



ORIGINAL ARTICLE

Studies on Hydrobiology of Chambal River Pertaining to Sulphates and Phosphates at Dholpur District**Pratap Singh Tiwari**

Department of Zoology, Kamla PG College, Dholpur

Email: pratapsinghtiwari1@gmail.comReceived: 11th Oct. 2017, Revised: 10th Dec. 2017, Accepted: 13th Dec. 2017**ABSTRACT**

Water for suitable life is prime important life, without water biotic activities are not possible on this planet. In nature water occurs on the land, below its surface in atmosphere and in the biomass. Almost all sources of fresh water including Rivers and ponds are polluted due to urbanization and industrialization in the present time. Green revolution by using pesticides have contributed a lot of water and soil pollution. In the present study sulphate and phosphates have been evaluated in River Chambal at dholpur.

Key words: Hydrobiology, Sulphate, Phosphate, Water quality

INTRODUCTION

The industrial effluents, sewage and other pollutants when discharge in to any stream or River, not only cause pollution but disturb the whole biological system of lentic and lotic habitat. Villagers of the coastal region of Rivers and streams generally bathe their cattle due to which the oxygen supply in the water is reduced and algae increases which diminishes the fish stock of water. Due to traditions of some tribals the dead bodies generally throw in Rivers which causes harm to polluted our life. Chambal River is boon for Raj. and M.P. because its water is used for agriculture and for drinking purpose through water works. In the present investigation the water quality of Chambal River has been observed to be of substandard quality because various untreated industrial effluents from Urban coastal region merge inside the River. Further municipal sewage mingle in the River without any treatment and deteriorate Chambal water. Therefore, it has become necessary to assess the water quality of Chambal River and its impact of aquatic fauna.

MATERIALS AND METHODS**SULPHATE (TURBIDITY METRIC METHOD):**

It is a naturally occurring anion in all kinds of natural water. Discharge of industrial waste and domestic sewage in water tends to increase its concentration most of the salt of sulphate are soluble in water and as such it is not precipitated. Sulphate is an important constituent of hardness with calcium and Magnesium. It has got some indirect importance by producing H₂S which helps in corrosion of concrete, thus posing serious problem in the waste water collection pipe.

Principal: Sulphate ion precipitated in the form barium sulphate by adding Barium chloride in hydrochloric acid medium. The concentration of the sulphate can determine from the absorbance of the light by Barium sulphate and then comparing with a standard.

Process: Taken 50 ml. sample in conical flask then add 25 ml. conditioning reagent (mix 50 ml glycerol+30 ml. conc. HCL+300 ml. distilled water+100 ml 95% ethyl alcohol+75 g NaCl) then add stirred and BaCl₂ crystal and stirred continuously for 1 min. Measured the turbidity developed after every 30 sec. for 4 minutes on calorimeter at 420 ml after 2 minutes stirring reading will remain constant. Prepared standard curve by carrying standard sulphate solution through entire procedure space standard at 5 mg/litre increment in the 0 to 40 mg/litre range. Then read the sulphate present in the sample from the standard curve.

Calculation:

$$\text{Sulphate (mg/litre)} = \frac{\text{mg Ba sulphate} \times 1000}{\text{mg sample}}$$

PHOSPHATE:

Taken 100ml sample the add 1 drop phenolphthalein indicator, sample turns pink. Then add strong acid solution drop wise to discharge the colour. Then add with mixing 4.0 ml molybdate reagent and 0.5 ml (10 dros) stannous chloride reagent blue colour development.

