

Effect of Sewage Pollution on Physico-Chemical Characteristics of Sikrahana River Water near Lauriya, West Champaran, Bihar

Mukesh kumar,

Ph.D in Zoology, B.R.A Bihar University, Muzaffarpur, Bihar

Date of Submission: 02-08-2020

Date of Acceptance: 20-08-2020

ABSTRACT: Sewage of domestic and industrial polluted Sikrahana collected from Lauriya one of the selected stations of the investigation, where such of the parameters like Temperature, pH, DO, CO₂, and BOD were analysed during 2011-2012 in Monsoon (July11-Oct11), Winter (Nov11-Feb12), and Summer (March12-June12). The physico-chemical characteristics of water of River Sikrahana show marked variations in different seasons at station Lauriya. The statistically analyzed data has been given in table.

Keywords- sewage, physico-chemical, polluted degradation, BOD.

I. INTRODUCTION

With the sprawling population, industrialization, lack of proper sanitary facilities and treatment of wastes, the water quality of Indian rivers are deteriorating rapidly. The causative factors responsible for degradation of water quality need to be evaluated, so as to take proper steps before the situation deteriorates further.

Lauriya is situated on bank of river Sikrahana, also discharges thousands of gallons of sewage from urban and sugar mills which containing different types of effluents. In the present investigation, efforts have been made to evaluate the physico-chemical characteristics of the Sikrahana water near Lauriya carrying heavy loads of pollutants.

II. MATERIALS AND METHODS

The analysis of physico-chemical characteristics of the Sikrahana water near Lauriya were done by the standard methods (Adoni et al, 1985, APHA 1995). The water samples were collected at a regular intervals in 2011-2012 from station Lauriya in plastic containers and were brought to the laboratory for analysis. The statistical data have given in the table.

III. RESULT AND DISCUSSION

The water temperature showed a seasonal variation according to length of day, clarity of atmosphere and penetration of the sunlight. It was observed that water temperature was more during summer than in monsoon and winter (Kannan and Job 1980). This may be due to clear atmosphere and greater penetration of sunlight (Muawar 1970). In rainy season when the phyto-planktons were more in number, the water maintained relatively alkaline nature. The observation was compared with the work of Sharma et al, (1984). The entry of more organic loads into river due to sugar mill effluents, resulted increase in the population of microorganism thereby lowering down the amount of dissolved oxygen and increase in the CO₂ content, due to this reason the pH of water is reduces.

Due to more transparency and more photosynthesis during winter and early summer the amount of dissolved oxygen was recorded greater. Similar observation has been done by Prasad et. Al (1985), Hulyal and Kaliwal (2011), Ramulu and Benarjee, (2013) observed maximum dissolved oxygen during winter.

Free CO₂ was observed more during monsoon. It is due to flood, less transparency, oxidation and transparency of organic matter. During winter and summer, it was less which may be due to high planktonic population.

The BOD values are generally higher due to urban discharge and sugar-mill effluents in to river. It was also observed that the microbial counts were much higher and the amount of DO was lesser while the BOD values were greater (Adakola, 2000).

REFERENCES-

- [1]. Adakola J.A (2000); The effect of domestic, agricultural and industrial effluents on water quality and biota of Bindare stream, Zaria-Nigeria, Ph.d Thesis. Department of

Biological sciences, Ahmadu Bello University, Zaria, Nigeria, 256 pp.

[2]. Adoni A. D. et al (1985); workbook on limnology. Pratibha Publishers C-10, Gour Nagar, Sagar-470003, India.

[3]. APHA (1995); American Public Health Association, Standard methods for the examination of water and waste water p-1268.

[4]. Kaushik M. and Bagga J.(2004); water quality assessment of Newatoli pond, Daltenganj (Jharkhand) int. j. Mendel 21 (3-4) 101-102

[5]. Singh, R.K and Srivastava, N.P(1982); Seasonal and diurnal variations in physico-chemical conditions of water and plankton reservoir, U.P J. Inl. Fish. Soc. India, 12(1:100-111).

[6]. Hulyal S. B and Kaliwal B. B (2011); Seasonal variations in physico-chemical characteristics of Almatti Reservoir of Bijapur district, Karnataka state, IJEP vol.i No.1 pp. 58-67.

[7]. Kannan V. and Job J.B (1980); Diurnal depth wise and seasonal changes of physicochemical factors in Sathio reservoir; Hydrobiol., 70, pp 103-117

[8]. Sharma M. S, Sharma L. L and Durve V. S(1984); Eutrofication of Lake Pichhola in Udaipur, Rajasthan. Poll. Res; 3 (2) 39-44.

Monthly variations in some physicochemical characteristics of river sikrahana near Lauriya (2011-12)

	JUL-10	AUG	SEP	OC T	NO V	DEC	JAN	FE B	MAR	APR	MAY	JUNE -11
TEM								20.				
P	28.9	28.4	27.2	23.1	22.6	20.2	18.5	9	26.3	28.5	30.1	30.4
pH	7.3	7.4	7.5	7.5	8.0	8.3	8.8	8.7	8.0	8.0	8.1	8.2
DO	7	5.9	5.7	6.6	6.7	7.3	10.5	6.7	6	5.7	5.3	6.5
CO ₂	nil	8.4	11.9	nil	nil	nil	nil	nil	Nil	nil	nil	nil
BOD	4.65	5.76	6	4.13	3.59	3.2	2.6	3.4 9	3.64	3.93	4.1	3.97

All values in mg/L, Temperature in °C, Absent-nil

Note- Material is obtained from My Ph.D Thesis: (Limnological Studies of River Sikarahana: From ChautarwaChaur- Bagha-1 to Sagauli)