to Shankar, *et al.* (1983), Saxena and Chauhan (1993), Tiwari, *et al.* (1989), who recorded decreased value of D. O. in River, Reh, Yamuna, and Ganga after being mixed up with untreated sewage, domestic and industrial effluents respectively. Divakar and Saxena (1987) also reported that low D. O. in the River Sabarmati and Ganga could be due to presence of high organic lod.

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