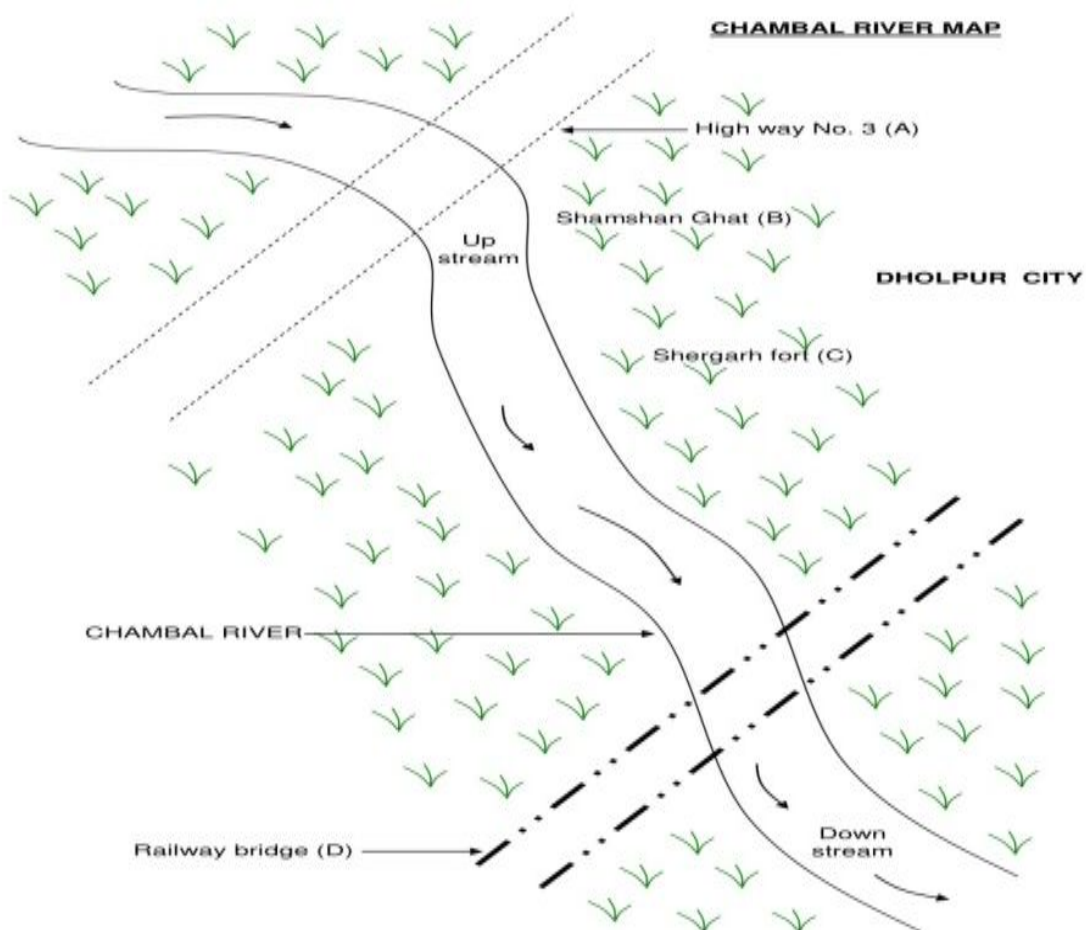


Fig. 1: Outline map of River Chambal at Dholpur

RESULTS AND DISCUSSION

SULPHATE:

There was no significant variation in the sulphate of Chambal water at different four sampling stations. However, the sulphate of Chambal water varies no significant after each three months intervals.

Table 1: Average Sulphate

Month	Sulphate (mg/l)			
	Site A	Site B	Site C	Site D
Oct-04	17.44	24.32	21.15	33.05
Jan-05	19.00	25.05	21.18	26.25
April-05	24.09	21.15	22.46	26.52
July-05	18.00	21.00	21.15	28.92

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

PHOSPHATE:

There was no significant variation in the Phosphate of Chambal water at different four sampling stations. However, the Phosphate of Chambal water varies no significant after each three months intervals.

Table 2: Average Phosphate

Month	Phosphate (mg/l)			
	Site A	Site B	Site C	Site D
Oct-04	0.38	0.43	0.63	0.81
Jan-05	0.40	0.47	0.61	0.85
April-05	0.47	0.48	0.53	0.82
July-05	0.49	0.52	0.52	0.79

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

The present analytical study reveals that sulphate as well as phosphate values are significantly increased at down stream site (D) throughout the study period as compared to upstream site. Increasing value of sulphate and phosphate at down stream site (D) is probably due to Chambol River continuously receives a lot of untreated domestic sewage. The sulphate and phosphate in the soil present in Chambol water as well as in ground water also present which is an established fact. The underground water of Dholpur is very hard and contains high amount of sulphate and phosphate in it. When this ground water due to continuous use, reach in Chambol water increase the amount of sulphate and phosphate.

REFERENCES

1. Ahmad S.H. and Singh A.K. (1993): correlation between Physico chemical factors and Zooplankton during diurnal variation in a fresh water tank at Bholi (Bihar) India J. Environ, Biol. 14(2): 95-105.
2. Shannon. J. E. and lee J.F. (1966): Hydrolysis of condensed phosphates in natural waters. J. Air. Water pollut. 10:753.
3. Singh A.K. and Bhowmic (1985): Effect of sewage on Physico-chemical characteristics and bacterial pollution in River Ganga at Ptana Indian J. Ecol., 12(1): 17-19.
4. Singh Kumar, Verma R.B. and Agarwal D.K. (1999): Physico-Chemical characteristics of wells water with respect to fluoride and Prevalence of Fluorosis in Farrukhabad district. IJET, 19(4): 279-283.
5. Somashekhar R.K. (1985): Studies of water Pollution of the River Cavery, Physico-chemical characteristics Inter Enviro. Studies. 24: 115-123.
6. Wollast R. (1993): Interactions in Estuaries and Coastal waters in the major Bioecochemical cycles and their interactions edited by B. Bdin. and R.B. cook, SCOPE 21 John Wiley & sons, Chichester, p. 385-405.